EUROPEAN SCIENCE FOUNDATION

SETTING SCIENCE AGENDAS FOR EUROPE

ORI — OFFICE OF RESEARCH INTEGRITY
U.S. Department of Health and Human Services

Research Integrity: global responsibility to foster common standards

Contents

Foreword

Research in all fields of endeavour is a significant feature of all societies and represents major financial commitment, whether from the public or private sector. Results and findings form the basis for policy decisions at all levels of government and the private sector. Therefore, it is of paramount importance that the research itself is conducted with integrity, in a responsible manner and in accordance with high ethical standards.

While all human endeavours have their 'rogue' elements, misconduct in research is fortunately not a common occurrence. When it occurs it has to be identified and dealt with. Therefore institutions as well as individuals have a responsibility to develop and work within appropriate frameworks for dealing with unprofessional and unethical conduct in research. Apart from dealing with the problem of misconduct, there is the need to inculcate the highest standards of professional practice in those involved in research, especially for the coming generations of researchers. By fostering the responsible conduct of research, not only can we work to minimise cases of misconduct but we can also provide the assurance that society requires that researchers and research institutions take integrity seriously and that the research system itself is robust in dealing with misconduct.

The increasing globalisation of research presents new challenges for promoting integrity. Countries plan and fund research differently. While these differences need to be respected, some common agreement on professional standards for responsible conduct in research is essential if researchers are to work productively and harmoniously with colleagues in other countries. The challenge of identifying, agreeing to and sharing common standards for responsible conduct in research was the key motivation that led to the sponsoring and planning of a global event on integrity in science.

Given the history of involvement in these issues, it was natural that our two organisations, the European Science Foundation and the US Office of Research Integrity, should come together to initiate the First World Conference on Research Integrity, which was held in Lisbon in September 2007. The Conference responded to the need for international comparisons and provided a platform where all those concerned with research, whether they were funders, research performers, publishers or international organisations could come together for the first time to share experiences and knowledge.

The outcome confirmed the importance of such a meeting and we are hopeful that this will lead to further meetings and exchanges. Both organisations have committed themselves to continuing their involvement with and leadership of such activities. It is our intention to take the recommendations and ideas put forward in this Science Policy Briefing further in the Research Integrity-related work of our organisations.

Our ultimate aim is to ensure that each new generation of researchers follows a rigorous path of ethical and responsible behaviour in its actions to ensure that research in whatever subject and wherever undertaken is conducted with the highest level of integrity.

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Background

In December 2000, the European Science Foundation (ESF) published an ESF Science Policy Briefing (ESPB No. 10) devoted to the topic of good scientific practice in research and scholarship. The publication was a response to the several cases of misconduct reported over the preceding years and ESF's desire to encourage the responsible conduct of research based on best practice within Europe and worldwide. Many of the ESF Member Organisations had already published their policies and were setting up procedures to deal with cases of misconduct. These policies and procedures were reviewed in ESPB No. 10. With this publication ESF committed itself to encourage best practice in all of its activities, working closely with its Member Organisations.

In the Foreword to ESPB No. 10, the then Secretary General of ESF, Enric Banda, pointed out that while there was no epidemic of cases of misconduct, each one destroyed trust both in the research system itself and between researchers. Good scientific practice in research and scholarship was recognised as essential for the integrity of the research endeavour. Such good practice, he argued, should set internationally valid benchmarks for quality assurance, which enable replication and further studies by other researchers. It also provides safeguards against scientific dishonesty and fraud. Thus, good practice, not only nurtures trust within the research community but also between research and society, both of which are necessary for scientific advancement.

In the interval from the publication of ESPB No. 10 until now, there have been other well-publicised misconduct cases and, at the same time, the internationalisation or globalisation of research has grown significantly. Research regulations and commonly accepted research practices vary internationally and among professional organisations. There is no common, worldwide definition for research misconduct, conflict of interest or plagiarism. Even where there is general agreement on key elements of research behaviour, such as the need to restrict authorship to individuals who make substantive contributions to the research or to provide protection for research subjects, the policies and/or legal frameworks that implement this agreement can vary widely from country to country and organisation to organisation. In sum, there is no global agreement on 'good scientific practice'. Therefore, the research community worldwide must address this problem if it is to retain public confidence, especially at a time when there are increased pressures on governments, research institutions and research groups to deliver results against the increasingly short timeframes to which funding is coupled.

Within the United States of America, issues of misconduct in research are taken seriously as is the promotion of what is now termed 'responsible conduct of research' in order to educate and encourage research practitioners to follow best practice and avoid questionable practices, in part to limit the scope of the most serious misconduct. The lead in developing activities to promote integrity in research has rested primarily with the Office of Research Integrity (ORI) in Washington DC.

At the same time, the problem of internationalisation in addressing integrity in research had been recognised at an intergovernmental level with the establishment of a Working Group of the Global Science Forum of the Organisation for Economic Co-operation and Development (OECD). This group has produced an initial report advising governments on needed action and is continuing to discuss ways that government can and should cooperate in research misconduct policy development (see OECD Report, below).

The European Commission, which operates the Framework Programmes and which, in its entirety, is probably the world's largest research programme, has also recognised that the promotion of good research practice and the prevention of misconduct is an essential underpinning for its activities.

Editors of research journals have long recognised that they face problems in dealing with both misconduct (such as falsification of data published in papers in their journals) and questionable practices (such as the 'salami' slicing of results to make more publications or issues of self-plagiarism). Leadership in this area has been provided by the Committee on Publication Ethics, which has been active in developing policies and guidelines for its members to follow.

The Lisbon Conference

Against this background of prior work and growing interest, the ESF and the ORI collaborated to try to provide a forum for the different parties to come together and exchange views and ideas as well as to compare policies and approaches. Such were the primary objectives of the First World Conference on Research Integrity: Fostering the Responsible Conduct of Research, which was held between 16 and 19 September 2007 in Lisbon under the auspices of the Portuguese EU Presidency and supported by the European Commission, the Portuguese EU Presidency, the Gulbenkian Foundation, the Committee on Publication Ethics, the European Molecular Biology Organisation and the UK Research Integrity Office. Additional funds for travel for many of the participants were provided by ICSU and NATO.

The Conference was the first forum convened to provide an opportunity to discuss strategies for harmonising research misconduct policies and fostering responsible conduct in research with participants from across the globe.

A total of 275 participants from 47 countries attended the four-day event that included a series of plenary sessions, three working groups, formal opening and closing sessions, and other events designed to promote discussion and begin a global exchange about ways to foster responsible research practices. For the Conference Programme see the Appendix.

Continuing Activities

The papers, speakers' biographies, the OECD draft report, the report of the European Commission's expert group and other materials are available on the Conference website (http://www.esf.org/activities/esf-conferences/details/confdetail242.html) as e-Conference Proceedings.

The evaluations and subsequent correspondence suggest that the Conference was an overall success. It was the first to address the complex and sometimes emotive subject of integrity in research. It attracted worldwide participation and is expected to lead to further actions by others.

Ten days after the Conference, a bilateral meeting co-organised by the American Association for the Advancement of Science (AAAS) Committee on Scientific Freedom and Responsibility and the Chinese Academy of Science and Technology convened a China-US workshop in Beijing on Scientists' Social and Ethical Responsibilities. The Conference and this event could mark the beginning of a much-needed global conversation on ways to promote higher standards of integrity and respond to misbehaviour in research.

These events come at what could be considered as the 50th anniversary of the globalisation of research. In the mid-1950s, scientists around the world agreed to work together during the upcoming 1957 International Geophysical Year to develop a comprehensive understanding of our planet. Cold War tensions, punctuated by the launch of Sputnik in October 1957, at first limited global cooperation in science. However, with the end of the Cold War in the late 1980s and the globalisation of the world economies in the 1990s, global cooperation in science has become a fact of life.

Policy discussions about globalisation in science have focused on resources and logistics: on how to fund and share vital research equipment; to collect, store and share data; and to make it easier for scientists around the world to meet and work together in person or in virtual laboratories. They have to a far lesser extent embraced integrity issues and good scientific practice.

The implicit assumption has been that scientists know the rules for responsible conduct and act accordingly. However, frequent reports of misconduct in research and growing evidence about suspect integrity in research suggest that this assumption is naïve. Researchers do not always behave as they should. To address this problem, three critical needs must be addressed on a global level.

First, and most importantly, there is a critical need for better information about research behaviour and the factors that influence it. It is commonly assumed that a few serious incidents of misbehaviour pose the greatest threat to the integrity of research today. However, empirical studies of research behaviour increasingly suggest that seemingly less high profile but more widespread and questionable practices in designing, interpreting and publishing experiments can have much greater impacts on the reliability of the research record, waste more public funds, and, at times, even endanger pubic health and welfare.

The pioneering Peer Review Conferences (1989 ff.)[1] and the ORI/NIH Research on Research Integrity Program (1999)[2] have done a great deal to improve understandings of research behaviour. However, to develop the knowledge base needed to formulate effective policies, more information is needed. Funding agencies around the world, therefore, should consider devoting resources specifically to the study of the behaviour of the researchers they support and to the factors that encourage these researchers to either follow or go against best research practices.

Second, the standards for best practice and procedures for reporting improper behaviour must be clarified, harmonised and publicised. The laws of nature do not change from country to country. Common units of measure and other standards that have been introduced into science have done a great deal to foster international cooperation. Basic standards for responsible behaviour must be global in order to foster the trust and sharing that is essential for the advancement of knowledge. This becomes even more important with the increase in joint working at the bench by researchers from different countries, funded through different sources.

The Organisation for Economic Co-operation and Development (OECD) Global Science Forum (GSF) is currently helping its member nations to work through the complexities of research misconduct and develop policies for responding. Over time, if national policies and approaches vary significantly, harmonisation will be needed to ensure fair and uniform treatment of researchers throughout the world. The International Committee of Journal Editors, the World Association of Medical Editors, and the Committee on Publication Ethics have already taken important steps to develop worldwide policies for responsible publication and editorial practices. International policies for the responsible use of humans and animals in research have been around for years but are still evolving. These efforts need to be continued and extended to other aspects of research behaviour, such as the management of conflicts of interest, data management and sharing, and the protection of intellectual property.

Third, to have an impact, global standards for best practice and policies for responding to misbehaviour must be better incorporated into training and research environments. Researchers cannot follow best practices if they are not aware of them. They will not adopt the rigour of best practice if they feel they are working in settings that tolerate or even

encourage lax behaviour. One recent US study found that while most researchers accepted the long-standing Mertonian norms for responsible conduct, roughly the same number felt that their peers did not. Until the deep-seated institutional issues that underlie these feelings are addressed, the development of best practices and misconduct policies could have little impact.

Formal Responsible Conduct of Research (RCR) training gained momentum in the USA in the early 1990s after the National institutes of Health (NIH) inserted an RCR requirement into its training grant applications. A new Congressional mandate to provide RCR training for all National Science Foundation-supported graduate students and postdoctoral fellows could broaden these efforts considerably. Finland will shortly provide RCR training for all its graduate students. New RCR courses are appearing in many universities throughout the world.

As encouraging as these developments may seem, there are at present no global curricula for providing RCR training or assessment tools for measuring their success. As a result, researchers can make no assumptions about how much international students, and colleagues working on projects with them, know about responsible practices. Likewise, administrators, funders and policy makers have no idea whether the meagre resources now going into RCR training are making any difference. As training providers enter into global discussions about integrity in research, careful attention needs to be given to content, approach and assessment. Properly delivered, RCR could be the key to improving research climates and developing a global culture of integrity in research.

It is sometimes argued that all that is needed to improve integrity in research is a strong code of conduct, similar to the Hippocratic oath for medicine. As a way to respond to concerns about misconduct in research in the UK, the British Government's Chief Scientific Adviser, Professor Sir David King, recently issued a seven-point code of conduct on Rigour, Respect and Responsibility that he proposed would foster ethical research, encourage active reflection among scientists on the wider implications and impacts of their work, and support constructive communication between scientists and the public on complex and challenging issues. UNESCO has also recently promoted a new code of ethical conduct.

Codes have inspirational value but lack the details and enforcing mechanisms needed to deal with the real problems that undermine the reliability of the research record, waste public funds, and, at times, endanger lives and public welfare. Clear 'good scientific practices' provide more detail and would enhance the efforts to promote responsible conduct in research if they could be developed in a global context. To achieve this end and the better harmonisation of national policies relating to integrity in research, the discussion begun during the First World Conference must be continued.

[1] http://www.ama-assn.org/public/peer/peerhome.htm
[2] http://ori.hhs.gov/research/extra/index.shtml

Conference Report by the Conference Co-Chairs, Tony Mayer and Nick Steneck

As a first effort, the presentations and the conversations that went on around them were exploratory in nature and not designed to set a firm course for the future. Nonetheless, there seemed to be fairly strong agreement on a number of points, which are summarised here and used as the basis for recommendations for future actions.

1. Need for clear, consistent institutional and national policies. In its report which was circulated before and widely discussed at the Conference, the OECD Global Science Forum (GSF) encouraged its national administrators to develop, implement and publicise national policies for Best Practices for Ensuring Scientific Integrity and Preventing Misconduct. While not unanimous, this view, tempered with the flexibility and caution urged by GSF, received wide support at the Conference. Therefore, in response, we recommend that:

> **Recommendation 1**
>
> ESF and ORI should continue to work with GSF and other organisations to achieve the common objective of encouraging all countries that support active research programmes to develop guidelines for best practice and procedures for responding to misconduct in research.

2. Global Clearing House for Research Integrity. Conference participants appreciated the information they gained during the Conference but felt that for conversations to continue, ways had to be found to post and share information in a timely manner. To achieve this goal, we recommend that:

> **Recommendation 2**
>
> ESF and ORI should take the lead in developing a Global Clearing House for Research Integrity by providing or helping raise initial resources and staff time to convert the current Conference website into a more general, independent, self sustaining site, built on and maintained by community-based ('Wiki' style) input. The site would provide basic information on national policies, training programmes, contacts and other relevant information.

3. Second World Conference on Research Integrity. Of the participants who filled out the Conference evaluation form, 83% felt that there should be a second World Conference; 70% felt that the follow-up conference should be held in two to three years time. In the comments that accompanied these responses, participants strongly recommended that the next conference be more focused and address specific challenging topics, such as conflict of interest, sharing data, authorship and other key topics. Both ESF and ORI are supportive of this aim and, therefore, we recommend that:

> **Recommendation 3**
>
> ESF and ORI should take the lead in raising the approximately 25 000 Euros needed to begin planning and fund-raising for a second World Conference, to be held in late 2009 or early 2010, following the general recommendations made in the Rapporteur's Report.

As plans and next steps are worked out, we propose that, in addition to the specific areas noted in the Rapporteur's Report, efforts should be concentrated on three crucial areas.

Information. First, and most importantly, there is a critical need for better information about the behaviour of those engaged in research and the factors that influence their behaviour. It is commonly assumed that a few serious forms of misbehaviour pose the greatest threat to the integrity of research today. However, empirical studies of research behaviour increasingly support the hypothesis that seemingly less serious but more widespread questionable practices undermine the reliability of the research record, waste public funds, and, at times, even endanger the health and welfare of the public.

Standards. Second, the standards for best practice and procedures for reporting improper behaviour in research must be clarified, harmonised and publicised. Basic standards for responsible behaviour in the conduct of research must be global in order to foster the trust and sharing that is essential for the advancement of knowledge.

Education. Third, to have an impact, global standards for best practice and policies for responding to misbehaviour must be better incorporated into training and research environments. Until the deep-seated institutional issues that underlie attitudes toward integrity are addressed, the development of best practices and misconduct policies could have little impact.

Rapporteur's Report*

Action Clusters

Four clusters can usefully be distinguished within the broad notion of research or scientific integrity.

1. The first is research misconduct proper. …

2. A largely different category concerns all types of infringements of bioethical regulations and guidelines for scientific research.

3. A third category is formed by cases where external pressures on researchers and scientific institutions lead to misrepresenting or hiding research outcomes, overemphasising findings etc. …

4. The integrity of institutions is at the core of a fourth area, and the issue here is which government and institutional policies are suitable to enable universities or research institutes to be true to their mission, responsibilities and independent role.

Actions in Cluster 1 'Misconduct'

Several areas for action stand out as necessary to combat or prevent research misconduct.

- Funding agencies, governments, universities and research institutes are well-advised to review some of their rules for funding research and for academic careers. …

- Training in Responsible Conduct of Research (RCR) is now being offered on some scale. It will remain important, but to have an impact, as studies have shown, it must be very high-quality training …

- In handling allegations of misconduct in research, universities and research institutes have a key primary role. …

- … it is crucial that universities and research institutes handle misconduct cases more seriously and openly. …

- … there was unanimous agreement that turning the scientific profession into a legally regulated profession is not the way to improve integrity; it would only stifle the pursuit of knowledge.

- … trust is, in the end, the basis of the implicit covenant between science and society.

Several actions pertain to scientific journals.

- Clearer rules and statements on co-authorship responsibility are needed. …

- Technical tools to combat plagiarism and image manipulation are increasingly available and should be used widely as their user-friendliness grows.

- An important development will be the establishment of public digital repositories for primary research data with links to the published articles. …

- While the suggestion was made to create an independent authority to which journals could report suspicious cases, it was strongly felt that journals should inform institutions, and the latter should act in the first instance.

There is a clear need for more harmonisation of rules and procedures and for more international collaboration in combating research misconduct. …

Actions in Cluster 2 'Bioethics'

Bioethics issues are an area where scientific research has to comply with clear regulations. A wide array of such regulations, guidelines and codes of conduct exist at national levels and also internationally. Many national, institutional and international bodies have been created to ensure compliance. There is, however, definitely room for additional action.

- …, concern was expressed that tighter controls and monitoring may be needed for clinical trials carried out in developing countries, such as ensuring compliance with home-country rules in developing host-countries. There may also be a need to review some of the regulations to ensure that the design of clinical trials does not reflect the unequal power of large companies and developing countries.

- As regards experiments involving human beings, there is a need to review the arrangements for 'informed consent' as the commercial use of data obtained in this way is now more common, and this may not be acceptable to the experimental subjects. …

- … Universities and professional medical associations should require (bio)medical schools to provide more than just minimal training. The training should, moreover, be non-routine and of high quality, with Socratean interrogation types of teaching methods being identified as good practice.

Actions in Cluster 3 'Conflicting interests'

The issues emerging in this context are less clear-cut; instead they identify areas for policy discussions which may give rise to actions.

- Much of the discussion on research integrity has concentrated on researchers in the 'open' public sector (universities, institutes for fundamental research etc.), or at least funded from the public purse. Yet there are good reasons to discover to what degree researchers in the private sector, in contract research organisations (which often have some public funding, but whose purpose is usually to work for industry or other organisations on proprietary knowledge) or in the public defence laboratories. …

- The advancement of science and the generation of wealth require the co-existence of a system of public knowledge and a private system where proprietary knowledge plays a much larger role. Important questions arise at the interface where the two systems meet, and they do meet increasingly on campus.

- Science is not immune to political and religious interference. … Some governments take a firm stand [against interference], others waver, and the situation is similar in religious communities. Academies of science, professional organisations and grass-roots scientific organisations, have traditionally been a strong advocate for science and condemn such interference. It is important that such organisations, supported by individual scientists, remain vigilant.

Actions in Cluster 4 'Institutional integrity'

In most countries governments play a considerable role in creating universities and research institutes which are the key players in performing research and training the coming generations of researchers. … Two issues stand out as necessary to promote responsible behaviour of institutions and people within institutions.

- The first one is to introduce 'intelligent' ways of enforcing accountability. …

- … In the end it has to be recognised that only when all actors accept responsibility, when careful checks and balances are introduced, when power is deliberately and rationally divided between government, funding agencies, universities, faculty or students, a system results in which trust, credibility and integrity are perceived to be the crucial values not only by the parties directly involved but also by society in general.

Cross-cutting issues

A few cross-cutting issues have emerged that deserve full attention when promoting research integrity. …

- Challenges in promoting the integrity of the science system are in many ways fundamentally different for developing countries, countries in transition or emerging economies.

- … the science system needs to be seen to tackle the various challenges in all four clusters having to do with integrity in a sincere and open way, not shirking discussions on limits to and uncertainties surrounding scientific knowledge. A heavy responsibility weighs on all actors to engage with the public in this regard.

OCED Global Science Forum

Summary of the Report on Best Practices for Ensuring Scientific Integrity and Preventing Misconduct*

1. RATIONALE

…. A number of countries are currently creating, modifying or reviewing their administrative mechanisms for dealing with misconduct. For these countries, the Global Science Forum workshop and report should be particularly timely, by providing an opportunity for international consultation, and for learning from the experiences of others.

2. THE VARIETIES OF MISCONDUCT AND ITS CONSEQUENCES

A wide range of (mis)behaviours by scientists can be labelled 'misconduct'. Clarity and consistency in defining misconduct are prerequisites to establishing or evaluating an administrative system for processing misconduct allegations, and for understanding the underlying causes and effective remedies.

> **Conclusion A**
>
> As in other instances where society confronts individual wrongdoing, an optimal response contains elements of both prevention and enforcement. However, it is always better to prevent bad behaviour than to be forced to deal with its consequences. Accordingly, an optimal strategy consists of actively promoting integrity and deterring misconduct within all of the components of the scientific enterprise: universities and other research institutions, funding agencies, professional organisations (trade unions, academies etc.), the publishing establishment, and in fora where scientists and the public interact.

3. OPTIONS FOR DEALING WITH RESEARCH MISCONDUCT ALLEGATIONS

… There is a body of opinion claiming that all matters pertaining to integrity should be handled exclusively within the scientific community, and in the context of the corresponding institutional frameworks (e.g. academic departments in universities). However, government officials have certain responsibilities that they cannot delegate:

- They are formally accountable for the proper spending of public funds. In particular, they manage the granting process (including reviews of applications and monitoring of progress) which cannot function properly if it becomes compromised by dishonesty. As described further in Section 8, the granting procedures that agencies establish may have an effect on the prevalence of certain forms of misconduct (i.e. they can have a corrupting effect on susceptible individuals).

- They are responsible for public safety, which can be compromised by the consequences of misconduct in research.

- They fund (and are otherwise involved with) the education and training of researchers - activities that are vital for promoting integrity and preventing misconduct.

- On a practical level, they are sometimes the only agents who have the means to conduct especially complex or difficult investigations, or ones that transcend national borders.

Based on the information gathered during the preparations for the Tokyo workshop, and at the workshop itself, it appears that dealing with misconduct in research is a shared responsibility of public officials, scientists and institutional administrators. The division of roles differs from country to country but, in general, three generic ways of handling misconduct cases can be identified:

a. Ad hoc committees established to deal with specific cases.
b. Standing committees in research institutions.
c. One or more dedicated committee(s) at the national level.

Regardless of the details of the system that is adopted in any country, the following desiderata were identified at the OECD workshop:

- To the extent possible, a uniform system should be adopted in each country.

- The pertinent principles, rules and procedures should be clearly defined and well publicised.

- Any system must be (and be seen as) scrupulously fair.

- The adopted system should only be as extensive as necessary to ensure the integrity of the research process.

- The relationship to the national legal system must be defined and understood, considering that most of the misconduct-related procedures will take place at the administrative level.

- Even if the 'local' system is adopted (see b above), some overarching national governmental structure can be considered.

- There ought to be agreed-upon standards of performance and periodic evaluation as well as a mechanism for modifying the system based on the assessment results.

> **Conclusion B**
>
> There is no universal optimal system for dealing with misconduct in research. Administrations are free to design and implement the system that meets their needs and is consistent with the way research is managed in a given country or institution, and is compatible with local laws and traditions.

4. RESPONDING TO MISCONDUCT ALLEGATIONS

… Those seeking to create, review or modify a system for dealing with misconduct would benefit from seeking answers to the following questions regarding the all-important 'first link in the investigative chain':

- Who is the first person/organisation to turn to with an allegation or suspicion?

- Is the receiving office/officer someone whose elevated standing (e.g. Dean of an academic faculty, high-level official of a science ministry) could discourage a student or other person who is in the lower ranks of the hierarchy?

- Is adequate information available to the potential accuser?

- Are there requirements/restrictions on who can be accused (and be an accuser)?

- Are anonymous allegations accepted?

- Is there the equivalent of a 'statute of limitations' for misconduct allegations?

- How does the system deal with frivolous or malicious accusations?

- What is the receiving person's exact role and authority?

Conclusion C

Well-intentioned persons who have a legitimate suspicion that misconduct may have occurred should have access to local information and assistance. Recognising that suspicions of misconduct place both accused and accuser in vulnerable positions, the first administrative response should be characterised by sensitivity, confidentiality, objectivity and fairness. Persons receiving notice of a suspicion or allegation should have the appropriate competence, training and mandate (including links to higher-level authorities, should they be needed). If possible, these persons should have the authority to resolve conflicts that do not merit a full investigative proceeding.

5. INVESTIGATING MISCONDUCT

The rules and procedures for misconduct investigations should explicitly address the following issues and questions:

- The number of members of the investigating committee and their affiliation (from inside/outside the institution where misconduct is alleged)?

- The areas of expertise that committee members need (including professional / judicial / procedural experience)?

- Avoidance of conflict of interest (and how conflict of interest is defined), including potential bias by local-level committees towards protecting the reputation of a home institution?

- How and under what authority does the investigatory body obtain the cooperation of the parties, especially those who are not themselves accused?

- Can an investigation be enlarged as new evidence is discovered? …

- What happens if the accused resigns, stops the work etc.?

- What happens if regulatory or criminal violations are uncovered? …

- Are there limits on the power/authority of the investigators?

- What is the source of funds for conducting an investigation?

Questions of fairness are particularly important when dealing with misconduct, because the investigation process is a quasi-legal one; i.e. it has many of the attributes of criminal or civil procedures but is reduced in complexity and is meant to function more quickly. … Accordingly, when constructing investigative procedures, answers should be sought to the following questions:

- What are the conditions and rules of confidentiality for accuser and accused? Can 'whistleblowers' be given anonymity and protected from retaliation, without thereby generating spurious/frivolous allegations?

- What is the standard of proof in a misconduct investigation (e.g. preponderance of evidence, proof beyond a reasonable doubt)?

- Is there a presumption of innocence?

- How can the validity of the proceedings be ensured, given that the investigators may be prominent scientists, but legal amateurs? …

- How can the accused defend him/herself? Does s/he have access to documents, testimony? Can the accused confront accusers and witnesses? Can the accused be assisted by a lawyer during the proceedings? Does the accused have a right to question the composition of the investigating body?

- Can one set of allegations give rise to more than one investigation ('double jeopardy')? …

- What are the rights of appeal and review (by accuser or accused) at each step of the investigation?

- Who is notified of the progress of the investigation, and when? How much detail is provided (e.g. to the funding agency)? Can the agency provide feedback, suggestions, information? Can it play a more active role during the investigation?

- What are the conditions of access by journalists and the public to the outcomes and records of investigations? When are names named (those of the accuser and accused, and/or other persons involved in the investigation)? If no finding of misconduct is made, can the exonerated scientist require that a formal exoneration be published? …

- Can disciplinary measures begin during the investigation (e.g. suspension of the research, withholding of a grant)?

- Is there a fixed set of possible 'verdicts'? Is it a simple guilty/not guilty system, or are shadings possible? Is there a reasonable and consistently applied relationship between the seriousness of the misconduct and the severity of the imposed punishment? Does the investigating body just make findings or can it also recommend corrective actions (including the punishment of guilty individuals, retraction of tainted publications, and other measures to protect science and the public interest)? Can action be taken with regard to persons who should have exercised better supervision even if they have not actively committed misconduct?

- What specific steps can be taken to restore a damaged reputation, and to restore a project that may have been delayed or disrupted during an investigation?

- Is there any provision for protecting 'innocent bystanders', such as graduate students whose projects may be terminated even if their work had nothing to do with the misconduct committed by the principal investigator?

Conclusion D

Misconduct investigations must themselves satisfy the highest levels of integrity and accuracy, given that they are administrative procedures, and thus are not characterised by all of the standards and protections of the legal system. Fairness and credibility are critical, since the reputations of scientists are easily damaged and difficult to restore. Corrective actions should be commensurate with the seriousness of the misconduct, should be consistently applied and should be aimed at undoing the consequences of misconduct. A good way to ensure these characteristics is via a well-defined and time-tested set of definitions, principles and administrative arrangements. The issues and options enumerated in Section 6 of this report are a reference for designing the details of an investigative process.

6. INTERNATIONAL CONSIDERATIONS

National and local administrators actively promote integrity in research, but their work is particularly difficult when allegations of misconduct concern projects that involve collaborators from two or more countries. … Among the recommendations of the workshop is strengthening contacts among the responsible national officials, and possibly even establishing an international venue that would allow them to (a) share information about national definitions, rules and procedures for dealing with allegations of misconduct; (b) cooperate on actual investigations, when there is a need to share data, physical records or access to personnel; (c) develop generic models of misconduct-related documents for international research agreements (contracts, memoranda of understanding, founding documents for international research facilities, etc.); (d) harmonise national arrangements for dealing with misconduct while recognising the legitimate intrinsic differences between national systems.

Conclusion E

Responding to misconduct allegations in international collaborative projects is especially challenging because of possibly incompatible definitions, standards and procedures in participating countries. There are also purely practical problems associated with conducting inquiries across national boundaries, e.g. linguistic barriers and the lack of familiarity with institutional arrangements and personnel. Since the internationalisation of research is on the rise, it makes sense for competent national administrations to increase their level of cooperation in order to understand one another's requirements and constraints. Harmonisation and convergence on definitions and procedures is also desirable. Interested countries are encouraged to undertake an international dialogue among national practitioners. Initially, this dialogue could take place under the aegis of the OECD Global Science Forum.

7. CAUSES, CONTRIBUTING FACTORS AND PREVENTION

An act of misconduct in research is an instance of moral failure, where an individual makes an intentional choice to behave badly. The detailed examination and causal explication of any such act is inherently difficult. Given identical circumstances, one scientist would commit misconduct, whereas a hundred others would not. It has been argued that seeking causes and explanations is pointless: bad people will behave badly and good people will behave well. This line of argument is overly simplistic. A more reasonable hypothesis is that some individuals have a propensity (or susceptibility) to misbehaviour, which can be aggravated (and lead to concrete acts of misconduct) by external factors, ….

Conclusion F

Understanding the causes is useful for devising effective measures for preventing scientific misconduct and for dealing with it when it occurs. A number of hypothetical causative factors are enumerated in this report, and, for each one, corresponding remedies can be devised. Of particular value are: educating young researchers, based on the existence of standards of conduct; fostering frank debate about misconduct at the institutional level; devising a credible and transparent system for dealing with misconduct allegations; publicising the results of completed investigations; streamlining and rationalising the process of hiring, promotion and grant review.

Appendix

The First World Conference on Research Integrity, 16 to 19 September 2007

CONFERENCE PROGRAMME

Opening Session

- Jose-Mariano Gago, Portuguese Minister of Science, Technology and Higher Education, Lisbon, PT
- Janez Potočnik, European Commissioner for Research, European Commission, Brussels, BE
- Angel Gurría, Secretary-General, Organisation for Economic Co-operation and Development (OECD), Paris, FR
- Tim Hunt, Cancer Research UK, South Mimms, UK and European Molecular Biology Organisation (EMBO)

Keynote Address

- Paul David, Oxford University, UK & Stanford University, Palo Alto, US

Plenary I – Global & Institutional Perspectives on Research Integrity

- Howard Alper, University of Ottawa, CA & Co-Chair, InterAcademy Panel, Trieste, IT
- Guitelle Baghdadi-Sabeti, World Health Organisation (WHO), Geneva, CH
- Ayse Erzan, Istanbul Technical University, TR

Plenary II – Integrity in Publication: Expectations, Problems, Solutions

- Anthony Komaroff, Harvard Medical School, Boston, US
- Joao Lobo Antunes, Hospital de Santa Maria, Lisbon, PT
- Philip Campbell, Nature, London, UK
- Sabine Kleinert, The Lancet, London, UK & Vice-Chair, Committee on Publication Ethics (COPE), London, UK

Plenary III – Confronting Research Misconduct: Policies, Standards and Guidelines

- Christine Boesz, National Science Foundation (NSF), Washington DC, US
- Herbert Gottweis, University of Vienna, Vienna, AT
- Motoyuki Ono, President, Japan Society for the Promotion of Science (JSPS), Tokyo, JP
- Ulrike Beisiegel, University Medical Center, Hamburg-Eppendorf & DFG Ombudsman, Hamburg, DE

Plenary IV – Science Culture and Training for Responsible Research Conduct

- Helena Illnerova, Academy of Sciences of the Czech Republic, Prague, CZ
- Alex Quintanilha, Institute for Molecular and Cell Biology, Porto, PT
- Sally J. Rockey, National Institutes of Health (NIH), Bethesda, US
- Melissa S. Anderson, University of Minnesota, Minneapolis, US

Plenary V – Factors Affecting Research Behaviour and Integrity

- Nicholas Steneck, Office of Research Integrity (ORI), Rockville, US
- Brian Martinson, HealthPartners Research Foundation (HPRF), Minneapolis, US
- Gün Semin, Free University of Amsterdam, Amsterdam, NL
- Renzong Qiu, Chinese Academy of Social Sciences (CASS), Beijing, CN

Concurrent Sessions: Research Misconduct

1. Current Policies and New Initiatives

- Nigel Lloyd, Natural Sciences & Engineering Research Council Canada (NSERC), Ottawa, CA

- Lida Anestidou, The National Academies, Washington DC, US

- Pieter J.D. Drenth, ALL European Academies (ALLEA), Amsterdam, NL

2. Reporting, Investigation and Adjudication

- Chris Pascal, Office of Research Integrity (ORI), Rockville, US

- Andrew Stainthorpe, UK Research Integrity Office (UKRIO), London, UK

3. International Cooperation

- Peggy Fischer, US National Science Foundation (NSF), Washington DC, US

- Matthias Kaiser, The National Committee for Research Ethics in Science and Technology (NENT), Oslo, NO

- Paul David, Oxford University, UK & Stanford University, Palo Alto US, Andrea Pozzi, Stanford University, Palo Alto, US

Concurrent Sessions: Institutional and Societal Issues

1. Global Research

- Amaboo Dhai, Steve Biko Centre for Bioethics, Parktown, ZA, *Preserving, Protecting and Improving Research Integrity in Africa: Challenges and Recommendations*

- Tom Kirchhausen, Harvard Medical School, Boston, US , *Challenges Faced by the Leading Investigator to Foster Responsible Research*

- Shamila Nair-Bedouelle, UNESCO, Paris, FR, *COMEST's Role in Fostering Integrity in Research*

2. Educating for Responsible Research

- Ian Halliday, President, European Science Foundation (ESF), Strasbourg, FR

- Fernando Lopes da Silva, University of Amsterdam, NL

- Elisabeth Heitman, Vanderbilt University, Nashville, US

3. Public Perceptions and Responsibilities

- Lawrence Bell, Museum of Science, Boston, US

- Carlos Fiolhais, University of Coimbra, PT

- Paul Caro, Académie des Technologies & CNRS, Paris, FR

- Vladimir de Semir, University Pompeu Fabra, Barcelona, ES

Concurrent Sessions: Publication

1. The Role of Editors and Journals

- Liz Wager, Publications Consultant, Buckinghamshire, UK and Council Member, Committee on Publication Ethics (COPE)

- Katrina Kelner, AAAS, Science, Washington DC, US

- Michael Rossner, Executive Director, The Rockefeller University Press, New York, US

2. The Role of Publishers, Funders and Research Institutions

- Michael Farthing, University of London, Vice Chancellor, University of Sussex, Brighton, UK and UK Research Integrity Office (UKRIO), London, UK

- Chris Graf, Publisher, *International Journal of Clinical Practice,* Wiley-Blackwell Publishing, Oxford, UK

- Peteris Zilgalvis, European Commission, Brussels, BE

3. The Challenges Faced by Smaller Journals

- Annette Flanagin, *Journal of the American Medical Association (JAMA),* Chicago, US, Muza Gondwe, *Malawi Medical Journal* and Malawi College of Medicine, Blantyre, MW

- Ana Marusic, Zagreb University, Zagreb, HR & Council of Science Editors (CSE), Reston, US

- Herbert Stegemann, World Association of Medical Editors (WAME), London, UK & President, Asociación de Editores de Revistas Biomédicas Venezolanas (ASEREME), Caracas, VE

Closing Session: Public Policies and Strategies Fostering Research Integrity

Conference Summary

- Peter Tindemans, EuroScience, Strasbourg, FR

- Ovid Tzeng, National Yang Ming University, Taipei, TW

Closing Talks

- Pär Omling, Swedish Research Council & EURO-HORCs, Stockholm, SE

- Joel Hasse Ferreira, European Parliament, Brussels, BE

- Manuel Heitor, Secretary of State of Science, Technology and Higher Education, Lisbon, PT

Closing

- Tony Mayer, European Science Foundation (ESF) & Conference Co-chair, Strasbourg, FR

- Nicholas Steneck, Office of Research Integrity (ORI) & Conference Co-chair, Rockville, US

This ESF Science Policy Briefing has been edited by Tony Mayer and Nick Steneck