

Stewards of Integrity

**Institutional Approaches to Promote and Safeguard
Good Research Practice in Europe**



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- Polar Sciences
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Foreword

In December 2000, the European Science Foundation published a Science Policy Briefing entitled *Good Scientific Practice in Research and Scholarship*. The time was not coincidental. During the 1990s, there were many major cases of research misconduct that were widely publicised in both the scientific and general media.

As research organisations in various countries were undertaking efforts to tackle the problem, there was a need to learn from each other's experiences and with the idea of the European Research Area (ERA) then burgeoning, discussions began on whether there should be coordinated efforts at the European level.

The ESF Science Policy Briefing No. 10 surveyed the then existing policies and practices in Europe and discussed the responsibilities of researchers and research organisations. It called upon ESF Member Organisations, to act, in their diverse roles, as stewards of research integrity.

In the eight years that have elapsed since the publication of this Science Policy Briefing, the issue of research misconduct continues, unfortunately, to be a subject of grave concern, as recent cases of research misconduct show. Amid a growing consensus that it is an issue for the global science community, a world conference was organised by the European Science Foundation (ESF) and the US Office of Research and Integrity (ORI) in September 2007.

This First World Conference '*Research Integrity: Fostering Responsible Research*', brought together researchers, officials from research organisations and scientific professional societies, representatives from science publishing houses and journal editors, as well as policy makers who discussed strategies for fostering responsible conduct in research and on the potential of harmonised, mutually comparable policies to deal with research misconduct¹.

The First World Conference on Research Integrity provided a good opportunity to revisit the ESF Science Policy Briefing No. 10 and learn how good research practice is promoted and safeguarded across Europe.

To this end, the European Science Foundation collected information from its Member Organisations and other relevant bodies, and this resulting report presents the policies, approaches and practices to foster good scientific practice found in several European countries.

Although the report is not exhaustive both in terms of countries and institutions covered, it provides a basis for an overview of mechanisms to promote good research practice and to handle cases of alleged research misconduct that exist in different European countries.

The need for such an overview has become more pressing today, as national research organisations increasingly encourage and support their research communities to engage in collaborative research efforts across borders. It is important that they are aware of each other's approaches and are able to discuss possible collaboration on promoting research integrity on an informed basis.

To provide such information is in line with the ESF Strategic Plan 2006-2010, in which ESF commits itself to act as a platform for Member Organisations to, among other things, exchange information and experiences and explore potential areas of fruitful cooperation.

We are deeply grateful to all officials from ESF Member Organisations and other organisations who not only provided the information on which this report is based but also checked the summaries and provided helpful comments on the first draft of the report.

We also wish to thank the European Commission which partially funded this work and publication.

We hope that this report will help our collective efforts to facilitate mutual learning between various actors and guide the discussions on pan-European and global cooperation on promoting and safeguarding good research practice.

Marja Makarow
ESF Chief Executive

¹ A short report has been published in December 2007 (ESF & ORI 2007).

1. Introduction

The ESF Science Policy Briefing No. 10 *Good Scientific Practice in Research and Scholarship* published in December 2000, came out at a time of intense discussions in the research community on the appropriate approaches to maintain high standards in research practice.

During the 1980s and the 1990s, several cases of serious research misconduct came to public attention, and concerns were raised that the 'self-regulation of science, based on traditional approaches to instilling values of scientific integrity, was not sufficiently meeting heightened public and political expectations' (ESF 2000, p. 5). In response, key actors in the research community started to devise appropriate mechanisms to promote good research practice and to handle cases of research misconduct.

In the USA, the Office of Scientific Integrity (OSI) and the Office of Scientific Integrity Review (OSIR) were created in 1989 by the Public Health Service (PHS), following Congressional hearings on the problem of scientific misconduct, especially in biomedical research, which took place in the 1980s. OSI was in National Institutes of Health (NIH) and OSIR in the Office of the Assistant Secretary for Health. Both institutions were replaced by the Office of Research Integrity (ORI) in 1992 with a mission to promote research integrity and investigate misconduct in research supported by the US Public Health Service. In 2000, the Office of Science and Technology Policy published its research misconduct policy, which applies to federally funded research. It provided a common definition of misconduct and guidelines to develop institutional procedures to handle allegations of research misconduct (NAS, 2002, p. 167ff).

The US National Academies of Sciences (NAS) published its seminal report *Responsible Science: Ensuring the Integrity of Research Process* in 2000 as well. The report was produced by a panel tasked to review the factors affecting research integrity and existing institutional mechanisms to address allegations of misconduct in the USA and issued recommendations to the research community and research organisations on steps to take to foster research integrity (NAS 2002 and NAS 2003)².

In Europe, several countries and organisations were also publishing guidelines and codes to promote good research practice and codifying rules to deal with allegations of research misconduct. Examples include the creation of the Danish Committee on Scientific Dishonesty in 1992 and the publication of *Recommendations for Safeguarding Good Scientific*

Practice by the Deutsche Forschungsgemeinschaft in 1997.

The ESF Science Policy Briefing No. 10 surveyed existing approaches and highlighted the efforts undertaken by various agencies to foster good scientific practice. It also made a series of recommendations in particular to ESF Member Organisations to take their responsibility seriously in stewarding research integrity.

Taking into account the diversity of the nature, missions and legal status of its Member Organisations in their respective national research systems, the ESF Science Policy Briefing recommended:

- *Learned societies* to draw up codes of good scientific practice and discuss the most appropriate ways and procedures to investigate allegations of misconduct;
- *Research-funding agencies* to promote good scientific practice by requiring the universities they fund to develop adequate policies to deal with research misconduct;
- *Research-performing organisations* to issue clear, fair and robust guidelines for good scientific practice and put in place procedures to implement those guidelines and adequately investigate allegations of scientific misconduct.

In this report we present the results of a survey on existing policies and procedures to foster good research practice in ESF Member Organisations and their partners in their respective national research communities. The survey had two complimentary objectives:

- to provide a systematic overview of various approaches to promote research integrity and to handle allegations of research misconduct (paying special attention to the efforts undertaken by ESF Member Organisations);
- to identify key organisations and bodies that foster research integrity in different countries, and within those organisations identify relevant departments and organisational units as well as responsible officials.

The structure of this report follows this logic. Section 3 presents, on a country by country basis, the existing mechanisms fostering research integrity. The analytical dimensions of the survey and the data-gathering process are briefly described in section 2. Section 4 summarises the results and section 5 contains the bibliographical reference. The last section lists the contact details of the officials within the organisations with responsibility for fostering research integrity.

² The report was issued in two volumes in 2002 and 2003 respectively. Volume I contains the findings of the panel and its recommendations, Volume II the background papers and selected institutional guidelines and policies.

2. Data basis

2.1 Analytical dimensions of the survey

In collecting information on existing institutional mechanisms to foster research integrity in Europe, the focus was placed on three analytical dimensions: codes/guidelines, key institutions and procedures to handle allegations of research misconduct (Figure 1).

The information collection and analysis followed three main questions:

- (1) What are the *codes/guidelines* purposely aimed at promoting good research practice?
- (2) Which are the key *institutions and bodies* in safeguarding good research practice, either by raising awareness, or by developing codes and guidelines, or in handling allegations of research misconduct?
- (3) What are the *explicit procedures* to report a suspected case of breach of research misconduct and to handle an allegation of research misconduct both at an institutional and a national level?

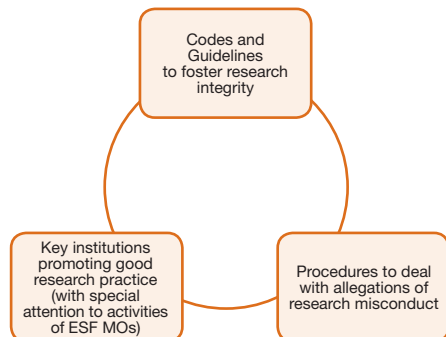


Figure 1. Analytical dimensions of the approaches to foster research integrity.

With regard to codes of conduct and guidelines, this survey complements other efforts (past and currently ongoing) to establish directories of codes of conduct for researchers.

In 2004, a survey was commissioned by the European Commission to provide 'systematic information facilities for ethical issues in science that would help promote the awareness of inconsistency in the existing codes of conducts and other standards for sciences' in the European Union and associated countries (EC 2004, p. 9). The report

entitled Codes of Conduct: Standards for Ethics in Research contains information on 65 standards in total³ of very diverse natures (oaths, appeals, recommendations, codes, guidelines etc.) which address a wide range of issues including ethical considerations in experiments involving animals, research on children and codes of conducts.

Another ongoing effort to establish an information base on the existing research-related codes of conduct is the database of codes of conduct maintained by UNESCO in its Global Ethics Observatory (GEObs).

Box 1: The Global Ethics Observatory (GEObs)

The GEObs is a system of databases developed and maintained by UNESCO to provide information on ethics in science and technology, launched in December 2005.

It consists of five independent databases: experts in ethics (Database 1: Who is Who in Ethics); key institutions active in areas of ethics (Database 2: Ethics Institutions); Ethics Teaching Programmes (Database 3); Ethics-Related Legislation and Guidelines (Database 4); Codes of Conduct (Database 5).

This database contains 151 codes of conduct (as of April 2008), of which over 30 are issued by Europe-based institutions. The codes are classified into *aspirational codes* (ideals to strive for); *educational codes* (to enhance understanding of conduct by means of commentaries, interpretation and examples); and *regulatory codes* (with enforceable rules to govern professional conduct and to serve as a basis for adjudication).

For further information go to:

www.unesco.org/shs/ethics/geobs

While the abovementioned initiatives cover all professional codes of conducts (and related guidelines) and address ethical issues in the widest sense of the term, this report confines itself to codes, guideline and other documents with a specific focus on good research practice. Moreover, this report contains information on procedures to deal with an allegation of research misconduct as well as contact

³ 45 at national level and 20 at international level.

2. Data basis

details of responsible officials in key organisations; information which is not within scope of the above listed overview.

2.2 Information gathering and limitations of the report

The compilation of information presented in this report was an iterative process. It started with a letter from the ESF Chief Executive to the heads of ESF Member Organisations in December 2006 asking them to provide information on 'policies and practice with regard to research integrity'.

The preliminary answers were used to gain an insight into the variety of existing mechanisms in different countries. In addition, an extensive internet and literature search was undertaken to identify relevant institutions. Those were subsequently contacted and asked to provide relevant documents.

The documents sent were mainly in English. In the few cases in which the documents collected were in a language other than English, German or French, an ESF staff member fluent in the language was asked to help in translating them.

The information collected was summarised in short texts describing the principles to promote, and the mechanisms used to safeguard research integrity.

To ensure the accuracy of summaries, a validation process followed. During October and November 2007, the texts were sent to the organisations which had sent the information with the request to check the text point out to any gross errors and omissions and provide answers to some questions which had arisen in summarising the information.

In the beginning of 2008, the first draft of the report was circulated to the ESF Member Organisations from countries which were not included in the report. They were asked to send information on existing institutional or national policies to promote and safeguard good research practice or to confirm that no such (explicit) policies existed.

Approaching ESF Member Organisations to collect information on existing mechanisms to promote research integrity and handle research misconduct allegations rests on the reasonable assumption that they are likely to be part of any major national initiatives either as co-initiators or supporting it

financially or otherwise. The descriptions in Section 3 show that this is the case in all countries for which the information could be collected.

However this report has some limitations which are inherent to this data collection approach:

- (1) The report contains detailed information on 18 countries. Despite great efforts made to collect information from 32 European countries (see Table 1), it cannot be assumed that other European countries not included in this report, do not have explicit guidelines to promote good research practice and written procedures to handle allegations of breach of good research practice.
- (2) The information-collection process focused on public research-funding agencies, learned societies and large public research-performing organisations. The survey excluded other key actors in promoting good research practice such as universities; research institutions; scientific societies (other than academies), private research-supporting organisations such as the UK-based Wellcome Trust or the French Institut Pasteur.
- (3) The report focuses on the codes and guidelines that the surveyed institutions offer to guide researchers as well as the procedures to handle allegations of research misconduct. However it did not address the equally important aspect of the concrete measures taken to promote good research practice including training programmes, specific organisational structures (e.g. mentoring programmes) etc.

Those limitations have to be kept in mind when reading the country summaries in the following pages.

3. Approaches in individual countries

The survey targeted 32 European countries which are either members of the European Union or in which ESF has at least one member organisation. Currently ESF has 78 members organisations in 30 countries, which include all EU member states except for Latvia and Malta and additional include Croatia, Iceland, Norway, Switzerland and Turkey.

Of the 32 European countries targeted by the survey, responses were collected from Member Organisations (or other relevant organisations) from 23 countries. Table 1 shows countries from which written responses were received and which countries are covered in this report.

Table 1. Countries targeted, responses and coverage in the report

	Country	Response received	Summaries of the policies included in the report
1	Austria	●	●
2	Belgium		
3	Bulgaria		
4	Croatia	●	●
5	Cyprus		
6	Czech Republic	●	●
7	Denmark	●	●
8	Estonia	●	●
9	Finland	●	●
10	France	●	●
11	Germany	●	●
12	Greece		
13	Hungary	●	
14	Iceland		
15	Ireland	●	●
16	Italy		
17	Latvia	●	●
18	Lithuania	●	
19	Luxembourg		
20	Malta	●	
21	Netherlands	●	●
22	Norway	●	●
23	Poland	●	●
24	Portugal	●	
25	Romania		
26	Slovakia	●	●
27	Slovenia		
28	Spain	●	
29	Sweden	●	●
30	Switzerland	●	●
31	Turkey	●	●
32	United Kingdom	●	●

In some cases, the approached organisations sent information about national bodies which advise governments on ethical issues especially in bio-ethics arena. In some other cases, organisations which deal with bio-medical research sent their policies on research involving human and animal subjects or informed that they have subscribed to international conventions such as the Helsinki Declaration of the World Medical Association.

As the structures and activities of National Ethics Committees (see Box 2) and the bio-ethics conventions and regulations were not the primary focuses of the survey, those aspects are not considered in this report.

Box 2: National Ethics Committees

Almost all European countries have a National Ethics Committee. They generally advise policy makers and inform the public on a wide range of ethical issues raised by research and they are involved in developing standards and policies for ethical problems arising from scientific research. In some cases they review research projects. Two European Fora network the National Research Committees (or equivalent bodies).

The Forum of National Ethics Councils (NEC FORUM) brings together the chairpersons and the secretaries of the National Ethics Councils in the 27 EU member states and aims to facilitate the exchange of information, experience and best practices on ‘ethics and science’. It operates under the procedures of the method of ‘open coordination’. The Forum organises meetings twice a year which are hosted by the country having the EU Presidency. The Forum is facilitated by DG Research (Unit ‘Science and Society’). <http://ec.europa.eu/research/science-society/>

The European Conference of National Ethics Committees (COMETH) consists of representatives from national ethics councils in the 47 member states of the Council of Europe. Its objectives are to promote co-operation between national structures, to help countries wishing to set up a national ethics committee and to promote public debate on ethical issues raised by progress in the fields of biology, medicine and public health. COMETH organises meetings every two years. The Bioethics Department of the Council of Europe provides the secretariat to the COMETH. http://www.coe.int/T/E/Legal_Affairs/Legal_co-operation/Bioethics/COMETH/

3. Approaches in individual countries

At the time this survey was being compiled a number of organisations had initiated the process of developing institutional policies or were engaged in dialogue with other research organisations to establish good research practice policies and institutionalize procedures to deal with allegations of research misconduct at the national level (see Box 3).

The report covers 18 countries for which information could be collected on explicit (i.e. written and published) codes and guidelines to promote good research practice and on relevant institutions and established procedures to handle research misconduct allegations. Country summaries include the structure, scope and main lines of the codes and guidelines, the structure and the operating modes of the relevant institutions and bodies presented, as well as the procedures on reporting and how to handle allegations of research misconduct.

Box 3: New Developments

HUNGARY

Although many Hungarian universities and individual research institutions have developed their policies on good research practice, no such policies exist at a national level nor are there national structures to handle allegations of research misconduct. The Hungarian Scientific Research Fund has started an initiative which may lead to the establishment of a national policy both for promoting good research practice and for adequately handling misconduct allegation cases.

LITHUANIA

A new law on science and studies were under preparation. This law foresees the establishment of the institution of the 'Ombudsman', a government official whose function will be to examine complaints on contraventions of academic ethics and procedures in Lithuania.

PORTUGAL

The Ministry of Science, Technology and Higher Education has asked the Foundation for Science and technology (FCT) to coordinate the activities aiming at identifying and developing appropriate mechanisms to foster good research practice, prevent research misconduct and investigate allegations of suspected cases. As the main funding agency, the FCT provide individual grants, project grants and grants to research institutions. It is the office which receives complaints on alleged cases of research misconduct.

SPAIN

The Spanish National Research Council (CSIC) was elaborating a Manual of Good Practice. This was a priority area in its Strategic Plan 2006-2009. A comprehensive analysis of the institution's strengths, weaknesses, opportunities and threats (SWOT analysis) by external boards of experts in preparation of the strategic plan highlighted the necessity to implement procedures that ensure and guarantee that the research conducted in the CSIC comes up to the highest standards of integrity. Accordingly, the CSIC's Strategic Plan for the period 2006-2009 includes two specific actions to promote scientific integrity at CSIC: (1) The creation of an internal Ethics Committee. The mission of the committee will be to oversee the rules of ethics and conduct on subjects relating to experimentation, research groups, relations between staff, publishing of results, etc., (2) The development of a Manual of Good Practice.

3.1 Austria

In its *Funding Guidelines*, Austria's main research funding agency, the Austrian Science Fund (FWF) requests compliance with 'general rules of good scientific practice'.

The general rules entail, in particular, providing accurate information in the application process by following the norms in the preparation of funding applications according to the standards of each scientific discipline. The outcome should be presented in such way that the information is comprehensible and nobody should be denied due recognition for an achievement s/he has achieved.

The general rules of good scientific practice apply from the moment the application is submitted.

Following a decision of its Executive Board, the FWF applies the recommendations of the Commission of the German Research Foundation (DFG) on Professional Self-Regulation in Science. This is meant to be a temporary provision until FWF has developed its own guidelines (see FWF's *Application Guidelines for Stand-alone Projects*).

With regard to the procedures to deal with an allegation of research misconduct, the funding guidelines state that if there is a suspected breach of good scientific practice, the case should be referred to the ombudsperson of the concerned research institution or to FWF, which will then make appropriate investigations. FWF will suspend any pending or running application reviews during the investigation.

Since 2003, the FWF has been actively encouraging universities to establish a system of ombudspersons, who should mediate and arbitrate in a case of an allegation of suspected research misconduct. More than half of the 21 Austrian public universities has established a Ombudsman. In parallel, an advisory committee (*Rat der Weisen*) of three outstanding researchers was established in 2004 by the FWF to

deal with cases occurring in non-university public research institutions or at universities which have not established an Ombudsperson.

In 2007, the FWF together with other key institutions of the Austrian Scientific Community convened a working group to make recommendations on an appropriate model to safeguard good scientific practice in Austria. The Working Group includes members from Austrian Academy of Science, the Austrian Rectors conference and the universities.

The first activity of the Working Group was to review the existing mechanism to handle allegations of research misconduct in the international perspective.

The Working group identifies three approaches, which usually co-exist and are applied together in some countries:

- Ad Hoc Committees convened to deal with specific cases of research misconduct
- Standing bodies in the research institutions and
- Central bodies, at national level, with the responsibilities to handle cases.

The Working Group has proposed the establishment of a central and independent body with national responsibility to deal with research misconduct cases. This body should operate in addition to the institutional mechanisms to safeguard good research practice (such as Ombudsman at the universities).

At the time of compiling the information for this report, details of the modus operandi of the proposed body were still under discussion and the working group had not yet published its final recommendations.

Key documents:

FWF Funding Guidelines

http://www.fwf.ac.at/de/downloads/pdf/fwf_funding_guidelines.pdf

Application Guidelines for Stand-alone Projects

http://www.fwf.ac.at/de/applications/einzelprojekte/pdf/p_guidelines.pdf

3. Approaches in individual countries

3.2 Croatia

Until 2006, the promotion of good research practice in Croatia, especially in health related research, was mainly stewarded by the editorial board of the *Croatian Medical Journal*. The CMJ editorial policy also includes provisions to promote good research practice and prevent misconduct and in 2001, the journal appointed a research integrity editorial officer.

It is mainly due to efforts of the editorial board of the Journal that, in 2006, following the reform of the higher education legislation, a national Committee for Ethics in Science and Higher Education (CESHE) was established.

The CESHE is an independent advisory body whose members are appointed by the Croatian parliament for a period of 4 years. The potential members are nominated by the institutions of higher education, research institutes and the Ministry of Science, Education and Sports. Of all the nominees only 9 members are appointed. At present the members have various backgrounds such as Medical and Life Sciences, Law, Engineering, and Philosophy.

The Committee is tasked with the promotion of ethical principles and standards in science and higher education as well as in the wider context of the application of modern technologies (including its environmental effects). The Committee examines cases of alleged research misconduct which are brought to its attention. The allegations are brought to the Committee's attention either directly by the interested parties, through the Ministry of Science, or the Committee can act on its own and proactively take on potential cases of misconduct. The Committee provides its opinions on the alleged cases and makes recommendations when appropriate.

To promote good research practice, the Committee has issued an *Ethics Code* in November 2006 and helped develop guidelines for responsible conduct of research in grant proposals funded by the Ministry of Science, Education and Sports in March 2006.

The *Ethics Code* addresses key ethical principles in higher education, scientific research, publication of results, relations between researchers, educators and others in the scientific and educational context, procedures related to the competitive market economy, as well as relations with the public and the media.

The *Ethics Code* (its full name in Croatian: Eticki kodeks odbora za etiku u znanosti i visokom obrazovanju), as well as CESHE's opinions and recommendations can be found on the CESHE's web page – www.azvo.hr/oezvo).

The *Guidelines for Responsible Conduct of Research in Grant Proposals* are promoted by the Ministry of Science, Education and Sports. Every project leader has to ensure responsible conduct of research and scientific integrity of proposed research by signing the RCR consent form. The RCR consent form covers questions of scientific integrity, collegiality/authorship, protection of research subjects, conflicts of interest, and social responsibility, and is a part of all the project and programme proposals. A detailed overview was published and publicly promoted by the Minister of Science, Education and Sports (Petrovecki M, Paar V, Primorac D. *Croat Med J*. 2006;47(6);809-24.)

The Secretariat of the Committee for Ethics in Science and Higher Education (CESHE) is provided by the Agency for Science and Higher Education (Agencija za znanost i visoko obrazovanje AZVO).

The AZVO mission is to 'protect public interest in the preservation of the standard of higher-education qualifications and constantly support the improvement of quality of the scientific activity and higher education'.

This summary is partially based on an article by Livia Puljak published in Science and Engineering Ethics, Vol. 13, Nr 2, June 2007, page 191-193: Croatia founded a national body for ethics in science.

Key documents:

Ethics Code
<http://www.azvo.hr/oezvo>

Guidelines for Responsible Conduct of Research in Grant Proposals
<http://zprojekti.mzos.hr/>

3.3 Czech Republic

The Academy of Sciences of the Czech Republic administers 52 publicly funded research institutes and employs more than 3500 academic researchers who conduct basic research in the sciences and humanities.

The Academy has a Committee for Scientific Integrity that drafted a *Code of Ethics for Researchers of the Academy of Sciences of the Czech Republic*, which was adopted by the Academy Assembly in April 2006.

The code of ethics contains a very detailed set of principles of good conduct in science and specifies procedures for resolving controversial ethical issues. It is divided into six parts.

The first part addressing *general principles* sets the frame of desirable attitudinal and behavioural standards in conducting scientific activities in general. These are, for example, true respect for the code of ethics; defence of freedom of scientific thought; openness to discussion and factual argument; and the refusal to use approaches based on racial, religious, nationalist or political opinions in science.

The principles in the second part deal with the attitude of the *researchers when conducting scientific work*. They touch upon such aspects such as:

- the responsibility to carry out research for the benefit of, and respect for society, environment and cultural values;
- safeguarding of primary data and documentation;
- a sense of responsibility for the efficient use of resources.

Part three of the code addresses issues related to *the publication of scientific knowledge and results*. The principles require researchers, among other things; to seek authorship or co-authorship only for results to which they have made a substantial contribution; to acknowledge the contribution of

predecessors and colleagues; and to avoid artificially inflating the number of publications by recurrent citations of the same acquired results found in multiple publications.

In the fourth part, *principles regulating relations with students and co-workers* are specified. The researcher is required to objectively evaluate her/his students and research co-workers, to guide them in developing their independent, critical thinking and taking a responsible approach. S/he should acknowledge their contribution to the work and list them as authors if their contribution to the paper is substantial.

Part five deals with principles regarding researchers *when performing assessment, evaluation or other expert activities*. The researcher is expected not to use the data contained in evaluated materials or to prolong unduly the process for personal or a third party's gain. Researchers should also reveal any potential conflict of interests in advance and resist any external pressures which could influence this position.

In part six, each Academy institute details additional specifications pertaining to its discipline.

In the procedures for resolving controversial ethical issues, the code states that such issues should be resolved ideally at the level of individual institutes of the Academy, possibly by establishing ad hoc commissions to address them. Should the issue exceed the competence of the institute or when the parties fail to come to an agreement, the case can be referred to the Academy's Committee for Scientific Integrity.

The code of ethics is binding for all scientists of the Academy of Science of the Czech Republic. It is also accepted by the rest of the research community in the Czech Republic since representatives of universities also participated in its elaboration.

Key document:

Code of Ethics for Researchers of the Academy of Sciences of the Czech Republic
http://www.cas.cz/en/code_of_ethics.php

3. Approaches in individual countries

3.4 Denmark

Denmark has a central body dealing with research misconduct: the Danish Committees on Scientific Dishonesty (DCSD).

This body was established in 1999 by the Danish Ministry of Science, Technology and Innovation. In 2005 the ministry issued a new executive order which introduced changes in the structure and work of the DCSD as well as in the scope of its activities.

The DCSD consists of three committees: the Committee for Research in Health and Medical Science; the Committee for Research in Natural, Technological and Production Science; and the Committee for Research in Cultural and Social Science.

Each of the committees consists of six members (and six alternates) who are recognised researchers in their respective fields. The committees have a common chairperson who is a High Court judge. The committee members, the alternates and the chairperson are appointed by the Minister for Science, Technology and Innovation, for a period of four years, extendable for no more than two years.

The secretariat of the DCSD is provided by the Danish Agency for Science, Technology and Innovation.

The DCSD deals only with cases of research dishonesty that could potentially influence Danish research.

The executive order mentioned above defines scientific dishonesty as conduct “intentional or grossly negligent in the form of falsification, plagiarism, non-disclosure or any similar conduct involving undue misrepresentation of a persons’ own scientific work and/or scientific results”.

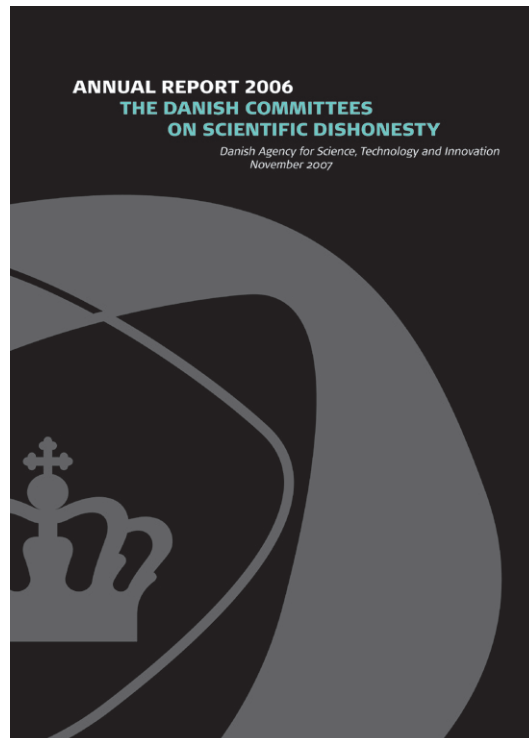


Figure 2. The 2006 Annual Report of the Danish Committees on Scientific Dishonesty.

The DCSD considers cases brought to it by a party alleging scientific dishonesty or a party seeking to be cleared of such an allegation. In addition, the DCSD is authorised to initiate investigations on its own initiative if it considers the case to be in the interest of society and of importance to human or animal health. The DCSD has the discretionary power to refuse to consider cases brought to its attention.

Key document:

Executive Order No. 668 of 28 June 2005 on the Danish Committees on Scientific Dishonesty
Danish Agency for Science, Technology and Innovation (2007): Annual Report 2006. The Danish Committees on Scientific Dishonesty.
<http://fi.dk/site/english/news/news-2007/annual-report-2006-the-danish-committees-on-scientific-d>

The executive order sets the frame on how to proceed when considering cases of scientific dishonesty. It requests the DCSD to draw up rules of procedures (which shall be approved by the Minister of Science, Technology and Innovation).

The DCSD is empowered to make a statement expressing criticism if scientific dishonesty occurred. It may also inform the employer of the researcher involved and at the specific demand of the employer, the DCSD can state its views on the degree of scientific dishonesty. It may recommend the project to be withdrawn and it may also inform the relevant authority supervising the research area, and the police in the case where a punishable offence is uncovered.

The DCSD publishes an annual report on how many cases were considered and the outcome of the inquiries.

Some cases are dealt with directly by the universities. There is no obligation for Danish universities to report cases concerning research integrity and scientific misconduct to the DCSD. Data collected by the secretariat of the DCSD suggest that, since 2000, each university has, on a yearly basis, handled fewer than five cases. The cases are typically dealt with by the rector's office. Only a few cases prove to be so serious that they can be considered as cases of scientific misconduct.

3. Approaches in individual countries

3.5 Estonia

The Estonian Academy of Science (EAS) is a learned society whose mission is to analyse global trends in science and provide adequate science policy recommendations, with the aim of fostering Estonia's economic, social and cultural development and conservation of the environment.

A working group set up by the Estonian Academy of Science drafted a *Code of Ethics for Estonian Scientists*. After broad consultations with the scientific community in Estonia, the code was adopted in December 2002 by the EAS General Assembly.

The code lists a set of principles to which Estonian researchers must adhere to in their activities. The code is divided into six parts, each addressing a specific aspect of research ethics: (1) general principles; (2) scientific research; (3) self-regulation in the scientific community; (4) the scientist as a mentor and as a student (5) the scientist as an expert; and (6) the scientist in society.

The *general principles* pertain to the respect for the code of ethics and the responsibility of researchers to apply research knowledge for the welfare of humankind, to the preservation and consolidation of the ecosystem and commitment to the freedom of scientific thought. Researchers are required to have critical minds and not use unproven results or claims especially when important decisions are being taken. The general principles also stress the moral responsibility of the researchers for activities which may be harmful to humanity, the environment, the country or its social institutions.

The second part deals with *scientific research*. The principles listed in this section require researchers to adhere to the highest professional standards and to preserve integrity in all steps of research process. In research involving humans, human dignity is a basic human right that must not be compromised.

In the third part, *self-regulation in the scientific community*, researchers are required to pursue scientific discussions with their opponents on an equal level. Researchers in senior positions are required to adopt a democratic style of leadership. This section of the codes stresses that the practice of 'honorary' or 'ghost' authorships is inconsistent with good scientific principles.

As *mentors*, researchers are expected to show respect for their team and encourage independent work of students, not hindering their communication with other scientists and scientific institutions.

In their capacity as *experts*, researchers are to act only in the area of their competence in cases for which they can remain impartial. In performing expert examinations, researchers should refrain from any discrimination based on sex, race, political opinions or cultural background. In expert examinations, they should retain their independence and defy any pressure. When making assessments which may lead to an appointment to an academic position they are expected to give no undue preference to one candidate.

The part relating to the *scientist in society* again stresses the scientist's responsibility to work for the benefit of society and environment. It further requires researchers to promote and spread scientific knowledge and to fight against pseudo-scientific theories and misconceptions.

The *Code of Ethics for Estonian Scientists* does not foresee any formalised mechanism to deal with individual cases of research misconduct.

Key document:

Estonian Academy of Science (2002). Code of Ethics for Estonian Scientists
http://www.akadeemia.ee/_repository/File/ALUSDOKUD/Code-ethics.pdf

3.6 Finland

National Advisory Board on Research Ethics

In Finland, the National Advisory Board on Research Ethics was set up in 1991 by the Ministry of Education with the mission to initiate debates on and take initiatives to promote research ethics.

It is a part of a wide network of advisory bodies which address ethics-related issues in science and technology. Other bodies are: The National Advisory Board on Health Care Ethics (ETENE); the Cooperation Group for Laboratory Animal Sciences (KYTÖ); the National Advisory Board on Biotechnology (BTNK) and the Board for Gene Technology (GTLK).

The National Advisory Board on Research Ethics has 10 members nominated by the Ministry of Education for a three-year term. Its secretariat is provided by the Federation of Finnish Learned Societies.

In 1994, for the first time, The National Advisory Board on Research Ethics published the procedures for handling allegations of scientific misconduct. They were subsequently updated in 1998 and 2002.

The latest version, entitled *Good Scientific Practice and Procedures for Handling Misconduct and Fraud in Science* contains general guidelines on research ethics and is to be seen as an effort to extend and widen the discussions on research ethics in the Finnish research community. Research institutions and organisations that support research are invited to commit themselves to good scientific practice by signing this document and implement its recommendations. As of February 2008, 95 institutions (including all Finnish universities) have signed it.

The first part of the document discusses the principles that the concept of good scientific practice entails. They are, among others:

- the duty to discuss and record agreements on the status, rights and obligations (e.g. co-authorship, storage and management of research data and results) of the research team prior to starting the project and in the recruitment context;
 - disclosure of funding sources and of other relevant interests;
 - good administrative and financial management.
- In this part, universities and other research-performing institutions are reminded of their important responsibility to include good scientific practice in the training of researchers and to commit themselves to those principles.
- Although the commitment to good scientific practice is primarily up to each researcher and each member of the research team individually, the 'responsibility for abiding by good scientific practice rests with the research community as whole'.
- the necessity to follow the standards and norms endorsed by the research community such as meticulousness and accuracy in conducting research, publication of research and assessing research plans or results;
 - giving credit to other researchers achievements and respecting their work;



Figure 3. *Good Scientific Practice and Procedures for Handling Misconduct and Fraud in Science*.

3. Approaches in individual countries

The second part discusses the violation of good scientific practices, which are divided into two categories: misconduct in science and fraud in science.

Misconduct entails 'gross negligence and irresponsibility especially in the conduct of research'. Examples of misconduct are: understatement of other researchers work or negligence in properly referencing one's own publications; negligence in recording and preserving the results; publication of the same results several times.

Fraud in science is defined as deceiving the research community and decision makers and giving false information or giving false results to the research community. Fraud in science is manifested in four categories: fabrication, misrepresentation (falsification), plagiarism and misappropriation.

Procedures for handling allegations of violations of good scientific practice are presented in the third part of the document. The higher education institutions and other research-performing organisations are invited to set up appropriate mechanisms to deal with any allegation of scientific misconduct at their institutions; mechanisms that should fulfil three essential requirements:

- fairness and impartiality
- hearing of all parties concerned
- speedy process

A detailed, 12-step procedure to deal with suspected cases of research misconduct is recommended. It starts with a first inquiry at the highest executive level of the institution (rector or director) to which the allegation must be made in writing. If the inquiry finds reasons to believe that fraud may have occurred, an investigation should be launched and carried out by an expert committee appointed by the rector. The National

Advisory Board should be informed. Based on the findings of the committee of investigation, the rector will consider possible sanctions. A person suspected or a complainant who is dissatisfied with the inquiry can refer the matter to the National Advisory Board and request its opinion. The Board can also propose that the rector launch another investigation. It does not however, conduct inquiries or arrange oral hearings, and its opinions are based only on written material.

Key documents:

The National Advisory Board on Research Ethics (2002). Good Scientific Practice and Procedures for Handling Misconduct and Fraud in Science. <http://www.tenk.fi/ENG/publicationsguidelines.htm>

Academy of Finland (2005). Academy of Finland Guidelines on Research Ethics. <http://www.aka.fi/Tiedostot/Tiedostot/Julkaisut/Suomen%20Akatemian%20eettiset%20ohjeet%202003.pdf>

Academy of Finland

In 2005, the Academy of Finland, the main research funding body for the country, issued its guidelines on research ethics. It is addressed to all recipients of grants from the Academy especially the staff working on research projects funded by the Academy and holders of Academy research posts (such as Academy Research Fellowships; Academy Professorships etc.)

The guidelines closely follow those issued by the National Advisory Board on Research Ethics, which the Academy has signed. In addition, the guidelines of the Academy require applicants to present accurate and truthful documents in their grant applications (CVs and list of publications). They also request the rectors of higher institutions to communicate to the Academy any decision to launch an inquiry. The Academy guidelines also present potential sanctions the Academy can take. They include ineligibility for academic posts funded by the Academy, ineligibility for project funding for a period up to five years and ineligibility to serve as an expert on the Academy bodies.

The guidelines also state that the Academy, in reviewing the research proposals, will take into consideration whether the research group has demonstrated the ability to manage research funds and to adhere to the principles of good scientific practice.

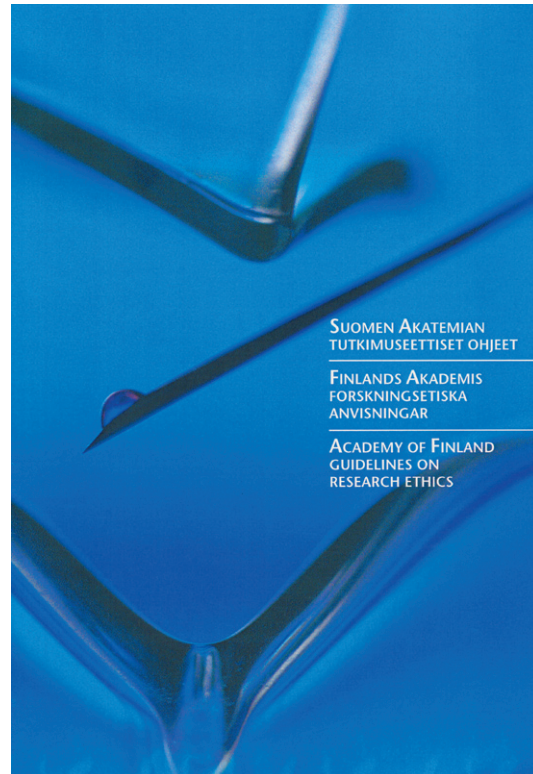


Figure 4. Academy of Finland Guidelines on Research Ethics.

3. Approaches in individual countries

3.7 France

Institut National de la Santé et de la recherche Médicale (INSERM)

In January 1999, INSERM, (The French National Institute for Health and Medical Research) established a dedicated structure to oversee research integrity. The Scientific Integrity Delegation (*Délégation à l'Intégrité scientifique*) has a dual mission: to reflect generally on appropriate mechanisms to foster research integrity and to handle specific cases of alleged misconduct.

The Scientific Integrity Delegation which reports to the Director General of INSERM is composed of a chair and a responsible officer. They are appointed by the Director General of INSERM for a non fixed unlimited term.

The Scientific Integrity Delegation makes preliminary inquiries and if the case is substantiated, makes recommendations to the Director General who can then launch a formal investigation. Generally, this is conducted by an ad hoc committee of experts, appointed by the Director General.

Currently, the Scientific Integrity Delegation is drafting guidelines of good scientific practice.

INSERM also has an ethics committee whose mission is to reflect and raise awareness of ethical issues in biomedical research and to act as a focal point for the dialogue between society and the INSERM biomedical research community. The committee deals with a wide range of issues such as bioethics laws or non-disclosure of conflict of interests in publication. It has about 10 members appointed by the Director General of INSERM.

Centre National de la Recherche Scientifique (CNRS)

In April 2006, the Scientific Ethics Committee of the National Centre for Scientific Research (COMETS) published a short document '*La fraude scientifique au CNRS*' which outlines the approaches and procedures to deal with cases of research misconduct at CNRS institutes.

COMETS is a consultative and independent body which reports to the board of CNRS. Its mission is 'to reflect on ethical aspects of research and make recommendations related to the definition, justification and application of rules related to ethics as well as to the research deontology'. COMETS is currently composed of 13 members.

As stated in its charter of January 2008, COMETS does not deal with individual cases. It can however make recommendations on how to deal with research misconduct if requested by the governance of the institution.

For an alleged individual case of misconduct, an ad hoc committee can be constituted and given the mission to investigate the case. The suspected researcher should have the opportunity to state his/her case at all levels of the inquiry. The ad hoc committee gives its opinion to the CNRS directorate which can then initiate disciplinary action in conformity with the labour laws regulating employment in the public sector.

Key documents:

Inserm: <http://www.inserm.fr/fr/inserm/organisation/comites/dis/index.html>

CNRS (2006). *La fraude scientifique au CNRS*. http://www.cnrs.fr/fr/organisme/ethique/comets/docs/fraude_scientifique.pdf
<http://www.cnrs.fr/fr/organisme/ethique/comets/>

Institut de Recherche pour le développement: IRD (2005). *Guide des bonnes pratiques de la recherche pour le développement*. <http://www.ird.fr/fr/ccde/ressources/reference.htm>

Institut de Recherche pour le Développement (IRD)

IRD - The French Institute for Development Research has an ethics advisory committee (Comité consultatif de déontologie et d'éthique, CCDE). Its role is to help in raising awareness on and pinpoint ethical issues which may arise from the research work done by the IRD and assist in establishing rules of conduct in research for development. It also advises IRD staff members on the implementation of those rules.

The Committee consists of nine members nominated by the chairman of the board of the IRD for a period of four years (renewable once). Apart from its president, other members of the committees are: three members chosen from IRD staff, three researchers not affiliated with the Institute and two members from developing or emerging partner countries. The Committee meets in plenary session three times a year to discuss (among others) planned research projects in developing countries and related ethical issues.

In 2005 the Committee published guidelines for good scientific practice in research for development. The 'guide de bonnes pratiques de la recherche pour le développement' is a set of principles to be taken into account in planning a research project (part 1); its implementation (part 2) and in valorization of the results and other follow up (part 3).

Box 4: Research Integrity in Private Foundations

Although this report aimed to cover only the policies and practices at public institutions and did not consider the private sector or the activities of private foundations, two organisations which have been particularly active in promoting research integrity should be briefly mentioned.

In UK, the **Wellcome Trust** published its guidelines on good research practice in 2002 (latest update 2005) which apply to research it funds. The Wellcome Trust requires all institutions which hosts its grant recipient in UK and Republic of Ireland to put in place formal written procedures for the investigation of allegations of research misconduct. Minimum criteria that those procedures should satisfy are stated in its 'Statement on the Handling of Allegations of Research Misconduct'.

In France, the **Institut Pasteur** issued in December 2004, its 'Code de Déontologie Scientifique' which applies to anyone 'exercising an activity' at the Institut Pasteur. The code seeks to clarify and define the rules which will help reduce or prevent behaviours at odds with good scientific practice. The institute has a Deontological and Conciliatory Committee (Comité de Veille Déontologique et de Conciliation), which investigates allegations of infringement of the code. It issues an opinion to the Director General who takes appropriate measures.

3. Approaches in individual countries

3.8 Germany

Deutsche Forschungsgemeinschaft (DFG)

In Germany, following serious cases of research misconduct⁴ in the mid-1990s, the Deutsche Forschungsgemeinschaft (DFG), the central funding body for academic research, set up an international commission to discuss causes of dishonesty in the science system, appropriate preventive measures and to make recommendations on how to safeguard good scientific practice.

In January 1998, the international commission published its *Recommendations for Safeguarding Good Scientific Practice*, a document which, as the commission states, complements rather than replaces other existing professional or legal norms or codes of conduct which govern some fields of science.

This document contains a total of 16 commented recommendations. One set of recommendations addresses the issue of good scientific practice and offers concrete guidance:

- primary data should be secured for at least 10 years
- authorship entails joint responsibility for the content.

It offers also a general frame for the key aspects that should be included in rules of good scientific practice:

- observing professional standards;
- documenting results;
- consistently questioning one's own findings;
- practicing strict honesty with regard to the contributions of partners, competitors and predecessors;
- cooperation and leadership responsibility in working groups;
- mentorship for young scientists and scholars;
- securing and storing primary data;
- scientific publications.

Another set of recommendations is addressed to various actors in the research systems especially research institutions, learned societies, scientific publishers and research-funding institutions.

Most of the recommendations are addressed to *universities and research-performing organisations*.

- They are recommended to formulate rules of good scientific practice and make them binding for all members of their institutions.

- They should put in place appropriate mechanisms to deal with suspected scientific misconduct.
- They are reminded of their responsibility to provide a healthy research environment (mentoring of young scientists; value originality and quality more than quantity in assessing performance) etc.

Learned societies are recommended to develop principles of good scientific practice within their disciplines.

Scientific publishers are recommended to have clear guidelines on authorship and to request confidentiality and disclosure of conflict of interest from their reviewers.

Research-funding agencies are recommended to make adherence to good scientific practice a precondition for funding eligibility (at the institution level). They should have clear guidelines on the information requested in research proposals and request disclosure of conflict of interest and confidentiality from the reviewers. Funding agencies should also clearly specify the criteria that the



Figure 5. DFG Safeguarding Good Scientific Practice.

⁴A short description of the case is provided in Judson, H.F (2004), page 139ff. For a more in depth description see Finetti, Marco and Himmelrath, Armin (1999).

reviewers should apply; 'quantitative indicators of scientific performance, e.g. so called impact factors, shall not by themselves serve as the basis for funding decisions'.

The DFG, as the main research funding body in Germany, is recommended to appoint an independent authority to advise and assist scientists in questions of good scientific practice.

Following this recommendation, the DFG created the office of ombudsperson, an independent committee that acts as an advisory and mediatory body which deals with questions involving good scientific practice and scientific misconduct. The ombudsperson team is a college of three scientists, appointed by the DFG Senate for a three-year term (renewable). The ombudsperson is assisted by a secretariat that the DFG financially supports.

The ombudsperson team assesses allegations of research misconduct (even when no link to DFG funding is given), provides mediation between the conflicting parties and, if appropriate, refer the cases to the appropriate tribunal if the initial assessment justifies the allegations.

In cases where no DFG relationship applies, the case is passed to the relevant body at the research institute concerned.

When DFG funding is involved, the ombudsperson refers the case to the DFG Committee of Inquiry on Allegations of Scientific Misconduct. This committee is appointed by the Joint Committee⁵; and consists of four members (scientists) who may be complemented by up to two experts from the subject area concerned. It is chaired by the DFG Secretary General (without a voting right) and is supported by the DFG office (legal department).

The remit of the Committee of Inquiry is to investigate allegations of scientific misconduct carried out by applicants, funding recipients, reviewers and members of DFG bodies and to make recommendations to the the DFG Joint Committee, which will take appropriate disciplinary steps. There are six possible sanctions:

- reprimand;
- ban on submitting proposals for a period from one to eight years;
- request to pay back research funds;

⁵ The joint Committee is the central decision making body responsible for the research funding provided by the DFG and for the multi-annual financial planning.

- request to withdraw publications (or to publish an erratum/corrigendum);
- ban on acting as a DFG reviewer;
- deprivation of the right to stand for election for DFG bodies.

In line with the recommendation to make adherence to good scientific practice a precondition of funding, the DFG asks applicants if their institution has implemented the recommendations on good scientific practice.

Consequently all universities and research institutions in Germany have implemented their own guidelines as requested in the DFG document.

Max Planck Society

The Max Planck Society for the Advancement of Science (MPS) is Germany's largest research organisation that performs basic research. It has 80 institutes, in three sections: Biology and Medicine Section; Chemistry, Physics and Technology Section; and Humanities Section.

In 1997, the Max Planck Society adopted rules of procedure to be taken in cases of suspected scientific misconduct. In 2000 those rules were amended by two documents adopted by the senate of the Max Planck Society: the *Rules of Good Scientific Practice* and the *Rules of Procedure in Cases of Suspected Scientific Misconduct*.

The *Rules of Good Scientific Practice* spell out general principles seen as critical for the integrity of the research process. They include among others:

- strict observance of discipline-specific rules for acquiring and selecting data;
- rule of systematic scepticism;
- systematic alertness for any possible mis-interpretation of one's own results;
- honest competition (e.g. not intentionally delaying reviews);
- the publication of falsified hypothesis;
- honesty in recognition of colleagues 'or predecessors' contribution.

The document also stresses the responsibility of research unit leaders to provide an adequate research environment especially for young scientists. With respect to the latter, they are

3. Approaches in individual countries

required to give particular attention to the principles of good scientific practice in their training.

Primary data should be stored for at least 10 years and the institute management is responsible for formulating clear implementation guidelines; authors bear joint responsibility for their work and acknowledgment of those who supported the work is to be made in a note of thanks.

The document calls for the appointment of an independent ombudsperson.

There are two categories of ombudsperson: at the level of the institute or the level of the section. They are elected by academic and academic-technical staff members for a three-year renewable term. Their remit is to act as the point of contact for matters related to good scientific practice and in cases of suspected scientific misconduct. Max Planck staff members can choose to consult the ombudsperson of the institute or the ombudsperson of the section.

According to the rules of procedure in cases of suspected scientific misconduct, the responsibility to conduct preliminary inquiries lies with the managing director of the institute concerned, together with the vice-president

representing the section to which the institute belongs. They decide (after giving the suspected person the opportunity to state his/her case) whether to terminate the case or to call for a formal investigation.

The formal investigation is conducted by an investigative committee that consists of: a standing chairperson (elected by the senate for three-year period, renewable once); the vice-president representing the section to which the institute belongs; three advisers from different sections; and the heads of the Personnel and Legal Affairs department. The investigative committee may co-opt additional members with the relevant expertise although as non-voting members. The committee decides by majority if any scientific misconduct has occurred (in which case it submits a report and recommendation to the President of the Max Planck Society) or if the case is unsustainable (in which case it terminates the investigation).

Annexed to the rules of procedures are two more documents: (1) a catalogue of conduct to be regarded as scientific misconduct and (2) a catalogue of possible sanctions in cases of scientific misconduct.

Practices regarded as scientific misconduct include: falsification and fabrication of data;

Key documents:

DFG (1999) Recommendations of the Commission on Professional Self Regulation in Science - Proposals for Safeguarding Good Scientific Practice
http://www.dfg.de/en/dfg_profile/structure/statutory_bodies/ombudsman/index.html

Ombudsmans der DFG (2007). Sechster Bericht des Ombudsmans der DFG an den Senat der DFG und an die Öffentlichkeit
http://www1.uni-hamburg.de/dfg_ombud//

Max Planck Society (2000). Rules of Good Scientific Practice (2002).

Max Planck Society (2000). The Rules of Procedure in Cases of Suspected Scientific Misconduct (incl. two annexes: a catalogue of conduct to be regarded as scientific misconduct and a catalogue of possible sanctions in cases of scientific misconduct).
<http://www.max-planck.de/english/careerOpportunities/ombudssystem/>

Leibniz Gemeinschaft (1998). Empfehlungen zu guter wissenschaftlicher Praxis (Recommendations on good research practice)

<http://www.leibniz-gemeinschaft.de/?nid=gsdd4&nidap=>

Leibniz Gemeinschaft (1999). Regeln guter wissenschaftlicher Praxis (Principles of good research practice)

<http://www.leibniz-gemeinschaft.de/?nid=gsdd3&nidap=>

incorrect statements in letters of application; plagiarism; theft of ideas and sabotage of research work. Misconduct can also occur in the form of 'joint responsibility' such as active participation in misconduct of others or having knowledge of falsification committed by others.

Possible sanctions can be a reprimand or dismissal (ordinary or extra-ordinary). In appropriate cases higher education institutions may consider the withdrawal of doctoral degrees or licence to teach. Civil and criminal law sanctions can also be considered.

Leibniz-Gemeinschaft

The Leibniz Association is an umbrella organisation of 82 non-university research institutes which covers a wide range of fields from natural sciences to social sciences and the humanities. The Leibniz institutes have a total budget of more than 1 billion Euros and employ about 5,700 scientific staff and 1,400 doctoral students.

Following DFG recommendations for safeguarding good scientific practice, in November 1998 the general assembly of the Leibniz Association adopted a set of recommendations for the Leibniz institutes. Those recommendations closely follow

the guidelines of the Max Planck Society (see above) and contain procedures to handle concrete cases of alleged or suspected scientific misconduct in Leibniz institutes.

In October 1999, the general assembly of the Leibniz-Association adopted a set of guidelines for good scientific practice and recommended that all Leibniz institutes take them into account in formulating their institutional policies to promote good research practice. The guidelines should also be an integral part of the training of the next generation of researchers.

Those guidelines define the good scientific practice (part I) and list criteria for the implementation of the guidelines in the individual Leibniz institutes (part II).

3. Approaches in individual countries

3.9 Ireland

The Health Research Board (HRB) funds research in the health arena from basic biomedical research to health practice and policy in the community.

The HRB is particularly sensitive to the need for high standards of integrity in the research that it funds. It holds the view that, for research in health related fields, trust within the scientific community and between science and society should, be nurtured as both are necessary for science to advance.

The HRB has subscribed to the position of the ESF Science Policy Briefing *Good Scientific Practice in Research and Scholarship*. Since 2002, all HRB-approved research-performing organisations have been required to adopt a policy and publish standards on good research practice. This is stated in HRB grant regulation that 'the host institution must have in place its own published standards of good research practice which include a formal written procedure for the investigation of allegations of scientific fraud'.

In October 2007, the HRB published a set of guideline documents for research-performing organisations, which outlined the minimum expected content of those organisational policies and procedures. These Guidelines are based on international best practice and have drawn on the experience of similar research-funding organisations such as the Wellcome Trust and the Medical Research Council in the UK and the Office of Research Integrity in the USA.

The *HRB Guidelines for Host Institutions on Good Research Practice* sets out a framework of general principles for:

- the conduct of scientific and scholarly research with integrity, honesty, openness and according to the highest standards of relevant professional bodies;
- good practice and responsibility in training and supervision of young researchers;
- ethical conduct of research on human and animal subjects;
- good practice in the design and conduct of experimental research;
- good practice in the recording, ownership, storage and reporting of data and samples;
- good practice in the publication, application and exploitation of results.

In addition to laying down the principles upon which the published guidelines should be based, the HRB provides guidelines for the handling of allegations of research misconduct.

The *HRB Guidelines for Host Institutions on the Handling of Allegations of Research Misconduct* defines the elements of research misconduct as:

- fabrication, falsification or plagiarism in proposing, performing or reviewing research or in reporting research results;
- failure to follow established protocols if this failure results in unreasonable risk or harm to humans, other vertebrates or the environment and facilitating of misconduct in research by collusion in, or concealment of, such actions by others;
- intentional, unauthorised use, disclosure or removal of, or damage to, research-related property of another, including apparatus, materials, writings, data, hardware or software or any other substances or devices used in or produced by the conduct of research.

Key documents:

HRB Grant Regulations

http://www.hrb.ie/display_content.php?page_id=109

HRB Guideline Documents on Good Research Practice and Allegations of Misconduct

http://www.hrb.ie/display_content.php?page_id=105

The *HRB Guidelines for Host Institutions on the Handling of Allegations of Research Misconduct* further clarifies the stages of the investigation process and the time limits that should be set for these.

Ireland has no national coordinating body for the investigation of allegations of misconduct in scientific and scholarly research. Responsibility for investigation of such allegations rests with research-performing organisations and professional bodies, according to their own policies. To deal with instances of research misconduct in the research proposals submitted to the HRB and the projects it funds, the HRB developed in 2007, a *Policy for Dealing with Alleged Research Misconduct in Applications Made to the HRB*. This policy identifies the responsibilities of both the HRB and the research-performing organisation in which the researcher works, and lays out the steps to be taken by both organisations where potential misconduct in a grant application to the HRB comes to light.

3. Approaches in individual countries

3.10 Latvia

The Latvian Academy of Sciences is a learned society with a membership of 208 Latvian researchers (elected for their outstanding achievements) and 92 renowned foreign scientists.

The Latvian Council of Science is a collegiate institution of 12 members, approved by the Cabinet of Ministers of Latvia, and 5 expert commissions, each consisting of 10 members. Its mission is to fund and coordinate scientific research in Latvia (acting as a research-funding agency).

In November 1997, both organisations published a *Scientist's Code of Ethics* which spells out the ethical principles on which research should be based.

The code is divided into eight parts addressing distinct roles of the scientist.

The first part states the general principles. Among other things, the scientist is required to defend science (against unjust accusations), to prevent improper use of scientific achievements, to adopt a critical approach in her/his research activities, to defend scientific freedom (while at the same time recognising moral limits) and to refrain from undertaking research of low cognitive or application value.

The *scientist as a creator* recognises international and national copyright laws. S/he acknowledges the contribution of colleagues and other researchers and s/he takes credit only when his/her contribution is substantial. S/he should not engage in multiple publications in order to inflate the number of own publications. When engaging in public information on scientific achievement, the scientist should abstain from self-publicity. 'The press, radio and television may be used for propagation of scientific achievements, but not for propagation of one's own person'. The code required the scientist to undertake tasks for which s/he has sufficient skills and knowledge. It requires him/her also to respect relevant regulations and principles on research involving human beings. Experimental use of animals should be made in a way that the intensity of pain is minimised.

The third part is titled *the scientist as teacher and creator of scientific school*. The principles in this part require the scientist to always serve as an example to students and collaborators; to avoid favouritism and to fight against corruption and discrimination; and not to take illegal payment for tutoring or consultation from his/her own students. S/he should adopt a democratic leadership style in the supervision of his/her research group.

The *scientist as a referee* should be impartial in his/her opinion on scientific publications and observe confidentiality. S/he should not be involved in assessments when his/her personal interests are at stake or in areas which are beyond his/her competence.

Part five addresses the *scientist as an expert*. In using his/her expertise, the scientist is expected to act honestly and responsibly and not to give in to pressure from his/her employers or sponsors. S/he should keep information obtained during these duties confidential and avoid a situation in which a conflict of interest could arise.

The subsequent part called *the scientist as a partner in scientific discussion* states the importance of conducting scientific discussions in a respectful manner and in an egalitarian spirit ('regardless of scientific degrees and titles').

The last two parts address *the scientist as a propagator of science and the scientists as a member of society* respectively. The researcher should respect the right of society to be informed about scientific achievements. S/he should however 'oppose pseudo-scientific theories hidden under a scientific phraseology umbrella'. As a member of society the scientist is reminded that even when holding a governmental or administrative position, those ethical principles in the scientists code of ethics apply.

Neither the Latvian Academy of Sciences nor the Latvian Council of Science has written procedures on how to handle allegations of research misconduct.

Key document:

Latvian Academy of Sciences and Latvian Council of Science (2007). *The Scientist's Code of Ethics*
<http://www.lzp.lv/code.htm>

3.11 Netherlands

In 2001, the Royal Netherlands Academy of Arts and Sciences (KNAW), the Netherlands Organisation for Scientific Research (NWO) and the Association of Universities in the Netherlands (VSNU) published the *Scientific Integrity Memorandum* to promote the application of high standards of scientific conduct and propose procedures to be followed when dealing with failures to adhere to good scientific practice.

The memorandum is in seven parts dealing respectively with (1) professional scientific conduct, (2) infringements of scientific integrity, (3) prevention of scientific misconduct; (4) the responsibilities, (5) the handing of research misconduct allegations, (6) the National Committee for Scientific Integrity (7) and sanctions in cases where scientific misconduct is found (the memorandum specifies that the involvement of humans and animals in clinical and other type of studies or the privacy of human subjects in social sciences do not fall within its scope).

While recognising the diverse nature of research processes in different fields, the memorandum on research integrity state that there are 'a number of *general principles*, which must be complied with in all branches of sciences'. They are rooted in the conviction that scientific research is based on mutual trust; exists by virtue of shared knowledge; and relies on statements based on objective observation and logical reasoning.

Infringements of scientific integrity encompass a variety of practices, of which three main categories are: falsification, misleading and theft of intellectual property. A relatively long list of examples of infringements of scientific integrity is provided to illustrate these and other categories.

Prevention of research misconduct can be enforced through training, awareness raising and adherence to protocols and other guidelines in research where appropriate.

The *responsibility* to safeguard good scientific practices is shared among the researchers themselves (who define the standards in their respective fields); the research coordinators (who ensure an atmosphere of healthy competition); and the leadership of the research institutions (through

training, promoting discussions on the issues and putting adequate procedures in place to deal with allegations of research misconduct).

The memorandum recommends procedures to ensure that violation of the principles of good scientific practice is dealt with fairly and efficiently. Their universities and research institutions are advised to appoint one or more research integrity officers to whom allegations can be made. This should ensure the protection of privacy of all involved parties. They are responsible for assessing allegations and reporting to the executive board of the institution, recommending, if appropriate, the setting up of an ad hoc committee to investigate the case.

The three organisations also recommended the setting up of a National Committee for Scientific Integrity (NCSI). This should be a body which can be called in by both the complainant and the respondent to assess the manner in which the case has been handled by the institution.

The memorandum states that the *responsibility to impose sanctions* (ranging from reprimand to dismissal) lies with the executive board of the research institution concerned and should be in line with civil service and labour legislation.

In 2003, the National Board for Scientific Integrity (LOWI) was set up by the KNAW, NWO and the VSNU. It acts like a second instance appeal court and is called in if either the complainant or the person accused of research misconduct is not satisfied with the way a specific case was dealt with. If the LOWI considers that the case was not handled properly, it will advise the university management to restart the process.

The National Board for Science Integrity is an independent body and consists of a chairman, a vice-chairman and four members. Two of the members represent social sciences and humanities, while the other two members represent the natural and life sciences. Both chairpersons and the four members are appointed by the Governing Board of the Royal Academy of Arts and Sciences. The appointment needs the approval of NWO and the Board of the VSNU.

In 2004, the Association of the Universities in Netherlands published the *Netherlands Code of Conduct for Scientific Practice: Principles of good scientific teaching and research*. Addressed

3. Approaches in individual countries

to the individual scientist it lists and defines five principles of good research practice, which are illustrated by best practice norms.

- (1) **Scrupulousness:** Scientific activities are performed scrupulously, unaffected by mounting pressure to achieve.
- (2) **Reliability:** Science's reputation of reliability is confirmed and enhanced through the conduct of every scientific practitioner. A scientific practitioner is reliable in the performance of his research and in the reporting, and equally in the transfer of knowledge through teaching and publication.
- (3) **Verifiability:** Presented information is verifiable. Whenever research results are publicized, it is made clear what the data and the conclusions are based on, where they were derived from and how they can be verified.
- (4) **Impartiality:** In his scientific activities, the scientific practitioner heeds no other interest than the scientific interest. In this respect, he is always prepared to account for his actions.
- (5) **Independence:** The researcher operates in a context of academic liberty and independence. This entails also the independence from pressures from commissioning or funding parties. In case the restrictions of the scientific liberty are inevitable, this should be clearly stated.

Box 5: The scope and objectives of the Netherlands Code of Conduct for Scientific Practice (extracts from the preamble)

- (...) The wish for a Code of Conduct stems from the generally shared conviction that (employees of) institutes that fulfill a societal role are held to a proper exercise of their duties. Rules that establish correct practice should be entrusted to paper to provide common ground and, if necessary, ground for admonishment.
- The Code applies to scientific practice, which is understood to include scientific teaching and research at all universities in the Netherlands. More precisely, the Code is intended for the individual scientific practitioner.
- The Code presumes the administratively autonomous university that safeguards the academic liberty of the scientific practitioners engaged there. It is the university responsibility to let this liberty fit into to the frameworks of the established education and research programmes. (... on the other hand, it) presumes that the university is a collaborative venture of diverse stakeholders in the university. Stakeholders are the staff and the students, but also the government, community entities and the corporate world. The integrity of each scientific practitioner is an essential condition for maintaining stakeholders faith in science. Integrity is the cornerstone of good scientific practice.
- The Code contains principles that all scientific practitioners allied with a university (teachers and researchers) should observe individually, among each other and towards society. The principles can be read as general notions of good scientific practice; they are not intended as supplementary judicial rules. The overarching principle is that every scientific practitioner is bound to the frameworks established by Dutch and international legislation. A second overarching principle is transparency; every scientific practitioner must (be able to) demonstrate how he puts these principles into practice.
- All universities and their scientific staff will make the necessary effort to familiarize themselves with the content of the Code (...). In addition, the universities will ensure that the Code is discussed by the academic community, particularly by incorporating the Code of Conduct into the teaching of aspiring scientists. This will enhance the awareness of what good scientific teaching and research entails.

Key documents:

Scientific Integrity Memorandum published in 2001 by the Royal Netherlands Academy of Arts and Sciences (KNAW), the Netherlands Organisation for Scientific Research (NWO) and the Association of Universities in the Netherlands (VSNU).

http://www.knaw.nl/cfdata/adviesraden/adviesraden_detail.cfm?orgid=690

The Netherlands Code of Conduct for Scientific Practice (published by the Association of Universities in the Netherlands)

<http://www.vsnul.nl/web/show/id=54033/langid=43/>

3.12 Norway

Since the beginning of the 1990s, Norway has had a system of National Committees of Research Ethics with the overall responsibility to advise on research ethics issues within their research disciplines. There are three ethics committees: The National Committee for Research Ethics in the Social Sciences and the Humanities (NESH), the National Committee for Research Ethics in Medicine (NEM)⁶ and the National Committee Research Ethics in Science and Technology (NENT).

The committees consist of 12 members and two substitutes who are appointed by the Ministry of Research following recommendations by the Research Council of Norway. The committees should have expertise in relevant disciplines, ethics and law and include lay members. The three committees have a common secretariat, provided by the Research Council of Norway.

The committees do not have a mandate to deal with specific allegations of research misconduct. They act as resources of competence in ethics within their areas of responsibility, more specifically: (1) they inform and advise the research community, the governmental authorities and the general public on research ethics issues; and (2) they coordinate relevant national activities and represent Norway in related international fora.

In addition to statements and position papers on particular aspects of research ethics, the committees publish and regularly update general guidelines on research ethics in their areas of responsibility.

In 2006, the National Committee for Research Ethics in the Social Sciences and the Humanities released an updated version of its *Guidelines for Research Ethics in the Social Sciences, Law and the Humanities*.

The guidelines, first published in 1993 aim at raising the awareness of ethical standards in the research community and assist it in making well-founded decisions.

The 2006 edition contains 47 general guiding principles on specific topics in six broad parts. They address three main categories of issues:

- Freedom of research and independence, good research practice and relationship between researchers.
- Relationships to individuals and groups directly affected by the research.
- Social relevance and users interests (including rationality in public debate) and cultural consideration.

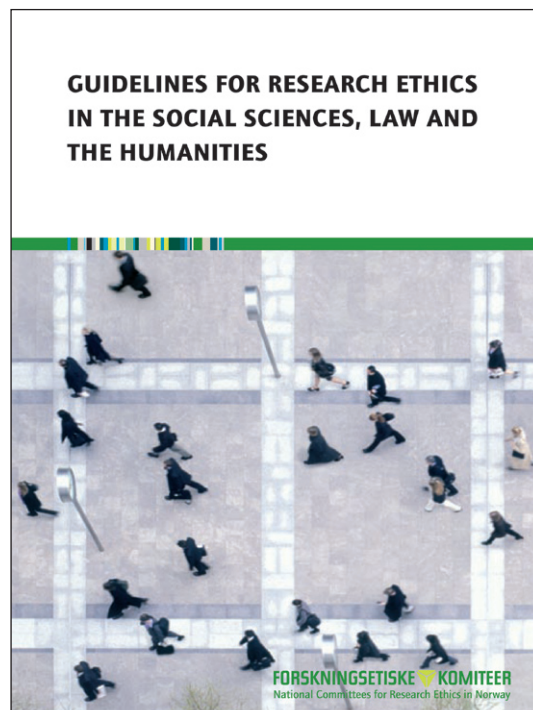


Figure 6. *Guidelines for Research Ethics in the Social Sciences, Law and the Humanities*.

⁶ There are also seven regional committees for medical and health research ethics, which review relevant projects in biomedical research in each respective region.

3. Approaches in individual countries

Box 6: Principles articulated in the guidelines

A. Research ethics, freedom of research and society

1. The value of research and research ethics
2. The social, cultural and linguistic roles of research
3. The importance of independent research
4. The communication and enforcement of research ethics standards

B. Respect for individuals

5. The obligation to respect human dignity
6. The obligation to respect integrity, freedom and participation
7. The obligation to avoid injury and severe burdens
8. The obligation to inform research subjects
9. The obligation to obtain free and informed consent
10. Research licences and the obligation to report
11. Regard for third parties
12. Children's right to protection
13. The obligation to respect individuals privacy and close relationships
14. The obligation to respect confidentiality
15. The obligation to restrict re-use of personal data for example for commercial or administrative purposes
16. The requirement regarding the storage of information that can identify individuals
17. Respect for posthumous reputations
18. Respect for the values and motives of others
19. Researchers responsibility for defining roles clearly

C. Regard for groups and institutions

20. Regard for private interests
21. Regard for the public administration
22. Regard for disadvantaged groups
23. The requirement for independence
24. The preservation of cultural monuments
25. Research into other cultures and times
26. Limits to cultural recognition

D. The research community

27. Scientific integrity
28. Plagiarism
29. Good reference practice
30. Verification and subsequent use of research material
31. Professional opinions
32. Obligations in respect of colleagues
33. The student-supervisor relationship
34. The responsibility of supervisors and project managers

E. Contract research

35. The balance between contract research and researcher-driven research
36. The management of contract research
37. Research institutions and the individual researcher
38. The independence of researchers and research institutions
39. Information about the funding of research
40. The use of research results
41. The right to publish

F. Science communication

42. Science communication as a specialised task
43. The obligations of individuals and institutions
44. Interdisciplinary discussion and a democratic public
45. Participation in the social debate and responsibility for how research is interpreted
46. The communication of results and verifiability
47. The obligation to convey research results

The National Committee for Research Ethics in Science and Technology published its guidelines in 2005, which were reviewed in 2007.

The guidelines are understood to be supplementary to existing international regulations and guidelines on research ethics. They cover eight areas for which they formulate a set of principles to guide research behaviour (24 in total).

- (1) Overriding obligations of research: upholds the obligations to respect and promote human rights, environment, peace, democracy and social justice in undertaking research activities.
- (2) Good research practice: states the responsibilities of researchers and research institutions to adhere to honest research practices. The researchers are also responsible for the choice of research topics and the choice of appropriate approaches as well as for the quality of the results. It also states the obligation to respect the contributions of others and follow standards for authorship and cooperation as well as adherence to international and national regulations related to ethics and security.
- (3) Uncertainty, Risk and the Precautionary Principle: requests that researchers take actions to avoid or minimise harm which may result from research activities or results (even when scientifically uncertain but merely plausible). They are also requested to make clear the degree of certainty their research results have, especially if they have the potential to be the basis for decision making.
- (4) Protection of research subjects: stresses the obligation to respect privacy and informed consent, in research involving human subjects.
- (5) Protection of animals in research: entails among others the respect for animal welfare in the preparation and implementing research experiments and obliges researchers to seek advice from independent ethics committee for their assessment.
- (6) Relationship with traditional and alternative sources of knowledge: requests that researchers (whenever possible) incorporate and respect alternative sources of knowledge,

such as traditional knowledge and engage in open dialogue with its guardian communities.

- (7) Openness, contract research and conflicts of interest: requests researchers to be open about potential conflicts of interest and to uphold scientific standards in research commissioned by external parties.
- (8) Whistle-blowing and ethical responsibility: states, among others, that research institutions should put mechanisms in place to allow researchers to inform about potential misdeeds. The latter have, in certain circumstances, the duty to act as a whistle-blower for the benefit of society at large.
- (9) Research and popularisation: encourages research institutions to reward researchers who engage in communicating science to the public at large and participate in public debates. The researchers should ensure that results of their work are appropriately communicated to the relevant user groups.

The guidelines close with a proposal for a scientific oath. It is addressed to research institutions, for them to consider including it in the process of awarding doctoral degrees.

In this oath the scientist will pledge to conduct research activities with 'integrity and honesty', use scientific skills and knowledge for the benefit of humankind and sustainable development. The researcher also pledges to act with objectivity and not let considerations 'based on ideology, religion, ethnicity, prejudices or material advantages' to overshadow his or her ethical responsibilities.

Following a case of serious research misconduct involving a respected Norwegian cancer researcher⁷, a new Law on Ethics and Integrity in Research was developed and entered into force in July 2007.

While building on and further developing the existing systems of national committees of research ethics, the new law introduced a new body to investigate research misconduct: The National Commission for the Investigation of Scientific Misconduct.

⁷ See Maris, Emma, 'Doctor admits Lancet study is fiction'. *Nature* 439, 248-249 (19 January 2006).

3. Approaches in individual countries

The law defines scientific misconduct as 'falsification, fabrication, plagiarism and other serious breaches of good scientific practice that have been committed willfully or through gross negligence when planning, carrying out or reporting on research'.

The remit of the National Commission for the Investigation of Scientific Misconduct is to assess allegations of serious research misconduct and issue a statement on whether any scientific misconduct has occurred or not. The commission covers all research fields and deals with research carried out by Norwegian research institutions. It can also investigate cases abroad, if the research has been carried out by researchers employed by a Norwegian institution or if a substantial part of the funding is from Norway.

The commission is composed of seven members and four substitutes who are nominated for a period of four years (renewable not more than once). The membership of the commission covers all fields of research. The members are appointed by the Ministry of Research following the proposition of the Norwegian Research Council.

At least one of the members should be a researcher from abroad and the chair of the commission should be someone with a judicial background.

The commission deals with serious cases of research misconduct which are brought to its attention but it can also launch investigations on its own initiative. The commission decides whether cases need further investigation or are judged baseless. The commission can draw on external expertise to deal with particular cases.

Appeals against statements of the National Commission for the Investigation of Scientific Misconduct can be addressed to the Ministry of Research, which appoint an ad hoc commission to deal with the appeal.

The National Commission started its work in July 2007 and a secretariat is provided by the Research Council of Norway.

Key documents:

Law on Ethics and Integrity in Research (Act of 30 June 2006)

[http://www.rcn.no/English/Policy and strategy](http://www.rcn.no/English/Policy%20and%20strategy)

<http://www.etikkom.no/English/about/act>

National Committee for Research Ethics in the Social Sciences and the Humanities (2006). Guidelines for Research Ethics in the Social Sciences, Law and Humanities.

National Committee for Research Ethics in Science and Technology (2007) Guidelines for Research Ethics in Science and Technology

<http://www.etikkom.no/English/Publications>

3.13 Poland

Polish Academy of Sciences

The Polish Academy of Sciences is both a learned society and a research-performing organisation. As a research-performing organisation, the Academy manages about 80 institutes and research units.

The Academy has 350 members elected for outstanding achievement in their respective fields who are grouped in seven sections representing all research disciplines. Each section oversees the research institutes and research units in its field and makes statements concerning its respective field. The sections also coordinate numerous committees which deal with specific problems in each field, whereby the presidium of the Academy operates a committee on issues transcending the disciplinary boundaries. The Committee on Ethics in Science was established in 1992 and consists of 51 democratically elected members. This committee does not deal with individual cases of research misconduct.

In 1994, following wide consultation with the research community in Poland, the Committee on Ethics in Science issued for the first time *Good Manners in Science – a collection of rules and guidelines*. The code is addressed to all researchers in Poland. A revised and amended version was published in 2001 under the title *Good Manners in Science: a set of principles and guidelines*. Those principles and guidelines – addressing the individual researchers – are divided into eight parts and contain both the statements and the comments on the underlying standards and concepts. In total there are 59 behavioural (and attitudinal) requirements for the scientist.

In *general principles* it is stated that the scientist is bound by 'principles of ethics of humankind and by the principles of good manners in science'. Accordingly s/he should abide by them and not ask colleagues/subordinates to violate them. In a conflicting situation the scientist should refer to his/her own conscience. Violation of the principles of good manners in science cannot be justified by obedience or loyalty to a higher authority.

In the second part called the scientist as a creator the following 10 standards are listed:

- (1) The scientist recognises the results of scientific creativity as a personal good of the creator, and at the same time as a common good.

- (2) The scientist is concerned that recognition for scientific achievement goes to those worthy of this recognition.
- (3) The scientist's main motivation should be a desire for greater understanding and a will to enrich the achievements of science. The goal should in turn be to know the truth.
- (4) The scientist is obliged to be honest towards his/her sponsor or employer.
- (5) Scientific research should be conducted in a manner which does not degrade human dignity or violate humanitarian principles.
- (6) Scientific research should be conducted in such a way as not to pose a threat to humankind or society, or affect the natural and cultural environment thereof.
- (7) The scientist shares his/her achievements and knowledge with others.
- (8) The scientist does not engage in multiple publications with the purpose of expanding his/her publication record.
- (9) The scientist refrains from undue self-promotion.
- (10) The scientist avoids reference to titles and scientific degrees in pronouncements which are outside his/her scientific competence.

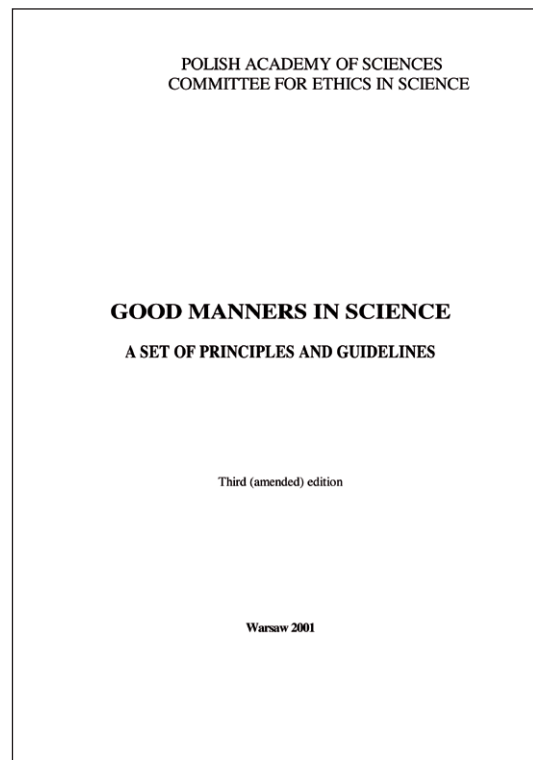


Figure 7. *Good Manners in Science: a set of principles and guidelines*.

3. Approaches in individual countries

The subsequent two parts deal with the scientist as *'master and boss'* and *the scientist as a teacher*. In this capacity, the scientists are required to assess their staff/students impartially, to treat them fairly and set a good example. They are required to encourage independent and critical thinking and take pride in their success. They should not accept any payment for, nor make profit from, students' activities. As an example of gross violation of good conduct the document cites taking payment for tutoring one's own students (remedial classes) or writing theses on their behalf.

In the parts addressing the *scientist as a consultant* and the *scientist as an expert* it is stated that scientists, when judging the work of others, should do so in a precise and impartial way. The scientist is required to state in whose name and for whom an expert opinion is being made. S/he should decline giving an expert opinion in cases in which personal interests are at stake and s/he should not submit to pressure from an interest group or employer.

The last two parts address the *scientist as promoter of science* and the *scientist as a member of the public and international community*. Scientists are expected to propagate reliable information about science and not conceal its limitations. They should not permit their standing in science or authority to be misused for propaganda purposes and they should respect internationally recognised conventions and principles of the scientist's responsibilities.

The Committee on Ethics in Science does not deal with individual cases of research misconduct.

Committee on Ethics in Science - Polish Ministry of Science and Higher Education

The Committee on Ethics in Science is an advisory and consultative body to the Minister of Science and Higher Education. Established in 1998, it consists of 10 members – eminent and respectable scientists representing different disciplines including law, medicine, humanities, engineering and natural sciences. The administrative support and clerical service of the Committee is provided by the Department of the Strategy and Development of Science at the Ministry (the secretary of the Committee is a Ministry's civil servant).

The Committee handles the issues and cases of research integrity and research misconduct solely upon the request of the Minister. The Committee primarily presents opinions and suggestions to the Minister which he/she is not obliged to follow. However, in practice the Minister's actions usually comply with the Committee's advices. The opinions concern general questions as well as specific cases (complaints), including research projects financed from public sources. In the year 2007 the act on financing research was substantially amended introducing the entitlement of the Committee to give opinions on financing public research. In case of an allegation of the research misconduct the financing department may seek advice and opinion from the Committee.

The Committee works merely on the documents brought with the specific case, it does not conduct hearings. According to the particular case the Committee typically advises the Minister to bring the case back to the organization where the misconduct is alleged to have been committed and/or to ask whether internal procedure/proceedings at the level of an institution has been launched and completed. The Committee also suggests consulting other institutions and offices especially the sectoral or professional ones on the specific issues. General opinions and guidelines adopted by the Committee are published on the website of the Ministry of Science and Higher Education.

So far most of the cases handled by the Committee have fallen within the domain of the civil law / intellectual property law. If there is a juridical proceeding going on the Committee is obliged to suspend its investigation and to refrain from giving an opinion until the court verdict is taken. Neither the Committee nor the Minister has the power to contradict the juridical verdict.

On the institutional level all higher education institutions and public research organizations (institutes and centres of the Polish Academy of Science and governmental research organizations) are obliged to establish their own internal commissions to investigate various cases of research misconduct. The Minister has the right to ask the institution's authorities to have the investigation procedure commenced; nevertheless the cases are brought to the commissions upon the decision of the heads of the institutions (rectors, directors). The research institutions are not obliged to report to the Ministry (they are autonomous), their internal commissions do not report in any way to the Committee on Ethics in Science. This is a reason for the lack of national data on the scale and character of the research misconduct area.

In 2004, the Committee on Ethics in Science presented to the Minister a set of guidelines and recommendations to promote and safeguard research integrity and good research practice in Poland (the document on *Good Research Practice* is available in Polish and English). The document has been subsequently accepted by the Polish Committee for Scientific Research and its successor – The Ministry for Science and Information Technology (currently the Ministry of Science and Higher Education).

The guidelines provide general definitions and spell out basic principles of good scientific practice. They also define procedures to be followed in cases of violations of those principles and list suitable sanctions to be taken. However, the recommendations have not yet been implemented, and are waiting for the expected changes in the binding law.

Additionally, in a number of research organisations (Higher Education institutions and institutes of the Academy of Sciences) internal codes of conduct have been adopted as well as professional ethics committees established. The codes of conduct to a large extent comply with the contents of the guidelines adopted by the Committee but they usually do not cover all the issues taken into consideration in the *Good Practice for Scientific Research*.

Key documents:

Committee on Ethics in Science of the Polish Academy of Sciences (2001). *Good Manners in Science*:

a collection of rules and guidelines.

http://ken.pan.pl/index.php?option=com_content&task=view&id=32&Itemid=46

Committee on Ethics in Science- Polish Ministry of Science and Higher Education
Good Practice for Scientific Research – Recommendations (2006)

http://www.nauka.gov.pl/mn/_gAllery/37/23/37237/20080505_Good_practice_for_scientific_research_EN.pdf

3. Approaches in individual countries

3.14 Slovakia

The Slovak Research and Development Agency (SRDA) provides research grant on a competitive basis in all research fields in Slovakia. It has been operational since 2001 and was established in its present form in July 2005.

It has among others, the mission to support basic and applied research and technological development based on the quality.

In 2004, the SRDA adopted the recommendations of the Deutsche Forschungsgemeinschaft (DFG) for safeguarding good scientific practice.

With the kind permission of the DFG board, the SRDA translated the recommendations but also amended them to include specific issues peculiar to the SRDA modus operandi and Slovak research system.

The resulting report, entitled *Good Research Practice: Recommendations of the Council of the Slovak Research and Development Agency* and published in November 2004, is addressed to all SRDA grant recipients who are expected to follow the formulated recommendations.

The document lists 4 key principles which are at the heart of good research practice. (1) Absolute integrity of practice, education for scientific research and administration of research, (2) Transparency, (3) Research without partiality and without prejudices and (4) Respect of the highest professional and moral standards.

A total of 19 recommendations are included in the document and divided into nine sections each addressing a different aspect of good research practice:

1. Management and governance of research institutions
2. Scientific education
3. Planning of experiments, data processing and their storage
4. Publication practices
5. Management and administration of research process

6. Funding for targeted research
7. Contractual research
8. Allegations of research misconduct
9. Specific problems of particular scientific fields

In 2007 the SRDA established an Ethics Committee which consists of 8 outstanding researchers in different scientific fields (medicine, mathematics, chemistry, ethics, law, engineering, philosophy). The Ethics Committee acts as an advisory board to the Presidium of Agency and also to the Agency director and deals with cases of dishonesty which are connected to SRDA grants (during all stages - writing proposals, peer review process, reporting the results, publishing articles).

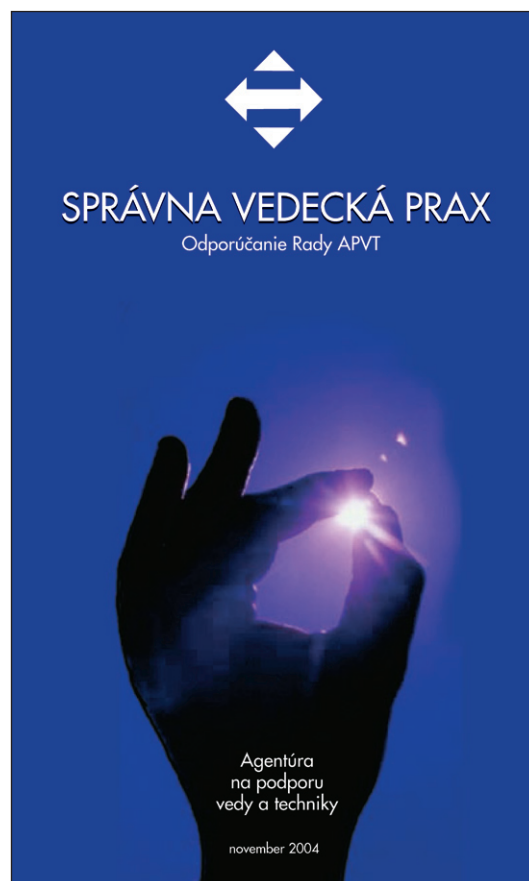


Figure 8. *Good Research Practice: Recommendations of the Council of the Slovak Research and Development Agency.*

Key document:

SPRÁVNNA VEDECKÁ PRAX: Odporúčanie Rady APVT (Good Research Practice: Recommendations of the Council of the Slovak Research and Development Agency).
<http://www.apvv.sk/dokumenty-agentury.php>

3.15 Sweden

In 2003, the Swedish Research Council set up a standing Expert Group for Investigation of Suspected Research Misconduct.

The Expert Group consists of four permanent members: a chair who is a qualified judge and three representing the research disciplines (humanities and social sciences; medical sciences; natural sciences and engineering). The members are appointed by the Director General of the Swedish Research Council for a period of three years renewable. When dealing with individual cases of alleged research misconduct, the Expert Group appoints additional members with expertise in the research area in which the case falls.

The remit of the Expert Group is to determine if deviation from good scientific practice has occurred. The procedures state that 'Deviations from good scientific practice may, for example, consist in fabrication of data; theft or plagiarism of data, hypotheses or methods without the source being cited; or other distortion of the research process (e.g. incorrect inclusion or exclusion of data, or misleading data analysis that distorts the interpretation)'.

The responsibility to take appropriate disciplinary measures lies outside the remit of the Expert Group. This is reserved for employers or relevant judicial body if a law has been infringed. The Expert Group acts only on the request of higher education institutions (via a written request with all supporting materials) or the Swedish Research Council (regarding the research it funds).

The Swedish Research Council also has an Ethics Committee, whose role is to advise on general ethical matters. Its chair is appointed by the Board of the Research Council and its members are appointed by the Director General for a renewable term of three years.

The secretariat of the Expert Group for the Investigation of Suspected Research Misconduct and of the Ethics Committee is provided by the Swedish Research Council.

In 2005, the Swedish Research Council published *Good Research Practice – what is it? Views, Guidelines and Examples*. Written by acting or former members of the Swedish Research Council Ethics Committee, the document aims not to exhaustively list the guidelines to be followed by the researcher on every occasion, but to provide a basis for discussion on good research practices and stimulate their further development at the level of research institutions.



Figure 9. *Good Research Practice – what is it? Views, Guidelines and Examples*.

Key documents:

The Swedish Research Council's Expert Group for Investigation of Suspected Research Misconduct. Guidelines for the Group's Work Adopted by the Research Council's Board on 29 September 2004 <http://www.vr.se/mainmenu/researchethics/organisation/theswedishresearchcouncilexpertgrouponresearchmisconduct.4.ad4587110fa0c3e8ca80003546.html>

The Swedish Research Council (2005). *Good Research Practice – what is it? Views, Guidelines and Examples*. <http://www.vr.se/download/18.6b2f98a910b3e260ae28000469/Good+Research+Practice.pdf>

3. Approaches in individual countries

The scope of the documents is the professional ethics of the researchers. It places the focus on the 'researcher's relationship to the actual role and task of research, rather than his or her relationship to the participants in a research exercise or third parties'. The introduction summarises the key principles in the following eight points.

1. Tell the truth about your research.
2. Openly report your methods and results.
3. Openly disclose any commercial interests and other ties.
4. Consciously examine and present the basic assumptions underlying your studies.
5. Do not steal research results from others (e.g. from younger colleagues).
6. Conduct your research in an orderly manner (e.g. by maintaining documentation and retaining data).
7. Do not conduct your research in a way that could harm other people (e.g. subjects).
8. Be fair in your assessment of other people's research.

In 2007, the Swedish Research Council and the Association of Swedish Higher Education made a suggestion to the government to set up an independent body for research misconduct related issues.

3.16 Switzerland

Swiss Academies of Arts and Sciences

In 2002 the Swiss Academy of Medical Sciences (SAMS) published guidelines for scientific integrity in medical and biomedical research and for the procedure to be followed in cases of scientific misconduct. The SAMS committed the five medical Faculties of the Swiss Universities to adopt these guidelines and to accept the SAMS as an appeal tribunal. Furthermore the SAMS appointed an Ombudsperson for handling cases that were referred to the SAMS at the request of primarily responsible organisations. Meanwhile most of the Swiss Universities have adopted their own guidelines regarding the handling of misconduct in research.

In 2006, the Swiss Academies of Arts and Sciences, the association of the four Swiss academies (Swiss Academy of Sciences, Swiss Academy of Humanities and Social Sciences, Swiss Academy of Medical Sciences and Swiss Academy of Engineering Sciences) convened a working group to advance further the debates on research integrity.

This group elaborated a memorandum on research integrity, recommendations for the creation of an organisation for the defence of integrity and a proposal regarding the procedure to be adopted when scientific misconduct is suspected.

The final document "Integrity in scientific research: principles and procedures" was published in April 2008 and referred to research institutions and research-promoting institutions, but also to political instances. The goal of the document is to remind researchers and research institutions of their responsibilities with regard to scientific integrity and to adapt existing guidelines or create new ones. The Swiss Academies of Arts and Sciences also established a Scientific Integrity committee, who is available to provide advice on basic questions of scientific integrity to research institutions and research-promoting institutions.



Figure 10. Integrity in scientific research: principles and procedures.

Based on their own recommendations, the Swiss Academies of Arts and Sciences have also adopted regulation to commit their employees to adhere to scientific integrity. Based on this regulation an Ombudsperson and an Integrity Protection Commissioner were appointed. The members of the scientific integrity committee, the Ombudsperson, and the Integrity protection commissioner are elected by the Academy on a voluntary basis for a period of four years, with a one-time re-election. In case an investigation on research misconduct has to be initiated, the commissioner will designate an ad hoc Fact-finding panel. If the suspicion is confirmed, a Decision-making panel is set up that is elected by the Executive board of the Academies. The Decision-making panel has the authority to decide if research misconduct occurred or not. Its decision will be forwarded to the competent authorities of the Academies. These bodies will carry out further steps according to their regulations, respecting the national laws and providing an appeal procedure.

3. Approaches in individual countries

Swiss National Science Foundation

With the “Statement of SNF position on scientific misconduct”, issued in December 2005, the Swiss National Science Foundation (SNSF) aimed to raise the awareness on the issue of scientific misconduct. The statement targeted primarily the researchers, who apply to various funding schemes of the SNSF and to the scientists who are involved in reviewing the applications and making funding decisions.

In the statement, the SNF defines “scientific misconduct” as falling into three categories: personal misconduct; co-responsibility and unfair practice.

- (a) Personal misconduct is particularly when a person acts in such a way that it is against good scientific practice, such as intentionally giving false information, intentionally or through negligence infringing on the intellectual property of someone else or otherwise impacting the research of another scientist. Misconduct can also be present in instances of gross neglect.
- (b) Co-responsibility can result when a person intentionally or through negligence participates in the offence of another party, is knowledgeable of another party’s falsification, co-authors a publication with falsifications, or conceals or grossly neglects supervisory responsibilities.
- (c) Unfair practice is any form of revenge and/or harassment of so-called whistleblowers, i.e., those persons who observe dishonest acts and disclose them directly or to their superior and, with that, often endanger their own careers.”

Swiss Legislation

An important amendment of the Swiss National Research Act (“Bundesgesetz über die Forschung”) entered into force on February 25, 2008 as part of the Education/Research/Innovation-Promotion Message 2008-11). This will give research funding institutions the authority to investigate allegations of research misconduct and the opportunity to effectively sanction cases of violation against good scientific practices. Under the amended law (§ 11):

1. Research funding organisations are required to ensure that the research they support is performed according to the rules of the good scientific practice.
2. They are permitted to provide administrative sanctions connected to the acquisition or use of funding in the organisation’s regulations in cases of infractions of good scientific practice. This includes the following measures which can be used individually or cumulatively:
 - a) Written reprimand
 - b) Written warning
 - c) Reduction, freeze or recall of funding
 - d) Temporary exclusion from further funding application cycles.
3. Infractions under Article 37 or 38 of the Sub-vention Act of 5 October 1990 will be penalized according to the federal law on administrative penalties from 22 March 1974 by the State Secretariat for Education and Research, or, in the case of funding accountability, through the Commission for Technology and Innovation by the Federal Office for Professional Education and Technology.

Key documents:

Swiss Academies of Arts and Sciences. Integrity in scientific research: Principles and Procedures, January 2008 (available in English, French and German)
www.akademien-schweiz.ch

Statement of the SNF’s Position on Scientific Misconduct, December 2005
www.snf.ch/e/current/seiten/statements.aspx

Legislative amendment to the Research Act (entered into force on February 25, 2008)
http://www.admin.ch/ch/d/sr/420_1/index.html

3.17 Turkey

Established in 1963, The Scientific and Technological Research Council of Turkey (TÜBİTAK) is both the main research funding agency and operates 15 research institutes in which more than 1,500 researchers are employed.

It has total budget of more than 600 million Euros per year, half of which are used for extra-mural funding.

As a funding agency, TÜBİTAK supports mainly research projects carried out in universities and other public and private organisations in Turkey (academic research funding). It also supports industrial research and provides fellowships to students and young researchers.

In February 2003, the Science Advisory Board of TÜBİTAK adopted ethical principles related to research the organisation supports and publications of the research results. Those principles are an integral part of the grant conditions and they also apply to TÜBİTAK staff members.

Practices considered being in violation of the ethical principles while preparing, proposing, carrying, and concluding a research project and publishing its results include:

- Fabrication, Falsification, Plagiarism,
- Publishing research results in short papers to unduly inflate the number of publications (so called “least publishable units”) and multiple publications of the same papers,
- Not acknowledging the financing institution,
- Excluding the names of the contributing person/s, including the names of people who have not contributed, changing the order of authors’ names without any reason and
- Violating other principles of research and publication ethics.

Those practices are considered a violation of the TÜBİTAK ethical principles if there is enough evidence that such practice occurred and that they are either deliberate or resulting from gross negligence.

When a violation of the research ethical principles is confirmed, TÜBİTAK guidelines foresee a range of possible sanctions.

Currently, TÜBİTAK science advisory board is considering some amendments to the existing guidelines.

Key document:

TÜBİTAK Grant conditions (which include the ethical principles related to research TÜBİTAK supports)
<http://www.tubitak.gov.tr/>

3. Approaches in individual countries

3.18 United Kingdom

In December 1997, the Director General of the UK Research Councils issued a joint statement 'Safeguarding good scientific practice', to stress the importance of recognizing the problem of scientific misconduct and to set out clear principles of good practice.

The document distinguishes two categories of scientific misconduct: the fabrication or falsification of results, and plagiarism, misquoting or other misappropriation of another researchers work. It discusses the principles of good scientific practice and their implementation, especially in relation to the education of junior researchers, the handling of primary data, the submission of proposals, the use of research funds and peer review.

Research institutions are invited to establish mechanisms to deal with allegations of scientific misconduct. Research Councils should implement the general policy to ensure due regard of the good research practice.

A number of Research Councils have developed their own policies and procedures to implement the recommendations of the joint statement (detailed below).

In 2006 RCUK (the umbrella organisation of all UK Research Councils which facilitates and enables their collaboration on issues of common interests) established the Good Research Conduct Group to share good practice between Councils and to coordinate – among other things – a survey on how good research conduct policies and procedures are implemented in research institutions eligible to receive Research Council funds.

RCUK is currently working with Universities UK, the UK Research Integrity Office, the Wellcome Trust, and others, to enable key stakeholders to consider developments in approaches to the governance of Good Research Conduct in the UK at a policy workshop in April 2008. It is hoped this will lead to revised generic guidance to be issued in 2008, and further development of systems to re-inforce good conduct governance procedures.

Arts and Humanities Research Council (AHRC)

The AHRC does not publish a separate Guide to Good Practice in Arts and Humanities Research. The Council emphasises in its Funding Guide the responsibility of institutions it funds to demonstrate that any proposed research has been approved through the appropriate ethical and good practice procedures of the institution and that the research will then be carried out in accordance with cross Research Council Terms and Conditions.

The AHRC has signed up to the Joint Research Council statement on Safeguarding Good Scientific Practice.

Biotechnology and Biological Sciences Research Council (BBSRC)

The BBSRC has issued a 'Statement on safeguarding Good Scientific Practice'. (First issued in 1999; updated in 2006).

It applies to: researchers who apply for BBSRC funding; all research and related staff funded by BBSRC; people involved in peer review process; administrators, in BBSRC Office and in higher education's institutions; and institutions employing BBSRC-funded researchers. At the heart of the BBSRC statement lies a number of general principles which must be complied with. They are related to: (1) Professional standards (honesty and openness); (2) Guidance from professional bodies; (3) Leadership and cooperation in research groups; (4) A critical approach to research results (5). Documenting results and storing primary data; (6) Publishing results; (7) Acknowledging the role of collaborators and other participants and (8) The needs of new researchers, whereby established members of the research community are responsible for ensuring that the younger generation of researchers understand good scientific practice.

The principle of honesty includes the obligation to abstain from committing any act of scientific misconduct, which includes: *Piracy* (defined as deliberate exploitation of ideas from others without acknowledgment); *Plagiarism* (defined as copying ideas, data or text without permission or acknowledgment) and fraud (defined as deliberate deception, including the invention of data, and the omission from analysis and publication of inconvenient data).

The statement requires research institutions to have codes of good scientific practices, binding for all relevant staff in order to qualify for BBSRC funding. The institutions are also required to have written procedures for dealing with allegations of research misconduct.

In the case of an allegation of research misconduct being made, the research institution is expected to initiate an investigation. The BBSRC may request access to relevant information about the investigation.

To enforce its guidelines on good scientific practice, the BBSRC may impose sanctions on the institutions or on individual researchers. For the institution, the BBSRC may revoke the award, reject the particular application involved or suspend the right to make further applications. For the individual researchers the BBSRC may reject applications, withdraw funding or prevent the individual from further application for a period of time defined at its discretion.

Engineering and Physical Sciences Research Council (EPSRC)

The EPSRC 'Guide to Good Practice in Science and Engineering Research' requires all institutions it funds (or employing EPSRC-funded researchers) to have explicit codes of good scientific practice (binding for all their staff) and put in place written procedures on how allegations of research misconduct are handled.

The main principles of good scientific practice – which the institutional codes should follow – are articulated as follows:

- Fundamentals of scientific work;
- Leadership and cooperation in research groups (stating the responsibility of leaders of research institutions to ensure that the climate conducive to good research practice exists);
- Taking into account the needs of young researchers (mentoring young researchers);
- Securing and storing primary data (to be securely stored for an appropriate time in durable form under the control of the institution of their origin).

The Good Scientific Practice also covers the need to ensure the accuracy of information provided in applications for funding; the appropriate use of funds and the responsibility of referees and panel members.

With regard to the procedures to deal with allegations of research misconduct, the EPSRC Guide requires the institutions to develop procedures which are 'written, agreed and clearly understood by all those who may be involved'. The Guide proposes key elements such procedures should have (including fairness both to complainant and respondent) and that they should ideally incorporate four stages.

- (1) Preliminary actions (receiving of the allegations, informing all relevant people and gather evidence)
- (2) Assessment stage, to determine if there is a case
- (3) Formal investigation, involving independent person or committee
- (4) Appeal stage

The EPSRC Resource Audit Committee (RAC) is entrusted with the task of oversight and monitoring the policies of good scientific practice and their implementation.

Economic and Social Research Council (ESRC)

The ESRC sets out its requirements on good scientific practice in its Research Funding Regulations. It has also re-inforced this through the development of its 'Research Ethics Framework' issued in 2005 by the ESRC. This was developed because it was considered that existing frameworks for research on human subjects – such as those issued for biomedical research – did not address the specificities of research in the social sciences. The Framework is mandatory for all ESRC funded researchers (and is recommended to others).

The Research Ethics Framework lists six key principles of ethical research:

- Research should be designed, reviewed and undertaken to ensure integrity and quality;
- Research staff and subjects must be informed about the purpose, methods and possible uses of the research results. They should also know what their participation in the research entails and the risks they incur (if any). [the framework discusses exceptional research contexts in which some variation can be allowed];
- Confidentiality of information supplied by research subjects must be respected and their anonymity preserved;
- Participation in research should be voluntary and free from any coercion; their harm must be avoided;
- The independence of research must be clear; any conflicts of interest must be explicit.

3. Approaches in individual countries



Figure 11: Research Ethics Framework of the ESRC.

The responsibility to ensure that relevant ethical principles are respected lies with the principle investigator and the research institutions. The Ethics Framework states that ESRC will only provide grants to those institutions which have procedures in place to comply with a set of principles, termed 'minimum requirements' which include:

- The principle that ethical issues must always be addressed in the proposal;
- The ethical review of proposals (either by expedited review or by institutional research ethics committees);
- The requirement to have procedures for institutional monitoring;
- Avoiding duplication of ethics review;
- Compliance with legal and data protections regulations.

Medical Research Council (MRC)

The Medical Research Council publishes the 'MRC Ethics Series' to provide guidance on a range of ethical issues relevant to medical research. Two documents relevant in the context of this report are briefly described in the following: *Good Research Practice* and *MRC Policy and Procedures for Inquiring into Allegations of Scientific Misconduct*.

Good Research Practice (published in 2000) sets as a general principle that 'good research practice is essentially an attitude of mind which becomes an attitude to work'. This is a responsibility of every researcher but research institutions, funders and the research community have the responsibility to promote and verify good practice. Principles are discussed in the various steps of the research process: planning the research; conducting the research; recording data, reporting the results; and applying and exploiting the results.

The MRC Policy and Procedures for Inquiring into Allegations of Scientific Misconduct apply to the MRC's own establishments and teams. (The MRC has over 30 research units and 3 institutes which carry out research across the biomedical research spectrum employing more than 3,000 people).



Figure 12: MRC Good Research Practice guidelines.

The MRC procedures foresee a 4 stage process. Stage 1 is the preliminary consideration by the Institution's Director if the allegation falls within the scope of the guidelines and if an inquiry is necessary. Stage 2 is the assessment of the evidence of scientific misconduct. This is done by an assessment committee of two people appointed by the Director and the suspect is given opportunity to respond. The MRC's Headquarters Office (Director of Research Management) should be informed of the launch of the assessment. On the basis of the report of the committee and of the suspect, the Director decides on whether to launch the investigation in stage 3. The investigation should determine whether a scientific misconduct occurred and, if so, how serious it is. The investigation committee consists of at least three persons. On the basis of the committee's findings and the response of the suspect, the Director decides which sanctions to impose. Possible sanctions are: removal from the particular project; final written warning; special monitoring of future work; removal of eligibility for pay progression for one year; withdraw of funding for programme; and down-banding of appointment. In particularly grave cases, termination of employment may be considered.

Stage 4 is the appeal. This can be called for by written statement to the Director. This convenes an appeal board of three or more people, which issues a report on the basis of which the Chief Executive of the MRC decides to accept, amend or overturn the conclusions of the investigation and resulting sanctions.

Natural Environment Research Council (NERC)

NERC published its ethical policy in June 2005. It covers all staff of NERC Office and its research centres and organisations which receive NERC grants are expected to respect it.

NERC ethical framework includes, among others following principles :

- to operate with honesty and integrity, taking steps to identify and deal with corrupt scientific practices and professional misconduct;
- to be open and transparent in making decisions, undertaking activities and allocating funding; if that is not possible, explain why;
- to reach conclusions based on best scientific and professional practice, having considered all views;
- to work to the standards of UK legislation as a minimum here and abroad, and operate according to local laws as required;
- to disclose conflicts of interest and actively manage them;
- to ensure funding decisions are transparent and securely based on objective assessment and selection procedures;
- to recognise appropriately the intellectual, scientific support and operational contributions of others;
- to consider ethical challenges which arise from new or possibly risky research at the limits of our knowledge by broadening debate at an early stage.

NERC has an Ethics Board composed of the Chief Executive, one member of the Council and another member from the Executive Board. The Boards deals with breach of the NERC ethics policy which can not be resolved with other (existing) mechanisms or line management. As an employee of researchers, NERC also has its own internal policy and associated procedures for investigating allegations of research misconduct.

Science and Technology Facilities Council (STFC)

The STFC guide to Good Scientific Practice is published in the STFC Research Grants Handbook. It provides a link to the joint statement 'Safeguarding Good Scientific Practice' issued by the Director General of the UK Research Councils.

The main principles of good scientific practice, which apply to Research Organisations who receive funding from the STFC are:

- they are expected to have in place agreed procedures for governing Good Scientific Practice that meet the requirements of the Research Councils guidance, and which have been made known to, and are binding, on all their staff;
- they must ensure that there are reliable systems and processes in place for the prevention of scientific misconduct e.g. plagiarism, falsification of data, together with clearly defined arrangements for investigating and resolving allegations of scientific misconduct;
- they are required to report to the Research Councils annually, stating explicitly whether

3. Approaches in individual countries

any issues of scientific misconduct have arisen concerning any Research Council-funded researchers.

Where an allegation of scientific misconduct arises in respect of a researcher supported by a STFC research grant, STFC must be informed immediately and advised of the outcome of any investigation.

The UK Panel for Research Integrity in Health and Biomedical Sciences and the UK Research Integrity Office (UKRIO)

The association of universities in the UK (The Universities UK) has set up the UK Panel for Research Integrity in Health and Biomedical Sciences with the aim of promoting good scientific practice in biomedical research and associated health and health-care disciplines.

The work of the Panel is developed by the Board which has members drawn from organisations with roles and responsibilities for health and biomedical sciences research across the UK. This includes the universities, research funders (including the Research Councils and Charities), regulators the National Health Service and Industry in the form of the Association for the British Pharmaceutical Industry (ABPI). Members of the Board are nominated by either an organisation involved in the Panel with independents elected

by other Board members. Observers include a government department representative and two from overseas. Members are invited to serve for three years in the first instance.

The Panel has a programme of work (2006- 2008) which include the development of the following main activities:

- a code to promote integrity in research The Code of Practice for Research (planned for early 2008);
 - a standard procedure to assist the research community put in place a systems to handle allegations of misconduct in research fairly;
 - a helpline to access guidance to those who wish to raise concerns or seek advice on research misconduct related issues guidance in handling matters of concern or allegations of misconduct;
 - help in establishing programmes of staff development and training on good scientific practice;
 - raise the awareness on research integrity through dissemination activities (websites).
- The Universities UK supports the UK Research Integrity Office (UKRIO), which provides support to the Panel in the delivery of the work Programme.

The UKRIO is also working closely with RCUK on projects to further develop the UK mechanism in support of good research conduct.

Key documents:

Safeguarding Good Scientific Practice. A joint statement by the Director General of the Research Councils and the Chief Executives of the UK Research (1997)
www.ukoln.ac.uk/projects/ebank-uk/docs/scientific-practice.doc

MRC The Good Research Practice
MRC Policy and Procedures for Inquiring into Allegations of Scientific Misconduct
<http://www.mrc.ac.uk/PolicyGuidance/EthicsAndGovernance/GoodResearchPractice/index.htm>

BBSRC Statement on Safeguarding Good Scientific Practice
http://www.bbsrc.ac.uk/publications/policy/good_scientific_practice.html
Guide to Good Practice in Science and Engineering Research (EPSRC)
<http://www.epsrc.ac.uk/ResearchFunding/GrantHolders/GuideToGoodPracticeInScienceAndEngineeringResearch.htm>

ESRC Research Ethics Framework
http://www.esrcsocietytoday.ac.uk/ESRCInfoCentre/opportunities/research_ethics_framework/

NERC Ethics Policy
www.nerc.ac.uk/publications/corporate/ethics.asp

STFC Research Grants Handbook
www.so.stfc.ac.uk/rgh

4. Summary and Outlook

This report presents the results of a survey undertaken to provide an inventory of approaches to promote and safeguard good research practice in Europe.

The survey was conducted by contacting key scientific organisations as well as through an extensive internet and literature search. It targeted 32 European countries in which either ESF has a member organisation and/or which are members of the EU.

The study focused on (1) codes and guidelines to promote good research practice; (2) activities and policies of institutions and bodies with research integrity responsibility; and (3) explicit procedures to handle allegations of research misconduct at an institutional and national level.

The survey shows a wide range of approaches across the 18 countries for which information on the above listed aspects could be collected.

The *codes/guidelines* analysed in the report are different in two main aspects.

- (a) We have on one hand documents which cover all research disciplines and on other hand those presenting the perspective of certain research fields.
- (b) The nature of the documents also varies greatly and includes all types covered by the UNESCO Global Ethics Observatory. Some documents are aspirational in nature, outlining the ideal behaviour of researchers (e.g. 'Good Manners in Science' of the Polish Academy of Science), while other documents seek to deepen the understanding of good research conduct by discussing its various aspects (e.g. the document *Good Research Practice – what is it? Views, Guidelines and Examples* of the Ethics Committee of the Swedish Research Council). A third type of document consist of regulatory codes/guidelines, which either provide the framework of mechanisms to be developed at the individual institutions (e.g. 'Good scientific practice and procedures for handling misconduct and fraud in science' of the Finnish National Advisory Board on Research Ethics) or define enforceable rules and serve as a basis for

inquiries and sanctions (e.g. the Norwegian Law on Ethics and Integrity in Research).

The report includes mainly 4 *types of institutions*, which, from different perspectives and in accordance to their mission, play a key role in promoting and safeguarding good research practice.

- (1) Learned Societies (Academies), which defines the standards of good research practice;
- (2) Public Research Performing Organisations which implements mechanism to make sure that that the standards of good research practice are respected by establishing (among others) explicit mechanisms to deal with allegations of research misconduct;
- (3) The Research Funding Agencies which promote the good research practice throughout their funding policies;
- (4) In some countries, there are also Central Bodies with Responsibility to deal with allegations of research misconduct at a national level.

The universities, which are important actors in this area, were not included in the report. They have a double role: to impart to the younger generation of researchers with standards of good research practice in their respective fields; and to make sure that those standards are respected and their violation appropriately investigated.

An update of this report should strive to include the activities of the universities to promote good research practice (e.g. training programmes) and their policies to allow investigation of allegations.

The fact that only a few countries and institutions have put in place explicit mechanisms to deal with allegations of research misconduct may imply that most research systems in Europe are not well equipped to handle major cases of research misconduct. In fact, in some countries the procedures were developed (or significantly further developed) often in response to cases of research misconduct which badly shook the national research systems concerned. This has been the case in Germany and in Norway.

4. Summary and Outlook

At the time of compiling information for this report, various activities at a national and international level were under way to further develop the systems to promote good research practice and to enhance the capacity to deal with research misconduct cases.

In Austria, a Working Group convened by the FWF has just recommended the creation of central bodies to handle allegations of research misconduct and was working on the details of its modus operandi.

In the UK, key actors in the research community were preparing a policy workshop to discuss the development to foster good research practice.

In France, a similar initiative (scheduled for the end of the year) was being discussed⁸.

At the international level, the OECD Global Science Forum was facilitating exchanges on how to best address research misconduct in international research collaborative efforts.

Following recommendations of an Expert Group convened by the European Commission to advise it on rationale for community action to promote research integrity in Europe, the EC has called for the development of a coherent approach to promote and safeguard good research practice in Europe and offered support.

This is in line with the recommendations from the First World Conference organised by ESF and the US Office of Research Integrity in September 2007.

Box 7: OECD Global Science Forum

The OECD Global Science Forum is a venue for senior officials of the OECD member states to coordinate their science policy. In 2007, on the initiative from the Delegations of Japan and Canada, the OECD Global Science Forum organised a workshop, to review the state of art on research integrity and research misconduct and identify best practices in promoting integrity. The Workshop 'Best Practices for Ensuring Scientific Integrity and Preventing Misconduct' was held in Tokyo on 22 and 23 February 2007 in Tokyo and attended by over 50 representatives from 23 OECD and non OECD countries (appointed by their governments).

The report of the workshop which discusses a range of practical measures to address research misconduct as well as related administrative mechanisms was published in October 2007 (OECD 2007).

As follow up, the OECD Global Forum convened a Co-coordinating Committee to discuss how to facilitate international research misconduct investigations. The Committee has started to develop model agreements which can be included in agreements of international research collaborations.

www.oecd.org/sti/gsf

At the time the report was being compiled, ESF, EUROHORCs and other organisations were planning to organise a forum for various actors with research integrity responsibilities to assess each other's approaches and policies, discussing the strengths and shortcomings (if any) and pave the way for the development of harmonised standards across Europe.

This also has the potential to support and encourage those who do not yet have appropriate structures (but are interested in developing them) to learn from experiences of others and to initiate debates in their respective communities on adequate models.

This report provides a good starting point in this endeavour.

⁸ Le Hir, Pierre: La France s'attaque à la fraude scientifique. Le monde, 7 February 2008, page 7.

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⁹In addition to the documents used to make the short summaries in Chapter 3. The sources for those documents is provided after the country summaries.

6. Responsible officials and contact details

Country	Organisation	Name & contact details
Austria	Working Group on Good Research Practice of the Austrian Science Fund, The Austrian Academy of Sciences and the Austrian Rectors Conference	Chair: Herbert Gottweiss Responsible Officer: Ulrike Varga (ulrike.varga@fwf.ac.at)
Croatia	Committee for Ethics in Science and Higher Education (CESHE)	President: Vedran Katavic vkatavic@mef.hr
Czech Republic	Committee for Scientific Integrity of the Academy of Sciences of the Czech Republic	Chair: Helena Illnerova Head of Secretariat: Eva Žižkova (scicounc@kav.cas.cz)
Denmark	The Danish Committees on Scientific Dishonesty	Chair: Paul Lodberg Secretariat: Cecilie Dickmeiss (cedk@fi.dk) and Charlotte Elverdam (chel@fi.dk)
Estonia	Estonian Academy of Sciences	Contact Person: Ain-Elmar Kaasik (elmar.kaasik@akadeemia.ee)
Finland	National Advisory Board on Research Ethics	Chair: Eero Vuorio Secretary General: Salla Lötjönen (salla.lotjonen@tsv.fi)
	Academy of Finland	Responsible Officer: Paavo Löppönen (paavo.lopponen@aka.fi)
France	INSERM – Scientific Integrity Delegation	President: Martine Bungener Head of Secretariat/Responsible Officer: Michelle Hadchouel (michelle.hadchouel@tolbiac.inserm.fr)
	INSERM Ethics Committee	President: Jean Claude Ameisen Head of Secretariat/Responsible Officer: Bénédicte de Boischevalier (ermes@tolbiac.inserm.fr)
	CNRS – Scientific Ethics Committee	President: Jean-Pierre Bourguignon Head of Secretariat/Responsible Officer: Christiane Bouchard (christiane.bouchard@cnrs-dir.fr)
	IRD – Ethics Advisory Committee	President: Dominique Lecourt Head of Secretariat/Responsible Officer: Marie-Christine Rebourcet (Marie-Christine.Rebourcet@paris.ird.fr)

Country	Organisation	Name & contact details
Germany	The Ombudsman of the DFG	Chair: Ulrike Beisiegel Responsible Officer: Helga Nolte (DFG-Ombudsman@rrz.uni-hamburg.de)
	DFG Committee of Inquiry on Allegations of Scientific Misconduct	Chair: Dorothee Dzwonnek Responsible Officer: Kirsten Hüttemann (Kirsten.Huettemann@dfg.de)
	Max Planck Society	Responsible Officer: Martin Steins (Martin.Steins@gv.mpg.de)
	Leibniz Gemeinschaft	Responsible Officer: Stephan Zwick (zwick@leibniz-gemeinschaft.de)
Ireland	Health Research Board	Responsible Officer: Maura Hiney (mhiney@hrb.ie)
Latvia	Latvian Academy of Sciences	Contact Person: Vija Klusa (vijaklus@latnet.lv)
	Latvian Council for Science	Contact Person: Galina Kalinina, (lzp@lza.lv)
Netherlands	National Board for Scientific Integrity (LOWI)	Chair: C.J.M. Schuyt Secretariat: Dirk de Hen (LOWI@bureau.knaw.nl)
Norway	National Commission for the Investigation of Scientific Misconduct	Chair: Johan Giertsen Head of Secretariat: Torkild Vinther (torkild.vinther@etikkom.no)
	The National Committee for Medical Research Ethics (NEM)	Chair: Beate Indrebø Hovland Head of Secretariat: Knut W. Ruyter (knut.ruyter@etikkom.no)
	The National Committee for Research Ethics in the Social Sciences and the Humanities (NESH)	Chair: Dag E. Helland Head of Secretariat: Hilde Wisløff Nagell (hilde.nagell@etikkom.no)
	The National Committee for Research Ethics in Science and Technology (NENT)	Chair: Anne-Hilde Nagel Head of Secretariat: Matthias Kaiser (matthias.kaiser@etikkom.no)
	The Research Council of Norway	Responsible Officer: Gro E M Helgesen (gh@rcn.no)
Poland	Committee on Ethics in Science of the Polish Academy of Sciences	Chair: Jerzy Pelc Secretariat: Zbigniew Szawarski (z.szawarski@uw.edu.pl)
	Committee on Ethics in Science Polish Ministry of Science and Higher Education	Chair: Maciej Wladyslaw Grabski Secretariat: Elżbieta Majchrowicz (elzbieta.majchrowicz@nauka.gov.pl)

6. Responsible officials and contact details

Country	Organisation	Name & contact details
Slovakia	Committee of the Slovak Research and Development Agency (SRDA)	President: Rudolf Pullmann Executive Secretary of Ethics Committee: Sonia Ftacnikova (ftacnik@apvv.sk)
Sweden	Ethics Committee of the Swedish Research Council	Chair: Göran Hermerén
	Expert Group for the Investigation of Suspected Research Misconduct	Chair: Karin Almgren Secretariat for the Ethics Committee and the Expert Group of the Swedish Research Council: Anette Gröjer (Anette.Grojer@vr.se)
Switzerland	Working Group on Research Integrity of the Swiss academies of Arts and Science	Chair: Emilio Bossi Responsible Officer: Markus Zürcher (markus.zuercher@sagw.ch)
	Swiss National Science Foundation	Responsible Officers: Andreas Dick (adick@snf.ch) Markus Röthlisberger (mroethlisberger@snf.ch)
Turkey	Scientific and Technological Research Council of Turkey (TÜBİTAK)	Head of the Academic Research Funding Programmes Directorate: Arif Adli (arif.adli@tubitak.gov)
UK	Medical Research Council (MRC)	Responsible Officer: Tony Peatfield
	Biotechnology and Biological sciences Research Council (BBSRC)	Responsible Officer: Mari Williams
	Economic and Social Research Council (ESRC)	Responsible Officer: Glyn Davies
	Natural Environment Research Council (NERC)	Responsible Officer: Helen Butler
	Engineering and Physical Sciences Research Council (EPSRC)	Responsible Officer: Stuart Ward
	Science and Technology Facilities Council (STFC)	Responsible Officer: Andrew Le Masurier
	Arts and Humanities Research Council (AHRC)	Responsible Officer: Ian Broadbridge
	RCUK Good Research Conduct Group	Chair: Glyn Davies (glyn.davies@esrc.ac.uk) Secretariat: Rebecca Fairbairn (rebecca.fairbairn@rcuk.ac.uk)
	UK Panel for Research Integrity in Health and Biomedical Sciences	Chair: Ian Kennedy Head of the Research Integrity Office: Andy Stainthorpe (Andrew.Stainthorpe@UniversitiesUK.AC.UK)

