



Comité Nacional de Ética
en la Ciencia y la Tecnología

Proposals for a socially responsible science and technology



Ministerio de
Ciencia, Tecnología
e Innovación Productiva
Presidencia de la Nación



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The implementation of the consultation to researchers received support from the National Council for Scientific and Technical Research (CONICET) and the National Directorate of International Relations, Ministry of Science, Technology and Productive Innovation (MinCyT). The design and information support was in charge of the Directorate for Systems Management, Under Secretariat of Administrative Coordination, MinCyT, group led by B.Sc. Silvia Tejero. The processing of the results was developed by the Coordination of Information Analysis and Program Evaluation, National Directorate of Programs and Projects, Under Secretariat Institutional Evaluation, Secretariat for Scientific and Technological Coordination, MinCyT, group led by B.Sc. Maria Guillermina D'Onofrio.

Foreword

The National Committee of Ethics in Science and Technology (CECTE) of the Ministry of Science, Technology and Productive Innovation (MinCyT) in compliance with a United Nations Organization mandate, based on the studies and recommendations that were elaborated between 2001 and 2012 and on the critical review of an extensive series of national and international regulations and codes, introduces the *Proposals for a socially responsible science and technology*.

This set of principles and statements on the social responsibility of researchers and public institutions and agencies of the national system of science, technology and innovation observes international declarations and conventions on ethics in science and does not substitute the codes of conduct of professions or specific research areas.

In developing this initiative the opinions, comments and proposals for alternative texts of four hundred Argentine researchers either active in national public institutions or members of the RAICES Programme working abroad were taken into account through a consultation posted on the website of the MinCyT from June 17th to August 18th, 2011. During 2012 and 2013, the results of the consultation were considered in two cycles of CECTE plenary meetings dedicated to the discussion and final version of the text.

The proposals incorporate both general principles of conduct in society as well as principles that constitute the very foundation of responsible research, adopting specific expressions in the actions of researchers from different disciplines in the exact, natural and social sciences and humanities, and in institutions where scientific work is promoted and performed.

The implementation of these principles, the strengthening of practices and methods that validate and legitimize research results, as well as an open and grounded debate on their possible contributions and consequences, are key elements in the development of a socially responsible science and technology.

The effectiveness that a guideline based on these propositions may attain depends both on the voluntary and explicit commitment of each member of the scientific community, and on the decision, continuity and transparency of institutional policies fostering an environment conducive to integrity in research practices, controlling their implementation and building up a culture of ethics in the training of young researchers.

The implementation of the *Proposals for a socially responsible science and technology* could be a conceptual starting point for an open and constructive discussion among researchers, institutions and other social sectors that may lead to the enhancement and reinforcement of the role of research and the trust of society on its contributions.

Socially responsible research should take into account the following guiding principles:

- I. *respect for human rights,***
- II. *consolidation of democratic values and practices,***
- III. *contribution to peace and justice, with special attention to the most vulnerable sectors,***
- IV. *care of the environment, biodiversity and the biosphere as a whole,***
- V. *open access to knowledge and information,***
- VI. *equity in the access to the benefits of knowledge,***
- VII. *freedom of research and the development of critical thinking skills and innovative creativity.***

In compliance with these principles researchers undertake the following commitments:

1. To conduct research with honesty and intellectual rigor; to apply the highest standards in every disciplinary field and in multidisciplinary and multi-centred projects.
2. To reject all forms of scientific fraud such as *fabrication*, i.e. the record or report of forged data or results; *falsification*, namely the manipulation of materials, equipment or processes, selective presentation, modification, change or omission of data, images or research results; and *plagiarism*, or the appropriation, without giving due credit, of ideas, processes, results or expressions of another person, including those which were accessed in the evaluation of a research project or of an unpublished work.
3. To encourage respect, non-discrimination, solidarity, cooperation and acceptance of differences, both in the scientific community in general as well as within workgroups involving students, collaborators and colleagues.
4. To develop, as a regular practice in working groups and in the training of new researchers, the skills for critical and reflective thinking about the different aspects of the research endeavour.
5. To establish the rights, duties, commitment and allocation of authorship of the members of the research team, clarifying the different responsibilities of the authors of each project and publication, without excluding or including any of them undeservedly.
6. To keep records of research data so that they may be accessible for verification.

7. To account for the origin and application of research resources, and manage them transparently.
8. To promote and act in accordance with regulations on safety and environmental care in research areas.
9. To protect the privacy and confidentiality of information related to natural or juridical persons subjected to research.
10. To comply with the requirements and obligations set forth under international and national conventions on research involving human subjects. To pay particular attention to issues involving vulnerable sectors. To meet appropriately the requirement of free and informed consent, ensuring that it is requested in a manner that is understandable to all the involved parties.
11. To account for the need of using animals in research. To comply with the requirements and obligations prescribed under national and international conventions and declarations, and to stand for the principles of reduction of the number of animals used, refinement of procedures involved and search for possible replacements so as to find additional ways to minimise animal suffering.
12. To contribute to the advance of knowledge, the improvement of the quality of social life and to the expansion of the rights of the people, paying special attention to their problems, conflicts and needs.
13. To facilitate and promote open access to public domain knowledge both within the scientific community and in other sectors of society.
14. To consider and make explicit the incidence of ideological tendencies and sectoral, institutional or corporate interests in research activities, taking into account that they may bias the development, findings and dissemination of results.
15. To be aware of how to recognize and avoid potential conflicts of interest at all levels of research and evaluation, and to report them if they arise.
16. To communicate and disseminate scientific results with accuracy, clarity and responsibility, by making explicit their range of validity, specific risks or significant uncertainties of their potential applications, and avoiding in all cases the creation of unfounded expectations or fears. It is advisable not to disseminate research results through mass media before they have been subjected to a peer-review process.
17. To provide information relevant to the application of the precautionary principle once the available scientific knowledge would reasonably suggest that the use of a technology or the development of certain field of research might have morally unacceptable consequences for present or future generations, i.e. that it could

produce potentially significant and irreversible damages, whose causes, magnitude, probability or nature would be uncertain.

18. To recognize and regard different cultures and traditions as well as local or other knowledge, and articulate them with scientific knowledge in those areas of research that may be pertinent.

Institutions assume the following obligations to accomplish the mentioned principles:

19. To build up the material, regulatory and cultural conditions that promote the fulfilment of the research requirements of each disciplinary area and the good quality at all levels of production, transmission, dissemination and application of the knowledge generated in its background.
20. To create the adequate conditions to promote and keep good scientific practices, to resolve potential ethical conflicts and to deal with allegations of misconduct in research and in training of researchers, ensuring the protection of the rights of the involved participants.
21. To establish mechanisms to identify, prevent and eventually solve real or apparent, either potential or actual, conflicts of interest.
22. To establish transparent and effective administrative, economic and staff management practices.
23. To uphold transparency, accountability and fairness in the evaluation processes and in the award and management of research funds.
24. To implement policies promoting a culture of respect, inclusion, non-discrimination, solidarity and cooperation in research.
25. To create a favourable environment for the development of critical, reflective and interdisciplinary thinking, especially with respect to researchers' training.
26. To observe, enforce compliance and disseminate national and international regulations on safety and environmental care in research workplaces.
27. To promote open communication and active discussion of research findings with all relevant stakeholders, avoiding building up unproven expectations or fears.
28. To promote broad access to scientific knowledge for the benefit and use of society.
29. To protect inventions or discoveries of regional or national interest while promoting their development, production and local accessibility.



30. To promote good practices in technology transfer and intellectual property management.
31. To take into account the moral integrity of those who are appointed to or distinguished in any area of science and technology, upholding that academic merit does not compensate for ethical breakdowns or any active collaboration with institutional policies responsible for human rights violations.

For the preparation of the *Proposals for a socially responsible science and technology* the following background was taken into account:

The *Universal Declaration of Human Rights* (1948), and the *Convention on Biological Diversity* (1992), both issued by the United Nations Organisation.

The *Recommendation on the Status of Scientific Researchers* (1974), *Declaration on the Responsibilities of the Present Generations Towards Future Generations* (1997), *Universal Declaration on the Human Genome and Human Rights* (1997), *Universal Declaration on Cultural Diversity* (2001), *International Declaration on Human Genetic Data* (2003), *Decisions adopted by the Executive Board at its 169th session* (2004), *Resolution of the General Conference at its 33rd session* (2005), *Universal Declaration on Bioethics and Human Rights* (2005), all of them issued by the UNESCO, and the *Report of the Expert Group on the Precautionary Principle* (COMEST-UNESCO 2005).

The *Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data* (Council of Europe 1981), *C169 Indigenous and Tribal Peoples Convention in Independent Countries* (ILO 1989), *Agreement on Trade Related Aspects of Intellectual Property Rights* (WTO 1994), *Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine* (Council of Europe 1997), *Declaration on the TRIPS agreement and public health* (WTO 2001), *International Ethical Guidelines for Biomedical Research Involving Human Subjects* (CIOMS-WHO 2002), *Report of the Workshop on Best Practices for Ensuring Scientific Integrity and Preventing Misconduct* (OECD-GSF 2007), the *Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects* (WMA 2008), the *Standards and Operational Guidance for Ethics Review of Health-Related Research with Human Participants* (WHO 2011) and the *International guiding principles for biomedical research involving animals* (CIOMS-ICLA 2012).

The *Declaration on Science and the use of Scientific Knowledge* (Budapest 1999), *Declaration on Open Access to Knowledge in Sciences and Humanities* (Berlin 2003), the *Singapore Statement on Research Integrity* (Singapore 2010) and the *Declaration of the Budapest World Science Forum 2011 on a new era of global science* (Budapest 2011).

CECTE documents *Confidentiality of genetic data* (2002), *Integrity in scientific community relations* (2002), *Analysis and recommendations for an ethics in research practice* (2005), *Work Programme Brazil - Argentina on Ethics in Science and Technology* (2006), *Ethics in the access to knowledge of public domain* (2008), *Conflict of interest in small scientific communities* (2007), *Annotations for an ethics in science and technology # 2, The Precautionary Principle* (2010).

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the Committee on Academic Responsibility (Massachusetts Institute of Technology, United States 1992), *On being a scientist. Responsible conduct on Research* (US National Academy of Sciences, US National Academy of Engineering, US Institute of Medicine 1995), *Code of Ethics* (American Sociological Association 1999), *Federal Research Misconduct Policy*, (US Office of Science and Technology Policy 2000), the *Code of Ethics* (Argentine Physics Association 2002), *Guidelines for Professional Conduct* (American Physical Society 2002), *Integrity in Scientific Research: Creating an Environment that promotes Responsible Conduct* (US Board on Health Sciences Policy, US Institute of Medicine 2002), *Code of Ethics* (American Association of Physical Anthropologists 2003), *Good scientific practice and procedures for handling misconduct and fraud in science* (National Advisory Board on Research Ethics, Finland 2004), *Meta-Code of Ethics* (European Federation of Psychologists Associations 2005), *The Ethics of Research Involving Animals* (The Nuffield Council, United Kingdom 2005), *Reference Ethics Framework for Biomedical Research* (CONICET 2005), *Ethics Principles for Scientific and Technological Researchers* (CONICET 2006), *Guidelines for ethical conduct in Social Sciences and Humanities* (CONICET 2006), *Rigour, Respect and Responsibility. A Universal Ethical Code for Scientists* (UK Government Office for Science 2007), *Guide for the Care and Use of Laboratory Animals* (US National Research Council 2008), *Guidelines for research ethics in science and technology* (National Committee for Research Ethics in Science and Technology, Norway 2008), *Freedom, Responsibility and Universality of Science* (International Council for Science 2008), *Rules of Good Scientific Practice* (Max-Planck Gesellschaft, Germany 2009), *Code of Professional Standards and Ethics in Science, Technology, and the Humanities* (The Royal Society of New Zealand 2012), *Ethical Guidelines for Observational Studies* (National Ethics Advisory Committee, New Zealand 2012).

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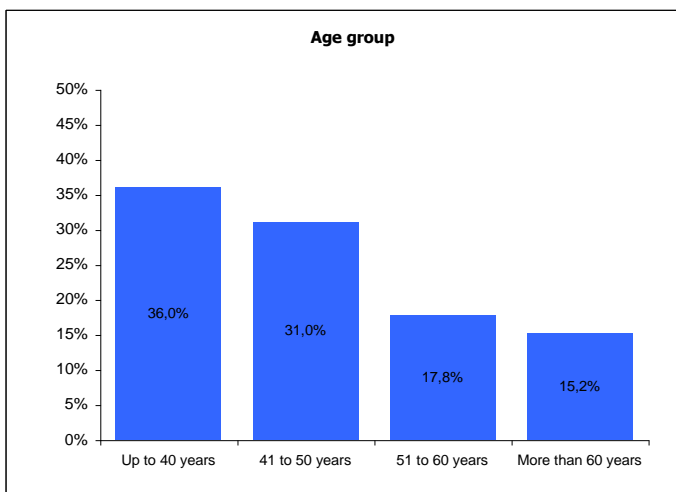
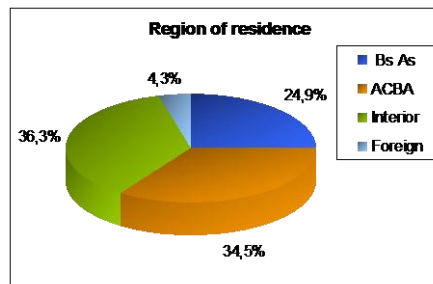
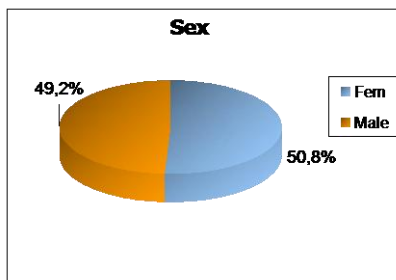
Consultation with researchers

Description of the universe of researchers that participated in the consultation¹:

The answers were distributed almost equally among female and male researchers (200 and 194), with a clear predominance of younger researchers.

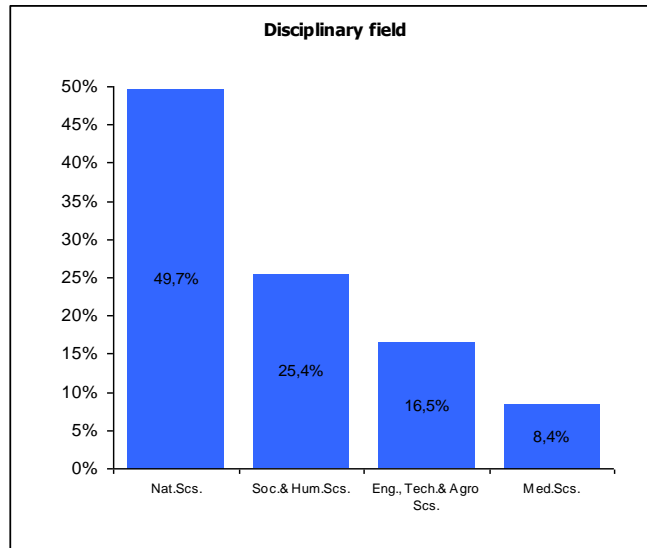
The geographical distribution of the responses was concentrated in the traditional areas (Buenos Aires Metropolitan Area) with a significant impact throughout the country.

376 researchers residing in the country participated as well as 18 living abroad. Out of the residents in the country, 136 correspond to the Autonomous City of Buenos Aires, 98 to the Province of Buenos Aires and 142 to the following provinces: Córdoba (34), Santa Fe (31), Río Negro (18), Tucumán (13), Mendoza (9), San Luis (8), Chubut (6), Salta (5), Misiones, Neuquén and San Juan (3 each), Chaco, Corrientes and La Pampa (2 each), Jujuy, Santa Cruz and Tierra del Fuego (1 each). As regards the researchers residing abroad, responses were received from Spain (7), Germany (3), Canada and USA (2 each), and Brazil, Colombia, Mexico and the United Kingdom (1 each).

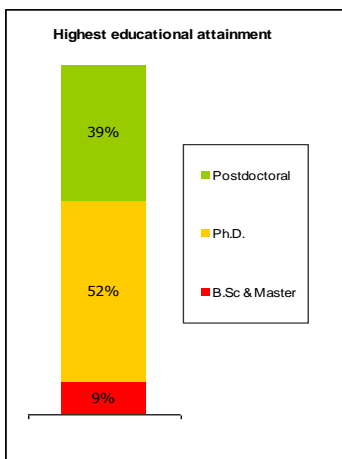


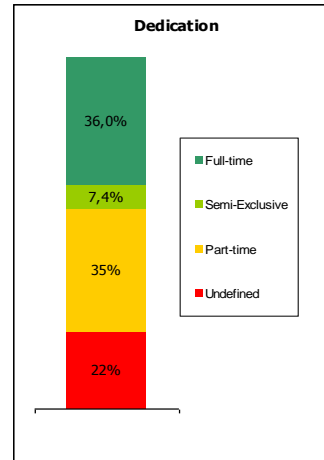
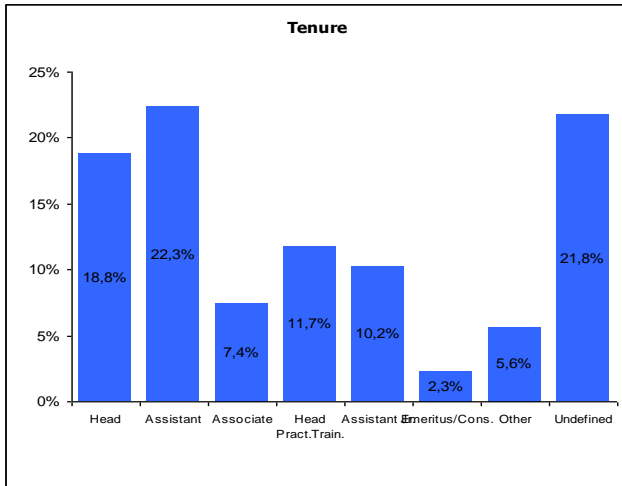
¹ Based on data corresponding to 394 researchers.

The researchers that participated in the study were asked to inform the field of the discipline to which they belong, based on the categorization of the National Agency for the Promotion of Science and Technology (ANPCyT), yielding the following distribution: Biological Sciences of Organisms and Systems (67 responses), Biological Sciences of Cells and Molecules (44 responses), Physics, Mathematics and Astronomy (41 responses), Chemical Sciences (18 responses), Hydroatmospheric and Earth Sciences (26), Social Sciences (62 responses), Human Sciences (33 responses), Economics and Law (5 answers), Medical Sciences (33 responses), Information Communications and Electronic Technology (14 responses), Energy Mining, Mechanical and Materials Technology (12 responses), Food Technology (11 responses), Chemical Technology (6 responses), Environmental Technology (5 responses), Livestock and Fisheries Technology (4 responses), Agricultural and Forestry Technology (3 responses), Other Technologies (10 responses). When processed, the responses were aggregated according to the categories of the *Proposed Standard Practice for Surveys on Research and Experimental Development (Frascati Manual)* of the Organization for Economic Cooperation and Development (OECD).

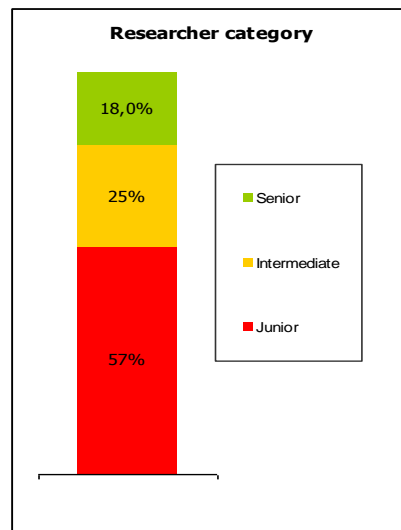
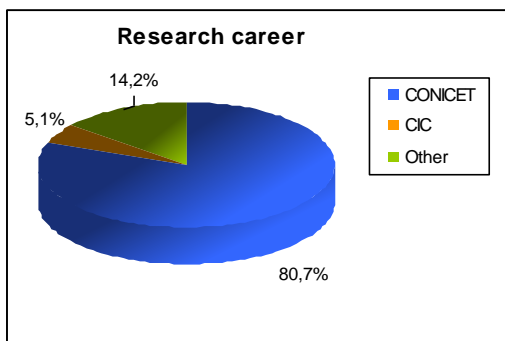


Most participants have completed doctoral researchers and a significant number reached postdoctoral levels.





CONICET researchers from the categories "Assistant" and "Deputy Associate" were grouped under the label "Junior". Researchers from the category "Independent" were labelled as "Intermediate". Researchers from the categories "Principal" and "Superior" were grouped as "Senior". Researchers from other institutions were grouped under the categories of "Junior", "Intermediate" or "Senior" by positive correlation with age, teaching position and highest educational level attained.





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en la Ciencia y la Tecnología

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