

GUIDE ON RESEARCH INTEGRITY AND GOOD SCIENTIFIC PRACTICES

Centre for Research in Agricultural Genomics CSIC-IRTA-UAB-UB

1st edition
December 2014



crag CENTRE FOR RESEARCH
IN AGRICULTURAL GENOMICS
CSIC IRTA UAB 

Foreword

The Centre for Research in Agricultural Genomics (CRAG) CSICb IRTAb UABb UB fully adheres to the Code of Good Scientific Practices of the Consejo Superior de Investigaciones Científicas (CSIC). The aim of the Code and of this Guide is to create an environment conducive to highb quality research and prevent problems from arising in relation to the integrity of scientists in their work. The CSIC Code (edition of 2011) is provided in the first section of this document. In addition, to facilitate implementation of the Code in all of the scientific activities at CRAG, this Guide provides a summary list of norms and recommendations specific to the Centre (Section 2). This summary list is, in its formulation, based on the Code of Good Scientific Practice from the centres of the Barcelona Biomedical Research Park (PRBB) (Fourth and Fifth Editions, 2009 and 2014). This Guide has been reviewed and supervised by the Internal Scientific Committee of CRAG.

This Guide also describes the figure of the Ombudsperson at CRAG (section 2.7), which was approved by the Board of Trustees, in the terms described in this Guide, in the Board meeting of Dec 12, 2014.

December 2014

CONTENTS

Section 1 - CODE OF GOOD SCIENTIFIC PRACTICES OF CSIC

Preamble

1. Principles of research work

- 1.1 Exercising methodological doubt. Checking hypotheses
- 1.2 Designing good experiments
- 1.3 Managing data and resources
- 1.4 Proper use of funding
- 1.5 Misconduct in research activity

2. The researcher as a science professional

- 2.1 Leadership and cooperation in the research team.
- 2.2 Training and testing
- 2.3 Evaluation and appraisal.
- 2.4 Disclosure
- 2.5 Curriculum vitae
- 2.6 Collaboration with public and private entities. Contracted research. Conflict of interest.
- 2.7 Data protection management. Intellectual property, industrial property, Know-How.

3. Scientific publications. Oral and written communication

- 3.1 Publication of results.
- 3.2 Authorship of publications
- 3.3 Previous authors recognition.
- 3.4 Peer review of scientific publications

4. Institutional framework

- 4.1 Information on research conditions
- 4.2 Evaluation criteria and promotion of personnel and units
- 4.3 Non-discriminatory conditions

Section 2 - INTERNAL NORMS AND RECOMMENDATIONS TO IMPLEMENT THE CODE AT CRAG

1. Leadership of a research team and supervision of researchers in training

2. Preparation of research projects

3. Recording, documentation, storage, custody, and sharing of data and biological or chemical materials arising from research

4. Research projects funded by the agbio industry or other commercial or private enterprises

5. Publication and communication practices

6. Main legal requirements affecting scientific activities

7. The Ombudsperson

8. Dissemination and implementation

9. Reference Materials

Section 1 - Code of Good Scientific Practices of CSIC

PREAMBLE

It would be difficult to imagine the actual world without the current levels that have been achieved in science and technology, as our life is now highly dependent on technological products. All scientific areas, both the natural and social sciences have contributed greatly to the advancement of knowledge and to improve the quality of life. However, we should not forget that science, as any other activity, must be based on sound ethical principles. These principles inspire the following Code of Good Scientific Practices, designed to provide an ethical basis for all scientific activity of CSIC.

The first of these principles is to consider freedom and autonomy of research. Science will be always under a particular human interest and always serve the welfare of mankind; the scientist and the science policy administrators are obliged to morally justify aims and priorities.

The second principle is respect to human dignity, particularly when human beings are the targets of the research. Whenever their health and rights are involved, it will be necessary to have a voluntary informed consent, with clear information about the risk and possible consequences of a wrong use of science.

The third one is the acceptance of responsibilities towards society, during scientific activity. Furthermore, the scientist is also responsible of his/her actions in relation to any living organism and the environment, avoiding any unnecessary damage and being aware of the integrity and correct function of our Earth System. This generation is responsible to the next ones, about the situation of the world, taking especially care to promote ethics, and allow that what derives from scientific research will contribute to improve life conditions in the near future.

The fourth principle is that research against human health or dignity including racism, holocaust denial or terrorism apology should not be supported, either in natural science or humanities. Although scientists or their institutions will not be directly responsible of the use that could be made of the knowledge they generate, they should reject to participate in projects and in the spreading of information to be used with awkward ends.

The fifth is that research must be transparent. The scientist should always be ready to answer about his/her work, understanding the

importance of peer review research evaluation and the social impact of his/her scientific activity.

All mentioned above indicates that scientific activity will be necessarily submitted to good practices. The scientists are obliged to adapt their activities to ethical principles. Good practices should involve procedures and results. The actual scientific development requires scientific teams, human and material resources, infrastructures and project management and programs with specific duties and responsibilities for each scientist. The honesty of the scientist, his/her vocation or own inventiveness is not enough to achieve good practices. Always observing the value of liberty and individual creativity, the full acceptance of good practice rules must be unequivocally explicit in the institution research contracts where they develop their research and with society that supports them.

The goal of CSIC is the acquisition of knowledge and the social welfare derived. Therefore, all its activities, rules and internal function of the Institution, should be focused, at all levels, to enhance scientific development. This mission should be done following the legality and the criteria of this good practices manual as defined in this Code, which should be updated or corrected, according to the experience developed from its application or to any new circumstance.

In this context, the CSIC Presidency, commissioned the Ethics Committee to design this Code of Good Scientific Practices, bringing together a set of rules, principles, compromises, declarations and/or recommendations applicable to any research kind. This Code calls for basic moral principles, helping its development and achievement. The Good Practices Code should be the instrument to generate and guarantee the integrity and ethical quality of scientific research developed in the CSIC.

INDEX

1. Principles of research work	39
1.1. Exercising methodical doubt. Checking hypotheses	39
1.2. Designing good experiments.	39
1.3. Managing data and resources	39
1.4. Proper use of funding	40
1.5. Misconduct in research activity	40
2. The researcher as a science professional	41
2.1. Leadership and cooperation in the research team.	41
2.2. Training and testing	41
2.3. Evaluation and appraisal.	42
2.4. Disclosure	43
2.5. <i>Curriculum vitae</i>	43
2.6. Collaboration with public and private entities. Contracted research. Conflict of interest	43
2.7. Data protection management. Intellectual property, industrial property, Know-How.	44
3. Scientific publications. Oral and written communication	44
3.1. Publication of results.	45
3.2. Authorship of publications	45
3.3. Previous authors recognition.	46
3.4. <i>Peer review</i> of scientific publications	46
4. Institutional Framework	47
4.1. Information on research conditions	47
4.2. Evaluation criteria and promotion of personnel and units	47
4.3. Non-discriminatory conditions	48
Annex I: Legal texts	49
A. Research with human beings	49
B. Animal research	49
C. Workers' protection	50
D. Environment protection	50
E. Personal Data protection	51
F. Other legal texts	51

1. PRINCIPLES OF RESEARCH WORK

1.1. Exercising methodical doubt. Checking hypotheses

The basis of scientific knowledge is the capacity for wonderment or questioning about the reasons for facts or situations hitherto unsolved or not investigated. Science aims to attain objective knowledge we can assume to be true. To achieve this we follow a two-step process of reflection: methodical doubt and justification of an explanatory hypothesis. Methodical doubt implies independent opinion and not accepting any idea, from the scientific point of view, as absolute or definitive. This questioning attitude, which is the starting point of all scientific endeavour, must always stay with the investigator, because if the human capacity for wonder is endless, so is also the extent of possible knowledge, and so our certainty at any moment can only be provisional.

Likewise to justify a hypothesis we need tests or arguments to validate it and the researcher must always assume the mentioned attitude.

1.2. Designing good experiments

Observation and experimentation in the laboratory or in the natural environment must provide us with the right answers to scientific questions. Therefore, research must be performed following well-designed protocols that can be examined and understood by any expert researcher on a given field. Experiments and observations must be carefully designed in order to make the best use of the available resources and taking into account specific rules. More care and attention is needed when the object of research are human beings or their personal data, laboratory animals, or when human safety or the environment are at risk.

1.3. Managing data and resources

Experimental data and observations, and the materials used, are the basis of results and scientific research publications. So in case of doubt, others should be able to repeat and understand our experiments. The experimental

protocols and the original data must be kept by the researcher, the research team and the institution for at least five years.

The data remains the property of the Institution in which the scientific work has been carried out, so its source should be clearly cited.

In order to allow any expert in a certain field to understand and reproduce an experiment, the Institution must provide researchers and trainees with suitable equipment to store the information.

1.4. Proper use of funding

The material and economic resources must be used effectively and efficiently, and carefully managed. This is especially important because economic and material resources are limited.

Consequently, the Institution's personnel must use resources responsibly, efficiently and economically, follow health and safety procedures and respect the environment. Government assets must always be managed in an austere way.

1.5. Misconduct in research activity

Science as the search for knowledge is by its very principles the enemy of fraud. Nevertheless, researchers may be tempted to stray from this in seeking undeserved credit, or financial gain either personally or for the Institution.

This sort of deviation is the biggest threat to good scientific practices and if it happens, the researcher is held accountable for it. Misconduct includes:

- Exaggerated interpretation of data.
- Falsification of data or tests to fit a hypothesis.
- Fabrication of data and discoveries.
- Plagiarism of the work of others.

Effective mechanisms for fighting this include:

- Requiring the researcher to submit any new contribution to peer review so other colleagues can check results.

- Disapproval and fight against fraud by the scientific community.
- Coordination among all stakeholders involved in scientific research to ensure the effectiveness of the fight against fraud.

2. THE RESEARCHER AS A SCIENCE PROFESSIONAL

2.1. Leadership and cooperation in the research team

The complexity of current scientific research requires working in teams and the use of shared methodologies, human resources and infrastructures such as projects or research programs.

The researcher who intends to lead a team must assume the responsibilities of leadership. These responsibilities and the composition of the research team should remain clearly established in the financial documents and be fulfilled by every member of the team.

The scientific work of other teams must not be hindered. The scientist must accept the critique, queries and comments of other colleagues.

2.2. Training and testing

Every researcher must take responsibility of educating and training other researchers.

- Obligations of directors and tutors include:
 - Providing trainees with resources and a proper scientific environment. Be aware of their needs and avoid undue pressure.
 - Providing information about safety and accident prevention rules that must be followed.
 - Encouraging them to observe the Code of Good Scientific Practices and to maintain a critical mind.
 - Ensuring that his/her own work is an example to be followed by the trainee.

- Being an expert in his field in order to educate and train others.
 - To introduce the trainee to forums and scientific meetings, provide advice about the future.
 - To recognize the trainee's work and to be rigorous and fair in authoring publications.
- Trainee's obligations include:
- Compromise to work on the assigned research project.
 - Follow the tutor's advice and recommendations, and to inform him/her about initiatives and relevant new results. Any difficulties encountered when carrying out the work must be reported promptly.
 - Be aware of the observance of the safety rules and procedures, and the fulfillment of the Code of Good Scientific Practices.
 - Take part in scientific activities, forums, seminars, etc., relevant to his/her work.
 - Give credit for the tutor's contribution in oral or written publication of results.
 - Respect and value the work of management, and make good and careful use of materials and facilities.

2.3. Evaluation and appraisal

- Researchers are often called on to take part in evaluation of projects, publications and groups. In these activities it is important to consider:
- The evaluation must be declined when there is a conflict of interest between the expert and the subject of the evaluation.
 - The evaluation shall be confidential and not be used for any purpose other than the evaluation itself. Internal deliberations of a given committee shall also be treated as confidential.
 - Information made available to committees shall not be disclosed or shared without previous and express written authorization of the owner.

- Acceptance of the appraisal must be made known to the institution and regulated by a formal agreement. This ensures that the researcher has the required knowledge and experience and avoids conflicts of interest.

2.4. Disclosure

A free society is one that has a high level of knowledge and a critical mind for making decisions, therefore the scientists have to:

- Disclose and communicate to society the results of their research, in order to contribute to the advancement of culture, the spread of knowledge, and to account for the resources involved.
- Make an effort to provide the public in general with the proper level of the knowledge and to avoid the premature disclosure of unconfirmed results to the media.

Criteria of truthfulness and scientific proof shall always be required.

2.5. *Curriculum vitae*

A *curriculum vitae* is a record of research work but must never be the aim of the researcher's endeavors.

It must document certain personal information about education and professional experience. Accuracy and clarity are essential.

The content of the *curriculum vitae* is the responsibility of the researcher.

All pages should be signed.

2.6. Collaboration with public and private entities. Contracted research. Conflict of interest

The public researcher should be willing to answer any factual questions posed to the Institution by either public or private entities.

Any collaboration with the different public or private entities which require written agreement shall be supervised and signed by the Institution's legal

representative, so that all terms and conditions ruling the interests of the parties can be clearly stated. Furthermore, all adopted agreements entered into by the entity soliciting the work and the representatives in charge of the execution of the research shall be included in the abovementioned agreements.

Conflicts of interest must always be avoided whilst negotiating the agreements and/or during the publication and exploitation of the work done in collaboration with private entities.

2.7. Data protection management. Intellectual property, industrial property, Know-How

The Institution must foster and promote the suitable management of its results establishing guidelines for the correct implementation of intellectual and industrial property policies to allow its effective valuation, protection, appraisal and commercialization. Likewise, measures should be taken to increase the awareness and training of the researchers on intellectual and industrial property and its exploitation.

R&D projects developed either in collaboration or under contract, should safeguard all previous knowledge, information and know-how property of the Institution. Researchers will sign the contractual documents in which the different interests, tasks and contributions will be adequately defined. Furthermore, undisclosed and confidentiality obligations, the property in the results achieved during the course of the project, the likelihood of their legal protection and the conditions under which they can be exploited shall be stipulated.

If the results obtained are liable to legal protection due to commercial interest, these must remain undisclosed during their valuation process. Nonetheless delay in disclosure shall be maintained at the bare minimum.

3. SCIENTIFIC PUBLICATIONS. ORAL AND WRITTEN COMMUNICATION

Publication of all results obtained with the aid of public funds is a fundamental activity of any research work since it is the only way to submit the findings to the international scientific community for review.

3.1. Publication of results

- Researchers shall always make an effort to publish their results and their possible interpretations in an open, honest, transparent and exact manner. This includes the publication of those results not in line with the given hypothesis.
- Publications of fragments of the work or part of the work separately is only acceptable if the publisher so requires or by reason of extensions.
- Researchers shall not unduly withhold the publications of any finding from projects financed with public aid unless this can be justified by commercial arrangements or by the nature of its legal protection.
- Research results obtained under an agreement shall be published in accordance with the terms contained therein.
- Verbal communications of results shall follow the same rules as for publications, avoiding in each case to overstate the importance and practical applications of the results.
- In case an error is detected in a publication, it must be revealed in publications of the same standard and if serious, the publication must be withdrawn.
- The “open access” would take the same criteria than other kind of publications, but always in accordance with institutional policy. In this regard, in 2006, the CSIC joined the Berlin Declaration for the “open access” to knowledge (Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities), which favours and promotes the open access to scientific and academic output.

3.2. Authorship of publications

- In order to be credited as author of a publication the researcher in question needs to either (i) have participated in the proposal and work design, and/or (ii) have carried out the experimental part, and/or (iii) analyzed and interpreted the results and its debate on whether it is state of the art.

- All researchers who have participated significantly in the research work must appear as authors of the publication.
- All authors of a publication, unless otherwise specified, must know the text and be responsible for its content.
- The order of the mentioned authors shall be decided in accordance with the guidelines normally accepted in their field of work and must be known to all of them.
- The work and contribution of collaborators and technical staff contributions must be properly acknowledged.
- Besides the authors, the institutions or centers in which the research has been executed or those they belong to, must be mentioned. Grants, financial support or sponsorships must also be declared and thanked, except when declined.
- Likewise, any conflict of interests must be known.

3.3. Previous authors recognition

- The authors must mention and make reference in their publications to all the previous literature connected with such publications.
- Previous publications which are not essential for the research shall not be included.

3.4. *Peer review* of scientific publications

Peer review is a method used to validate written research in order to evaluate its quality and scientific rigor. This method opens the work to scrutiny, annotation or edition by other authors with similar knowledge to that of the researcher. Currently, scientific publications are only accepted for publication in scientific journals, after *peer review*.

- The scientist, as reviewer or publisher, must avoid any kind of conflict of interest (personnel, academic, commercial, etc.). Likewise, evaluations, reasonings and opinions must be clear and accurate, and subject to enough discussion in order to be impartial.

- The evaluation process must remain strictly confidential. Reviewers and publishers must not use the information which they might have accessed without previous, specific and express authorization by the author.

4. INSTITUTIONAL FRAMEWORK

4.1. Information on research conditions

- Institutions must stimulate scientific collaboration and the quality of the research. Likewise it must recommend models for the organization of research and encourage the relationships between the economic and social agents, and in particular offer its advise and experience in those research activities.
- The Institution must guarantee that all researchers have access to the Code of Good Scientific Practices of CSIC as well as to the updated legislation applicable to the different fields of science. Documents gathered in a specific document ("ad hoc") will be edited at CSIC´s web. In addition, the Institution will endeavour to make researchers aware of good research practice by means of giving adequate information through specific courses, leaflets and others. To this end and by virtue of what is stipulated in the statute, the Presidency set up an Ethics Committee.
- Researchers must make compatible the intellectual freedom with the engagement and loyalty to the Institution that provides them with the framework to develop their research efficiently. Researchers must get involved with the CSIC and know well all the activities that the Institution carries out as well as its role of service to society.

4.2. Evaluation criteria and promotion of personnel and units

- The Institution must establish clear evaluation and personnel promotion procedures, set clearly-defined criteria, and make them known in advance.

- The mentioned criteria shall be objective, clear, impartial and lasting and reflect the quality of the performed work.
- In order for any evaluation to be fair, it has to be objective. The evaluators shall make an effort to know well every candidate's capacity and interpret properly each and every document they submit. If the evaluation process includes a personal interview, this one must be stated in writing.
- Evaluators shall avoid any conflict of interest that might be related to kinship, friendship, enmity, professional implication or any other similar condition; the evaluators always have to be unbiased.

4.3. Non-discriminatory conditions

In accordance with the current regulation, the Institution will promote equal opportunities and prevent any discrimination on the basis of age, race, sex, religion, marital status, sexual orientation, opinion or any other condition or social circumstance, and mainly in relation to the:

- Access to training activities.
- Access to (i) become a member of the examining board and (ii) enter the personnel recruitment processes at all levels as well as any promotion competition and free access to job openings of different grade such as directive or management positions.

Furthermore, CSIC shall take all necessary measures in order for its workers not to be subjected to labour harassment, promote work conditions based on fair treatment and respect and ensure the implementation of instruments to detect and solve any potential deviation.

Section 2 - INTERNAL NORMS AND RECOMMENDATIONS TO IMPLEMENT THE CODE AT CRAG

Throughout this text, the specific section of the CSIC code that the norm or recommendation refers to, is indicated (e.g., CSIC Code sect. 1.2)

1. LEADERSHIP OF A RESEARCH TEAM AND SUPERVISION OF RESEARCHERS IN TRAINING

1.1. Leadership and cooperation in the research team The researcher who leads a team must assume the responsibilities of leadership. The scientific work of other teams must not be hindered, and no scientist should hinder the work of any other scientist. Scientists should respect each other's work, and make good and careful use of materials and facilities. *(CSIC Code sect. 2.1)*

1.2. Assignment of a supervisor All individuals linked to CRAG (either through a contract, fellowship, or grant) to carry out research and to receive some form of training (undergraduate, postgraduate, and PhD students, and others), will be assigned a supervisor.

1.3. Responsibilities and obligations of supervisors The supervisor defines the objectives and takes responsibility for the education of the individual in training, and should advise and guide the individual in order that the expectations of the initially proposed training may be fulfilled within the time allotted. Furthermore, supervisors should provide a proper scientific environment for the trainees. The specific obligations of supervisors include: a) to interact personally and on a regular basis with trainees for whom they are responsible, in order to supervise the tasks with which the trainees are entrusted and ensure that those tasks are completed; b) to encourage regular meetings to discuss the progress of the assigned tasks and contribute to the scientific and technical development of the trainees; c) to monitor the working conditions of trainees and ensure that they receive appropriate health and safety training, and that they receive information about safety and accident prevention rules that must be followed; d) to provide trainees with up-to-date information regarding legal requirements affecting scientific activities, including biosafety (see below). *(CSIC Code sect. 2.2)*

1.4. Limits to the number of individuals assigned to a single supervisor The total number of trainees for whom a single supervisor is responsible should be appropriate and compatible with the extent of the supervisor's obligations and commitments.

1.5. Rights and obligations of individuals in training Trainees have rights and obligations that arise from their nature as personnel in training. The supervisor should be diligent in ensuring that trainee scientists are not involved in performing tasks outside those related to their training. Conversely, trainees must commit to work on the assigned research project. Trainees should inform the supervisor about initiatives and relevant new results, and must report promptly any difficulties encountered when carrying out the work. Trainees should commit to taking full advantage of the educational opportunities offered by supervisors, CRAG and the CRAG community. Trainees should be aware of and follow the safety rules and procedures for laboratory work. *(CSIC Code sect. 2.2)*

1.6. Use of common or external equipment or facilities In order to ensure appropriate use of resources, all research work that involves the use of research facilities or equipment not designated for the exclusive use of the research group, will require prior consent from the individual responsi-

ble for the facility or equipment that is to be used.

2. PREPARATION OF RESEARCH PROJECTS

2.1. Research project formalization Prior to their initiation, all research projects must be formulated in a written document (the written proposal necessary to obtain approval and funding), which must be deposited at the Projects and Grants office.

3. RECORDING, DOCUMENTATION, STORAGE, CUSTODY, AND SHARING OF DATA AND BIOLOGICAL OR CHEMICAL MATERIALS ARISING FROM RESEARCH

3.1. Recording and storage of data All data arising from experiments or research observations should be recorded. That information must remain permanently recorded in databases, notebooks, or other appropriate format, in a condition that facilitates external review. The records must also include changes, errors and negative, unexpected, or conflicting results, as well as an indication of the person who performed the experiment or made the observation. The necessary means and infrastructure should be provided for correct storage and safekeeping of all documentation and biological or chemical material resulting from a research project. *(CSIC Code sect. 1.3)*

3.2. Custody of data and samples The individual responsible for the project is also responsible for the recording, storage, and safekeeping of the primary documentation and biological or chemical material obtained in the course of the research project. *(CSIC Code sect. 1.3)*

3.3. Sharing of data and samples with outside parties Data and materials arising from a research project must be publicly available and in a condition to be shared with outside parties, except in cases where restrictions have been established on the basis of possible future commercial use. Provision of data or materials will require that information be provided on the intended use by the person who has requested them, that the research group is aware of the request, that there is a material or data transfer agreement with the approval of the individual responsible for the research, and that the person making the request is willing to pay all possible costs of production and shipping. Sharing may be restricted for reasons of availability, competition, or confidentiality.

3.4. Length of storage of data and samples All original primary information and biological and chemical material arising from a research project must be stored for a minimum of 5 years from the date of the first publication of the results, except in those cases in which the law allows shorter storage periods or requires longer periods to be applied. *(CSIC Code sect. 1.3)*

4. RESEARCH PROJECTS FUNDED BY THE AGBIO INDUSTRY OR OTHER COMMERCIAL OR PRIVATE ENTERPRISES

4.1. Transparency When knowledge and technology is exchanged or provided to private enterprises, public interests must always take priority, and therefore, should be safeguarded by the appropriate agreements. Complete transparency must be maintained in all agreements. Research projects developed either in collaboration or under contract, should safeguard all previous knowledge, information and know-how property of CRAG. Any collaboration with private entities which requires written agreement shall be supervised and signed by CRAG's legal representative, so that all terms and conditions ruling the interests of the parties can be clearly stated. Researchers should also sign the agreements or contractual documents in which the different interests, tasks

and contributions will be adequately defined. All adopted agreements entered into by the entity soliciting the work and the representatives in charge of the execution of the research shall be included in the abovementioned agreements. (*CSIC Code sect. 2.6*)

4.2. Intellectual property rights and economic compensation When researchers participate in a project promoted by industry and make essential contributions to its design and execution, the necessary agreements will be established with the promoting organization addressing the sharing of the corresponding industrial and intellectual property rights. Researchers must inform CRAG and seek technology transfer advice to ensure that appropriate intellectual property rights agreements are negotiated prior to the initiation of the collaborative work. Such agreements also include all aspects of economic compensation directly or indirectly relating to the research and should be accessible to all parties involved in the agreement. (*CSIC Code sect. 2.7*)

5. PUBLICATION AND COMMUNICATION PRACTICES

Publication of results in journals or other media that apply a process of peer review is an essential part of a research project. It is therefore an ethical imperative that researchers make all reasonable efforts to publish their work in a peer-reviewed publication.

General policies and practices related to scientific publications, as reflected in the Code (*CSIC Code sect. 3*) and at CRAG, are based on the guidelines from the International Committee of Medical Journal Editors (<http://www.icmje.org>).

5.1. Institutional affiliation and acknowledgement of support In publications, CRAG should be referred to as "Centre for Research in Agricultural Genomics (CRAG) CSIC-IRTA-UAB-UB" or a similar formulation, but in any case explicitly mentioning the four institutions that form the CRAG consortium. In research articles, conference presentations and all other types of presentation of results, the following must be declared: a) the institutions or centres to which the authors belong, or belonged, and in which the research was undertaken; and b) details of all funding received to carry out the reported research.

5.2. Protection of results with possible commercial interest If the results of research could lead to inventions or applications that may be subject to protection on the basis of their commercial interest, the individual responsible for the research project should communicate this information to the Administration of CRAG (to the General manager, in the first instance) and manage the publication of the results in scientific journals accordingly.

5.3. Presentation in the mass media The presentation of results in the mass media must always include an appropriate level of explanation for a non-specialist audience or a part of the presentation that has been adapted for the general public. In such presentations, the names of the authors must always be linked to their institutions and, wherever possible, financial support and help received should be mentioned.

5.4. Premature communication through the media All research results should be scrutinized by other scientists through peer review in scientific publications or scientific conferences prior to their communication in the media.

6. MAIN LEGAL REQUIREMENTS AFFECTING SCIENTIFIC ACTIVITIES

6.1. Responsibilities of CRAG The director of CRAG must provide assurances to personnel that the infrastructure complies with legal requirements and that the center has the relevant authorisation to undertake any scientific activity that is subject to specific regulations. CRAG will keep up to date with relevant legislation and regulations in the following areas: the use of animals and animal cells and samples in scientific research; the use of, exposure to, and storage of radioactive material; the use of, exposure to, and storage of genetically modified organisms; and the use of, exposure to, and storage of any potentially dangerous biological or chemical agent.

6.2. Research involving experimental animals In accordance with national and European regulations, all research projects and procedures using animals must be previously approved by the corresponding Ethical Committee for Animal Research. All animal protocols must be carried out in an accredited animal facility.

6.3. Biosafety Research projects and procedures involving the use of biological agents or chemicals of special hazard, should be presented for approval to the corresponding Biosafety or Ethical committee, which should undertake a risk assessment of the experiment within the context of the proposed research setting and equipment. This procedure should also be followed for research projects involving genetically modified organisms (GMOs). The biosafety committee to be used may depend on the institutional affiliation of the scientist responsible for the project; for instance, CSIC researchers should present their projects for approval to the Bioethics Subcommittee of CSIC (which depends on the Ethics Committee of CSIC).

7. THE OMBUDSPERSON

To address issues related to the Code, in particular those that may benefit from mediation, the Board of Trustees of CRAG approved to institute the figure of the Ombudsperson (or an equivalent figure or structure) at the Centre.

The Ombudsperson of CRAG is a designated neutral scientist, preferably ascribed or affiliated to CRAG but might also be a scientist external to it, and who is not part of executive management. The Ombudsperson acts to serve CRAG constituencies, in particular research personnel and with respect to the matters of the Code. Therefore, the institutional Ombudsperson can provide options with concerns related to the Code; provide coaching, shuttle diplomacy, generic solutions, and mediation for conflicts; and make recommendations for changes to CRAG policies or procedures.

The Ombudsperson may organize an ad hoc external or internal committee to help with resolving issues that are presented to him/her.

The Ombudsperson functions do not include acting on disciplinary actions related to misconduct cases or on serious offences to the Code. Those cases, should they occur, are to be handled through an investigation by an appropriate independent committee, that may be internal or external to CRAG. The Director of the Center may decide on the appropriate mechanism (Ombudsperson or independent committee) to handle those cases.

The Ombudsperson is nominated by the Director of the Centre, upon consultation with the Internal Scientific Committee, and appointed by the Board of Trustees. The Ombudsperson will initially serve for a term of two years, renewable for a second term of two years.

8. DISSEMINATION AND IMPLEMENTATION

8.1. Dissemination CRAG will provide an electronic copy of this Guide on Research Integrity and Good Scientific Practice, which includes the Code of Good Scientific Practices of CSIC (Section 1), to all research personnel, and will provide a copy to any new members when they join the centre. In both cases, individuals will be required to confirm receipt of their copy. Likewise, CRAG will post a link to the current contents of the Code of Good Scientific Practice on its intranet so that they will be readily available and can be freely consulted.

8.2. Implementation The Ombudsperson and, in the case of graduate students, the Academic Committee, will oversee the regular review and discussion of the contents of this Guide on Research Integrity and Good Scientific Practice and of the Code of Good Scientific Practices of CSIC as part of postgraduate studies and activities undertaken by trainee scientists and other staff affiliated with CRAG.

9. REFERENCE MATERIALS

- Research Ethics at CSIC: <http://www.csic.es/web/guest/etica-en-la-investigacion>. The Code of Good Scientific Practices of CSIC (in English or in Spanish) can be downloaded from the site, which also provides additional reference information.
- The European Code of Conduct for Research Integrity. European Science Foundation (ESF) & All European Academies (ALLEA). <http://www.esf.org/coordinating-research/mo-fora/research-integrity.html>
- Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals. *International Committee of Medical Journal Editors*. <http://www.icmje.org>