



FREEDOM, RESPONSIBILITY AND  
UNIVERSALITY OF SCIENCE



**ICSU**

International Council for Science





# ICSU STATUTE 5

The Principle of Universality (freedom and responsibility) of Science: the free and responsible practice of science is fundamental to scientific advancement and human and environmental well-being. Such practice, in all its aspects, requires freedom of movement, association, expression and communication for scientists, as well as equitable access to data, information, and other resources for research. It requires responsibility at all levels to carry out and communicate scientific work with integrity, respect, fairness, trustworthiness, and transparency, recognising its benefits and possible harms.

In advocating the free and responsible practice of science, ICSU promotes equitable opportunities for access to science and its benefits, and opposes discrimination based on such factors as ethnic origin, religion, citizenship, language, political or other opinion, sex, gender identity, sexual orientation, disability, or age.



# PREFACE

The International Council for Science (ICSU) is a non-governmental organization with a global membership composed of 120 national scientific bodies representing 140 countries and 31 International Scientific Unions. Founded in 1931, its vision is that of a world in which science is used for the benefit of all, excellence in science is valued and scientific knowledge is linked to policy making. To achieve this vision, ICSU's focus is on International Research Collaboration, Science for Policy and Universality of Science.

By advocating the Principle of Universality of Science, ICSU's goal is to help build a truly international science community. Because science is inherently a global enterprise, full participation in it requires free exchange and communication among all scientists, engagement in scientific discourse without repercussions, or fear thereof, as well as equitable and non-discriminatory access to the tools of science. At the same time, these freedoms entail responsibilities on the part of all scientists in the conduct of their scientific work. To address and promote both aspects, ICSU established the Committee on Freedom and Responsibility in the conduct of Science (CFRS) in 2006. This Committee differs significantly from its predecessors that, since 1963, had focused on scientific freedom, in that it is explicitly charged with also emphasizing scientific responsibilities.

The Committee's enlarged task finds reflection in this brochure, which is a revised version of the CFRS booklet "Freedom, Responsibility and Universality of Science," produced in 2008. It explores the unique relationship between the sciences and societies in which they are practised by providing illustrative examples of how ICSU and its members, through CFRS, have addressed threats to freedom and promoted responsibility.

The brochure is available online on the "Freedom and Responsibility Portal" of the ICSU website. The Portal contains more detailed information on the various aspects raised in the chapters, that follow.

## THE ICSU VISION

The long-term ICSU vision is for a world where excellence in science is effectively translated into policy making and socio-economic development. In such a world, universal and equitable access to scientific data and information is a reality and all countries have the scientific capacity to use these and to contribute towards generating the new knowledge necessary to establish their own development pathways in a sustainable manner.

## INTRODUCTION

Science is the development of knowledge through research – the systematic exploration and explanation of the world. As such, science also has an inherent and important cultural value, satisfying human curiosity and enriching human understanding. Moreover, scientific knowledge provides the basis for the development of technologies, policies and practices that shape our future.

Science depends on society's respect for its processes and support for its activities. It is widely acknowledged that there is an informal, social contract between science and society. This contract implies certain responsibilities from society to science, and from science to society.

As science is a global cross-cultural and cross-national endeavour, some of these responsibilities transcend national contexts. It is the particular purpose of ICSU to illuminate and strengthen this global dimension of science in all its facets.

### **Societal responsibilities to the sciences**

For science to progress efficiently and for its benefits to be shared fairly, scientists must have academic intellectual freedom. This includes individual freedom of inquiry and exchange of ideas, freedom to reach scientifically defensible conclusions and institutional freedom to apply collectively scientific standards of validity, replicability and accuracy. The conditions that promote these freedoms include the ability to engage freely with other scientists and with the scientific community as well as access to information and scientific materials. International scientific exchange must take place without discrimination.

### **Responsibility of science toward the public**

Scientists have a fundamental responsibility to conduct and communicate their research with honesty, integrity and respect. Moreover, there are external responsibilities, which include respect and care for physical, social and human environments. Not all applications of science are beneficial for everyone or the environment. The use of scientific knowledge can pose serious social or physical threats. Therefore, scientists as individuals and the international scientific community have a shared responsibility, together with other members of society, to do their utmost to assure that scientific discoveries are used solely to promote the common good.

### **Maximizing the benefit of sciences**

The desire to maximize the use of science for the universal good of mankind and the environment is encapsulated in ICSU's vision.

# FREEDOMS OF SCIENTISTS

The basic academic freedoms supported by ICSU are grounded in a number of international documents and covenants adopted and promoted by the United Nations, including the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights.

## UNIVERSAL DECLARATION OF HUMAN RIGHTS (1948)

- Art. 13** Everyone has the right to leave any country, including his own, and to return to his country.
- Art. 19** Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.
- Art. 20** Everyone has the right to freedom of peaceful assembly and association.
- Art. 27(1)** Everyone has the right freely to (...) share in scientific advancement and its benefits.

## INTERNATIONAL COVENANT ON ECONOMIC, SOCIAL AND CULTURAL RIGHTS (1966)

- Art. 15(3)** The States Parties to the present Covenant undertake to respect the freedom indispensable for scientific research and creative activity.



The freedoms specified in these multilateral treaties are social and political ideals, which must be supported and promoted. They can only become reality through systematic support and commitment by the signatories. Unfortunately, in the past as well as today, some or all of these freedoms have been limited for reasons such as political ideology, national security and economic or proprietary concerns.

At the international level, challenges to freedoms underlying the universality of science have often consisted of political threats to scientists. When such threats arise, ICSU works to counter them through communications with the relevant actors or by taking action to support the fundamental freedoms of science.

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## THE FREEDOMS ICSU PROMOTES ARE

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- Freedom of movement;
  - Freedom of association;
  - Freedom of expression and communication; and
  - Access to information, data and scientific material.
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### 1. FREEDOM OF MOVEMENT

Freedom of movement entails the ability of scientists to travel freely outside of their countries of residence to attend scientific meetings and to conduct scientific exchange in any other country. Assuring this freedom includes addressing problems in obtaining visas to enter a country and transit visas required when traveling through third countries *en route* to a final destination. Some scientific studies require access to specific geographic areas, that may not routinely be accessible to visitors.

ICSU proactively supports its Members to ensure freedom of movement. It disseminates to the scientific community guidelines for meeting organizers, sponsors and participants. These guidelines encourage potential sponsors of scientific meetings to work with their national government to ensure that citizens of all countries are permitted to attend the meetings. Over the last decades, ICSU has also reacted when scientists wishing to attend scientific meetings were denied or faced difficulties in obtaining visas for political reasons.

ICSU also addresses problems in obtaining exit visas: that is when countries do not allow their nationals to travel outside their own borders – generally out of fear that travellers will reveal politically embarrassing or sensitive information about their country or that they might not return. In such cases, ICSU works with its Members to assist scientists to obtain exit visas.

## **2. FREEDOM OF ASSOCIATION**

The scientific endeavour often depends on personal contact and exchange among scientists across national borders. Many areas of scientific study, for example in health and the behavioural or social sciences, also depend on close contact with specific communities.

Scientists' freedom of association can be challenged in a number of ways. One is when groups of people, institutions or governments refuse scientific cooperation with individual scientists or scientific institutions solely to make political statements about the policies of the countries with which the scientists who are discriminated against happen to be associated. Often, such refusals take the form of boycotts (see box opposite) or other forms of condemnation.

Contacts among scientists are sometimes controlled or prohibited for political reasons. In some countries, individual scientists who have contact with foreign colleagues risk

## OPPOSITION TO BOYCOTTS

In accordance with ICSU Statute 5, all ICSU Members that organize or sponsor international scientific meetings are expected to ensure that participation of scientists is free from discrimination of any kind. Boycotts against the participation of scientists because of their nationality, political or religious beliefs, or place of work are in breach of the ICSU Principle of Universality of Science.

The situation regarding international meetings hosted in the Middle East or North Africa, or with a focus on that region, requires special attention. There have been several instances where scientists and or organizations have boycotted or disrupted scientific meetings because of the participation of counterparts from other countries, such as Israel, or where scientists from these countries have been excluded from participation. This is in contradiction of the ICSU Principle of Universality of Science.

ICSU is unequivocally in favour of cooperation among scientists, irrespective of their nationality, political or religious beliefs, or of the country in which they currently work. Such cooperation is especially important among scientists and institutions in countries in the Middle East or North Africa that have many common challenges in relation to global sustainability research. Combining scientific strengths to tackle these challenges will benefit all of the people in those regions.

charges of treason or espionage. In others, there are explicit governmental policies limiting scientific contact with scientists from specific countries, often for political reasons or national security concerns.

To promote freedom of association, ICSU monitors and publicises such issues, and speaks for the scientific community in condemning individual, institutional or governmental infringements.

### **Strengthening free association through ICSU activities**

A major role of ICSU is to plan and coordinate global interdisciplinary research programmes, for example in the areas of global environmental change, global health and disaster and risk management. All ICSU committees and programmes are open to scientists from any country in the world and it is often the case that the ‘neutral platform’ of ICSU enables scientists, who might be prevented from meeting and communicating for political reasons, to work together.

### **3. FREEDOM OF EXPRESSION**

Progress in science depends on open scientific exchange. Scientists, as everyone else, should have the right to freely express their ideas and opinions by writing, speaking or through other means of communication.

These rights can be threatened in a number of ways. For example, individuals who criticise government policies risk repercussions in a number of countries. Repression can include harassment, accusations of committing treason or of being associated with terrorists. Sanctions can include detention, incarceration, torture, denial of medical treatment or denial of access to family and legal representation.

ICSU actively supports freedom of expression by taking action when scientists, as a result of their scientific activities or expression of their scientific findings or non-violent opinions, face economic, political or social repression. ICSU also works with its Members and other international bodies to address threats to freedom of expression. In 2012, for example, its Committee on Freedom and Responsibility in the conduct of Science reached out to ICSU Member organizations to raise their awareness that public sector scientists in a number of countries were prevented from talking to the media because their views did not necessarily accord with government policies.

## **4. ACCESS TO DATA, INFORMATION AND RESEARCH MATERIAL**

Access to scientific data and information is essential to the conduct of science and for scientific progress. This is recognized in the two international documents mentioned earlier, the Universal Declaration of Human Rights and the International Covenant on Economic, Social and Cultural Rights. The importance of access to data, information and research materials is also acknowledged in recent United Nations Economic, Scientific and Cultural Organization (UNESCO) and Organisation for Economic Co-operation and Development (OECD) guidelines.

In practice, there are many obstacles to providing universal and equitable access to information. These may be technical, such as poor internet access for online resources, or poor infrastructure for providing resources for processing data or housing research materials. They may also be financial, such as charges for access to scientific journals, or security-related, such as controls on access to certain categories of equipment and materials deemed sensitive to a country's security. An example of such restrictions concerns a 2010 US government-regulation that was prohibiting US-based editors and reviewers of scientific journals from handling manuscripts whose authors include citizens of Iran who had dual affiliations, e.g. university and government.

### **Strengthening access through ICSU activities**

ICSU works to promote universal and equitable access to data, information and other resources for research by broadening mechanisms for accessibility as well as by actively monitoring and condemning policies and regulations that represent threats to access. This latter activity is also led by the Committee on Freedom and Responsibility in the conduct of Science. Initiatives to actively promote access include the establishment of several Interdisciplinary Bodies that work with the ICSU Membership on data and information issues. Examples are the following:

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→Committee on Data for Science and Technology (CODATA): active at the international policy level in developing guidelines for data access;

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→ World Data System (WDS): provides full and open access to data and data products for the global science community. Its goal is to form a worldwide ‘community of excellence’ for multidisciplinary scientific data that will ensure the long-term stewardship and provision of quality-assessed data and data services to the science community and other stakeholders through a common, globally interoperable distributed data system, with searchable common data directories and catalogues;

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→International Network for the Availability of Scientific Publications (INASP): helps promote universal and equitable access to scientific information in less developed countries. In 2011, the ICSU ad hoc Strategic Coordinating Committee on Information and Data (SCCID) made various recommendations to improve that kind of access.

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# RESPONSIBILITIES OF SCIENTISTS

ICSU fully recognizes that it has a duty to not only promote and protect the freedoms of scientists, but also to examine, support and promote the responsibilities inherent in such freedoms.

## **1. RESPONSIBILITIES IN THE CONDUCT OF SCIENCE**

The scientific enterprise is built upon the premise that the goal of science is to produce knowledge that is verifiable and provable. The science community is assumed to be self-correcting through the peer-review system and by making scientific results public. These mechanisms help ensure that the scientific record represents the best available knowledge. It is the responsibility of all scientists to contribute to this process.

It is also the responsibility of the individual scientist to strive for high-quality science. Thus, all scientists have a responsibility to ensure that they conduct their work with honesty and integrity, as well as to report methods and results in an accurate, orderly, timely and open fashion.

As members of the larger scientific community, scientists are expected to be impartial and fair in assessing both their own work and that of their colleagues, and to be respectful and ethical, particularly when dealing with human subjects or animals or when research involves toxic substances that could be harmful to human health or the environment.



While these general guidelines may appear self-evident to most scientists, their relative importance is not obvious. For example, a trade-off between consideration of possible harmful outcomes and openness may be required when dealing with human genetic data or reporting geographical data on rare species. Timeliness of research reporting might need to be balanced with national security or proprietary claims. Nevertheless, awareness of and respect for each of these aspects are important for the individual scientist in making his or her own decisions on what is responsible scientific practice in specific situations.

### **Strengthening scientific responsibility through ICSU activities**

ICSU, through its Committee on Freedom and Responsibility in the Conduct of Science, works to promote the practice of scientific responsibility in a number of ways. CFRS has organized and will continue to organize international workshops focusing on vital topics at the interface between science and society to help clarify and promulgate the rights and responsibilities of science and scientists. Recent workshop topics have included global health, science communication, data access, access to genetic resources, science and the private sector as well as science and policy-making. A major outcome of these workshops has been a series of discussion documents that highlight important issues, challenges and potential solutions for consideration by ICSU's Members.

Through CFRS, ICSU co-sponsors regular conferences on research integrity. The 1st World Conference on Research Integrity (WCRI), held in 2007 on "Fostering Responsible Research," laid the groundwork for harmonization of regulations on research misconduct worldwide and began international information gathering on best practices for promoting responsible research. The 2nd WCRI in 2010 resulted in the

“Singapore Statement” on responsible research with a focus on honesty, accountability, courtesy, and stewardship of research on behalf of others. The 3rd WCRI in 2013 focused on integrity in cross-national, cross-disciplinary and cross-sector partnerships, and proposed the “Montreal Statement” that extends the Singapore Statement through consideration of equitable research and scientific collaborations in international and interdisciplinary contexts.

## SINGAPORE STATEMENT ON RESEARCH INTEGRITY (2010)

### PREAMBLE

The value and benefits of research are vitally dependent on the integrity of research. While there can be and are national and disciplinary differences in the way research is organized and conducted, there are also principles and professional responsibilities that are fundamental to the integrity of research wherever it is undertaken.

### PRINCIPLES

- *Honesty* in all aspects of research
- *Accountability* in the conduct of research
- *Professional courtesy and fairness* in working with others
- *Good stewardship* of research on behalf of others

The entire Statement is available at: [www.wcri2010.org](http://www.wcri2010.org)

## 2. SELF-GOVERNANCE AND RESPONSIBILITIES

In return for scientific freedoms, scientists must ensure, individually and collectively, that science is conducted responsibly and ethically. As part of the normal scientific process, scientists are expected to speak up when others have made a mistake or misinterpreted their data, or when research results are superseded by subsequent work.

More complex issues arise when a scientist suspects or becomes aware of unethical or dishonest behaviour of fellow researchers. Scientists have a responsibility to disclose such wrongdoing to relevant persons in positions of authority or to the public. In so doing, a researcher risks being isolated by colleagues, peers and/or an employer – often not an easy route to take. Yet, self-surveillance of the scientific peer community is a crucial mechanism by which to guard against scientific malpractice, and whistle-blowing may prove necessary. In this context, institutional support for whistle-blowers, for example by appointing an ombudsman, is vital.

To raise awareness within the scientific community and to initiate a discussion about the need for protection mechanisms at the institutional level, in 2012 ICSU pointed out to its Member

organizations the critical role played by whistle-blowers in supporting the self-correcting nature of science.

## 3. RESPONSIBILITIES OF SCIENCE TO SOCIETY

It is important to acknowledge that the results of scientific discoveries and the uses to which they are put are not value-free. Scientific knowledge forms the basis of countless innovations and advances that serve the well being of society, but it can also do considerable harm. In particular, harm occurs if scientific results are used for purposes that are not in the interests of society, or when they are misrepresented for commercial or political gain. Given this potential for multiple use, the demands on scientists to pay careful attention to their individual and communal responsibilities are higher than in many other areas of work. Scientists have an obligation to critically reflect upon how their expertise is used, particularly when asked to support decision-making and policy processes.



The relationship between science and society is complex. The responsibilities of the scientific community include:

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- promoting science for the benefit of society;

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  - generating and promoting science to improve human well-being and sustainable development;

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  - supporting good, evidence based policy-making;

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  - promoting science that contributes to shared human knowledge and experience;

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  - ensuring the benefits and minimising the potential dangers of applications of science;

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  - stimulating public engagement in the challenges and opportunities science provides.
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The definition and enforcement of these responsibilities is a matter for continual discussion among the scientific community at the international and national level.

The responsibilities of individual scientists to do good science and follow good practice in this framework include:

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- upholding scientific freedoms;

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  - showing respect for human rights, animal rights and the environment;

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  - acknowledging scientific risk and uncertainty;

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  - being accountable for responsible and honest communications about science;

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  - contributing to the public good by placing societal benefits before the pursuit of personal gain;

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  - distinguishing between their opinions as citizen and as scientists.
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# BALANCING FREEDOMS AND RESPONSIBILITIES

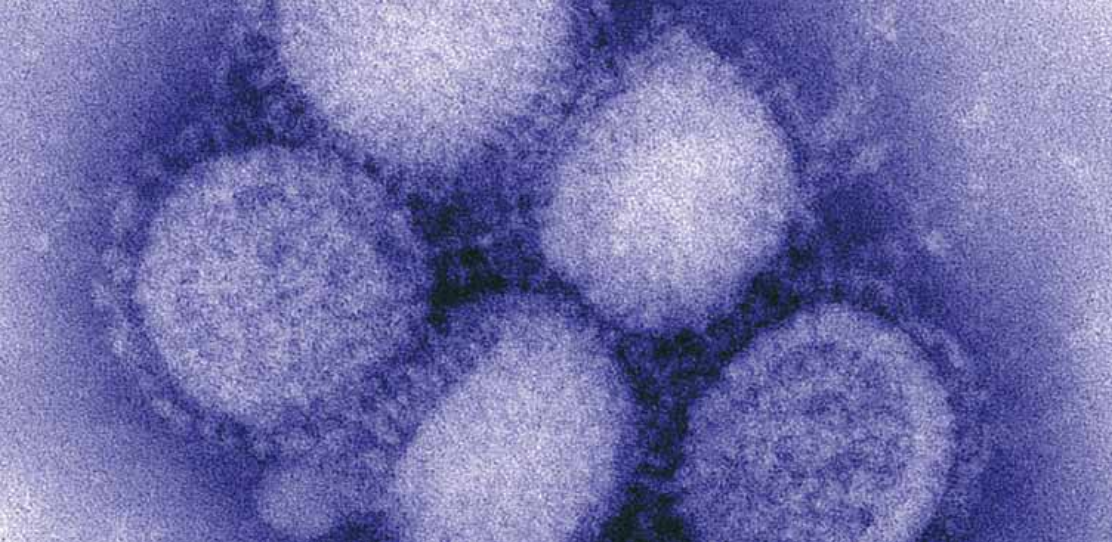
As the world continues to change, with science and technology being important drivers, there are continuing challenges to the freedoms of scientists and an increased onus on the scientific community to articulate and embrace its responsibilities.

What does this mean in practice? There are many areas of science where the tensions between freedoms and responsibilities are apparent. The ways to resolve these tensions are invariably less evident and require broad and open debate and discussion, both among scientists and within society as well as between scientists and the societies of which they are part.

CFRS has organized a number of scientific meetings and workshops in the last few years that have addressed issues balancing freedom and responsibility, examples of which follow. All of these were joint undertakings with ICSU National Members. Recommendations were drawn from most of these meetings to serve as advice, reflecting some consensus and some divergence within the scientific community.

## **Global health and emerging diseases**

Interactions between science, society and policy are crucial in the domain of public health and emerging infectious diseases. Global alerts for diseases such as the Severe Acute Respiratory Syndrome (SARS) and avian influenza have been widely



publicized in recent years. The response of the global and scientific communities to these alerts raised fundamental issues. At the macro level, these include the level and nature of response and financial investment in both basic and public health research on these diseases. For individual scientists, there are important issues relating to biosafety and access to, or sharing of, materials and data. For example, tissue samples and scientific data may variously be considered as essential public health tools, dangerous precursors of biological weapons, demonstrations of scientific prowess or levers for political influence. In 2007, the workshop “Emerging infectious diseases: rights and responsibilities of scientists,” organized by CFRS in partnership with the Academy of Sciences located in Taipei, focused on Asian scenarios. As part of an open forum, scientists, representatives from the pharmaceutical industry and the health policy sector engaged in joint discussions on the role of scientists who generate the tissue samples or data in the first instance and on the most effective mechanisms to link science and policy in crisis situations.

### Academia - business interface

Contemporary science is marked by an increasing presence of the private sector and by calls for increased collaboration between universities, industry and government. Measures of innovation and commercialization have even become critical performance indicators in many areas of science. While this development has generated more resources for science and strengthened ties between research and the applications of science, it also carries inherent risks to academic freedom and research conduct. Contractual agreements, collaborative arrangements and intellectual property protection procedures can create a serious dilemma for the individual scientist. The international workshop “Private Sector – Academia Interaction,” held in Sigtuna, Sweden, in 2011 and co-sponsored by CFRS and the Royal Swedish Academies of Sciences and of Engineering addressed some of these issues. Attended by scientists, policy-makers and industry representatives, the workshop looked at how academia interacts with the private sector and how partnerships could be built to encourage collaboration on global sustainability issues and to the benefit of society. While acknowledging that these relationships differ according to disciplines and geographic regions, a consensus emerged on the need for an open and continuing dialogue between academia and industry. Mutual appreciation and respect for differences regarding purposes, interests and standards were seen as central to these partnerships, as were early clarification and settlement of goals and positions around issues of confidentiality. Participants also stressed the need for open sourcing of data and information and the open publication of results.



## **Communicating science**

A number of issues relating to the communication of scientific results were discussed in the international forum “Science communication: responsibilities of the scientific community and the media” held in Bogotá, Colombia in 2010. Organized by the National University of Colombia, with the support of the Colombian Academy of Exact, Physical and Natural Sciences (ACCEFYN), the Department of Science, Technology and Innovation Columbia (Colciencias), CFRS and SciDev.net, the conference was attended by some 500 participants, mostly journalists, scientists and students. The discussion, reflected in a CFRS advisory document based on this meeting, emphasized the responsibilities of scientists to communicate their findings accurately, to cultivate an awareness of their potential impact on science and society, and to be aware of the status of scientific evidence, uncertainty and limits of their own personal expertise. Additionally, scientists were encouraged to engage in debate and discussion to foster communication, for example with the media, to ensure that scientific views are reported correctly.

## **ACCESS TO AND SHARING OF DATA AND OTHER RESEARCH MATERIAL**

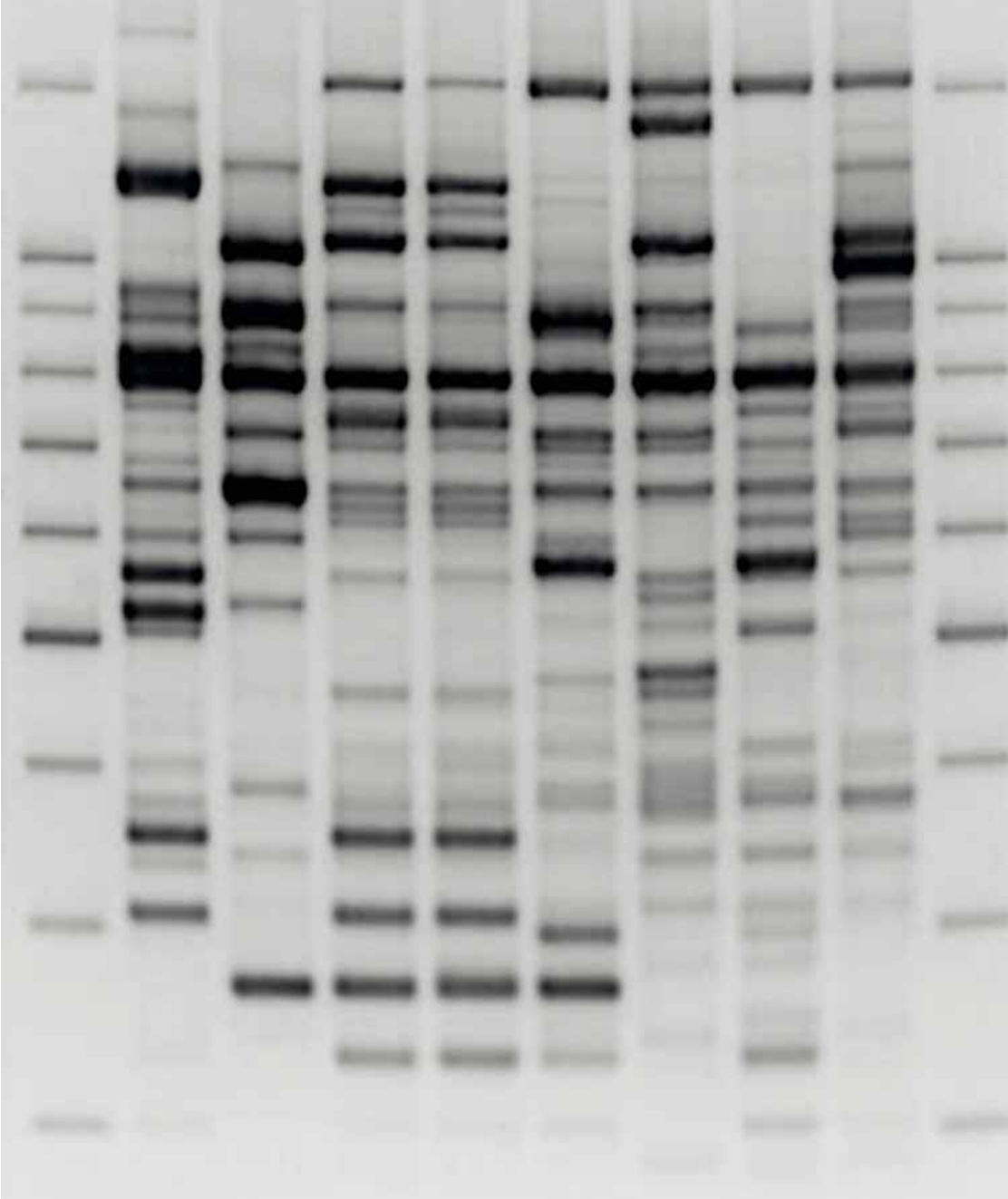
### **Access in developing countries**

Scientific research is increasingly dependent on access to diverse sources of data. Using these resources requires policy, infrastructure and procedures. Although many OECD countries and some emerging economies have implemented national policies and programmes for public data management and access, this is by no means universal. Digital networks can provide a near-universal infrastructure for sharing much of this factual information on a timely, comprehensive and low-

cost basis. However, use of these networks requires addressing various specific barriers to the unhindered access to and sharing of data collected by governments or researchers using public funding, and the universal development of data centres or digital repositories to which researchers can submit their data for use by others. The international symposium “The case for international sharing of scientific data: a focus on developing countries” addressed these and related issues to improve the access to and use of publicly-funded scientific data so that there could be much greater value and benefits to research and society, particularly for economic and social development. The symposium was organised by the US National Academy of Sciences in consultation with CFRS and took place in Washington, DC in 2011.

### **Sharing genetic research material**

The rights and responsibilities of scientists involved in access to genetic resources and sharing the benefits from their utilization were the focus of an international workshop hosted by the Swiss Academy of Sciences in 2011 in Berne, Switzerland, and organized in consultation with CFRS and the ICSU Regional Offices. The workshop dealt with the roles of individual scientists, the global scientific community, research funding organizations, national governments as well as national and international scientific organizations. A particular focus was the regulations in the Nagoya Protocol on Access and Benefit Sharing (ABS) that is part of the 1992 Convention on Biological Diversity (CBD). The discussions revealed the need to find a balance between the right of scientists to access genetic resources and their responsibility to enhance global equity by sharing the resulting benefits. Recommendations were made with regard to creating mutual trust, developing fair and effective regulatory measures, raising awareness and building



capacity. A joint follow-up project involving the ICSU Regional Office for Latin America and the Caribbean, DIVERSITAS, the Swiss Academy of Sciences and the International Union of Biological Sciences (IUBS) was designed to help implement the ABS System in Latin America and the Caribbean by engaging researchers and policy makers.

## CONCLUDING COMMENTS

Over the past 75 years, the ICSU Principle of Universality of Science has developed from a declaration of the rights of scientists to conduct their work freely – in communication and association with colleagues internationally – to the understanding that such rights and even privileges go hand-in-hand with the acceptance of certain responsibilities by the scientific community relative to society. In parallel, discussion of the relationship between science and society has changed in many ways, particularly in response to increasing recognition of the socio-economic benefits as well as risks and dangers associated with scientific progress and the potential for misuse.

In recent years, there has been recognition that, given the major challenges humankind is facing, science must be a vital element of national, regional and international progress towards sustainable development. Upholding the Universality of Science by promoting the free and responsible conduct of science and by fostering on-going discussion of the roles and relations between science and society is vital for the future of science and humanity as a whole.

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