

Éléments d'information pour une sensibilisation à la conduite responsable et intègre de la recherche

Ghislaine Filliatreau, déléguée à l'Intégrité scientifique – Inserm
Ghislaine.filliatreau@inserm.fr

Responsible and Ethical Conduct of Research

The responsible and ethical conduct of research (RECR) is critical for excellence, as well as public trust, in science and engineering.

The responsible and ethical conduct of research involves not only a responsibility to **generate and disseminate knowledge** with **rigor** and **integrity**, but also a **responsibility** to:

- conduct peer review with the highest ethical standards;
- diligently protect proprietary information and intellectual property from inappropriate disclosure; and
- treat students and colleagues fairly and with respect.

1

RELIABILITY

in ensuring the quality of research, reflected in the design, the methodology, the analysis, and the use of resources.

HONESTY

in developing, undertaking, reviewing, reporting, and communicating research in a transparent, fair, full, and unbiased way.

2

3

RESPECT

for colleagues, research participants, society, ecosystems, cultural heritage, and the environment.

ACCOUNTABILITY

for research, from idea to publication, for its management and organisation, for training, supervision, and mentoring, and for its wider impact.

4



Ethics in Scientific Research

An Examination of Ethical Principles and Emerging Topics

Courtney Weinbaum, Eric Landree, Marjory S. Blumenthal, Tepring Piquado, Carlos Ignacio Gutierrez



Table S.1
Ethical Principles for Scientific Research

Ethical Principle	Definition
Duty to society	Researchers and research must contribute to the well-being of society.
Beneficence	Researchers should have the welfare of the research participant in mind as a goal and strive for the benefits of the research to outweigh the risks.
Conflict of interest	Researchers should minimize financial and other influences on their research and on research participants that could bias research results. Conflict of interest is more frequently directed at the researcher, but it may also involve the research participants if they are provided with a financial or nonfinancial incentive to participate.
Informed consent	All research participants must voluntarily agree to participate in research, without pressure from financial gain or other coercion, and their agreement must include an understanding of the research and its risks. When participants are unable to consent or when vulnerable groups are involved in research, specific actions must be taken by researchers and their institutions to protect the participants.
Integrity	Researchers should demonstrate honesty and truthfulness. They should not fabricate data, falsify results, or omit relevant data. They should report findings fully, minimize or eliminate bias in their methods, and disclose underlying assumptions.
Nondiscrimination	Researchers should minimize attempts to reduce the benefits of research on specific groups and to deny benefits from other groups.
Nonexploitation	Researchers should not exploit or take unfair advantage of research participants.
Privacy and confidentiality	<p>Privacy: Research participants have the right to control access to their personal information and to their bodies in the collection of biological specimens. Participants may control how others see, touch, or obtain their information.</p> <p>Confidentiality: Researchers will protect the private information provided by participants from release. Confidentiality is an extension of the concept of privacy; it refers to the participant's understanding of, and agreement to, the ways identifiable information will be stored and shared.</p>
Professional competence	Researchers should engage only in work that they are qualified to perform, while also participating in training and betterment programs with the intent of improving their skill sets. This concept includes how researchers choose research methods, statistical methods, and sample sizes that are appropriate and would not cause misleading results.
Professional discipline	Researchers should engage in ethical research and help other researchers engage in ethical research by promulgating ethical behaviors through practice, publishing and communicating, mentoring and teaching, and other activities.

NOTE: *Research participant* refers to someone with an active role participating in research, whereas *research subject* could include someone whose data are used but who does not consent to participate.

- **Déclarations UNESCO (1974, 1999) concernant le « métier de chercheur »**
 - **NAS US : “Ensuring the Integrity of the Research Process” (1992)**
 - **Création ORI (1996) ; [création DIS Inserm (1999)]**
 - **OCDE : Best Practices for Ensuring Scientific Integrity and Preventing Misconduct (2007)**
 - **The Singapore statement on research integrity (2010 ; 2eme colloque mondial)**
 - **Forum et Rapport ESF : Fostering research Integrity in Europe (2010)**
 - **ALLEA : The European code of conduct for research integrity (2013 ; 2017)**
 - **Charte nationale de déontologie des métiers de la recherche (2015) / French charter for research integrity**
 - **NAS US : Fostering Integrity in Research (2017)**
- ***Décret 2021 : les établissements publics contribuant au service public de la recherche et les fondations reconnues d'utilité publique ayant pour activité principale la recherche publique, (+ le Hceres), veillent à ce que l'organisation des travaux de recherche de leurs personnels soit menée dans le respect des exigences de l'intégrité scientifique, définie par la loi comme l'ensemble des règles et valeurs qui doivent régir les activités de recherche pour en garantir le caractère honnête et scientifiquement rigoureux.***
 - **the public institutions contributing to the public research activities and the foundations recognized as being of public utility whose main activity is public research (+ the Hceres), ensure that the organization of the research work of their personnel is carried out in compliance with the requirements of their scientific integrity, defined by law as the set of rules and values that must govern research activities in order to guarantee their honest and scientifically rigorous character.**

L'Institut

Recherche responsable

Support à la recherche

Santé et sécurité au travail

Ressources humaines

Accompagnement administratif

Informatique



Intégrité scientifique



Déontologie



Éthique



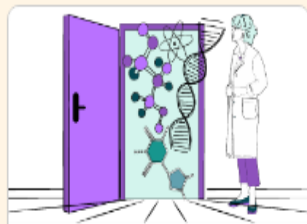
Qualité



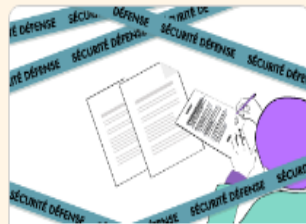
Données personnelles



Recherche participative



Science ouverte



Sécurité-défense

La charte nationale de déontologie des métiers de la recherche

1. Respect des dispositifs législatifs et réglementaires / Compliance with legislative and regulatory requirements
2. Fiabilité du travail de recherche / Reliability of research work
3. Communication / Communication
4. Responsabilité dans le travail collectif / Responsibility of research work
5. Impartialité et indépendance dans l'évaluation et l'expertise / Impartiality and independence in assessment and expertise
6. Travaux collaboratifs et cumul d'activités / Collaborative work and plurality of activities
7. Formation/ Training

1. Respect des dispositifs législatifs et réglementaires

« Tout chercheur se tient informé des dispositifs législatifs et réglementaires qui régissent les activités professionnelles et veille au respect des textes correspondants, s'agissant notamment des recherches sur l'être humain, l'animal et l'environnement. »*

** Par « chercheur » la Charte entend « **tout personnel impliqué dans la réalisation de la recherche** ».*

Connaitre et respecter les chartes et règlements en matière d'éthique et de déontologie ; par ex., obligations vis-à-vis des participants (humains et animaux), études d'impact

The French National Charter for Research Integrity concerns all women and men (referred to in the text by the generic term "researcher") forming part of an institution or body, whether permanent staff or not, who contribute to a research activity and who undertake to respect the principles of integrity expressed herein, in the context of those research projects in which they are involved, either directly or indirectly.

1. Compliance with legislative and regulatory requirements

All researchers should ensure that they remain informed and up-to-date concerning the legislation and regulations which govern their professional activities and that they comply with any such legislation, notably that covering research on human subjects, animals and the environment.

2. Reliability of research work

Researchers must respect the commitments undertaken by their research unit or for any specific contract. They must always use the most appropriate methods to conduct any research project.

A detailed description of the research protocol, through the use of laboratory notebooks, or any other media, must enable the replication of the experimental work.

All raw data (which are the property of the institution) together with their analysis must be conserved to enable their verification.

The conclusions must be based on a critical analysis of the results and possible applications should not be unjustifiably amplified. The results should be communicated in their entirety in an objective and honest manner.

All research naturally relies on previous studies and results. The use of these sources must be correctly cited in any scientific production, publication and communication. In certain situations, their use may require prior authorisation to be obtained.

Les chercheurs doivent respecter les engagements pris dans le cadre de leur unité de recherche ou dans le cadre de contrats spécifiques.

*Les **méthodes** mises en œuvre pour la réalisation du projet de recherche doivent être les plus appropriées.*

*La **description détaillée du protocole de recherche**, dans le cadre de cahiers de laboratoire ou de tout autre support, doit permettre la reproductibilité des travaux expérimentaux.*

*Tous les **résultats bruts (qui appartiennent à l'institution) ainsi que l'analyse des résultats doivent être conservés** de façon à permettre leur vérification.*

Les conclusions doivent être fondées sur une analyse critique des résultats et les applications possibles ne doivent pas être amplifiées de manière injustifiée. Les résultats doivent être communiqués dans leur totalité de manière objective et honnête.

*Tout travail de recherche s'appuie naturellement sur des études et résultats antérieurs. L'utilisation de ces sources se doit d'apparaître par un **référencement** explicite lors de toute production, publication et communication scientifiques. Leur utilisation nécessite dans certains cas d'avoir obtenu en préalable les autorisations nécessaires.*

La tenue et l'archivage des cahiers de laboratoire, des données primaires et des résultats, - qui appartiennent à l'institution -, sont obligatoires.

The maintenance and archiving of laboratory notebooks, primary data and results, - which belong to the institution -, is mandatory.

*Les résultats d'un travail de recherche ont **vocation** à être portés à la connaissance de la communauté scientifique et du public, en reconnaissant les apports intellectuels et expérimentaux antérieurs et les droits de la propriété intellectuelle.*

*Le travail est le plus souvent collectif et quand c'est le cas, la **décision** de publication doit être prise de manière **collective** et conférer à chaque auteur un **droit de propriété intellectuelle**. La qualité d'auteur doit être fondée sur un **rôle explicite** dans la réalisation du travail, toutes les personnes remplissant la qualité d'auteur devant l'être. Les **contributeurs** qui ne justifient pas de la qualité d'auteur selon les critères internationaux doivent figurer dans les « remerciements » insérés dans la publication.*

*La liberté d'expression et d'opinion s'applique dans le **cadre légal de la fonction publique**, avec une obligation de réserve, de confidentialité, de neutralité et de transparence des liens d'intérêt.*

*Le chercheur exprimera à chaque occasion **à quel titre**, personnel ou institutionnel, il intervient et distinguera ce qui appartient au domaine de son expertise scientifique et ce qui est fondé sur des convictions personnelles. La communication sur les réseaux sociaux doit obéir aux mêmes règles.*

It is the vocation of research results to be brought to the attention of the scientific community and the public, any previous intellectual and experimental contributions should be appropriately acknowledged and intellectual property rights should be respected.

3. Comm unicati on

Research work is most often collective and, when this is the case, any decision to publish must be taken collectively, with each author being granted intellectual property rights. Authorship should be based on an explicit role in the work carried out and all persons having fulfilled such a role should be authors. Contributors who do not qualify for the status of author according to international criteria must be included in the 'acknowledgements' section of the publication.

The notion of freedom of expression and opinion is applicable within the legal framework of public service, with a duty of reserve, confidentiality, neutrality. Any potential conflict of interest should be disclosed. On each occasion, the researcher shall clearly indicate whether they are intervening in a personal capacity or as representative of their institution, and professional comments from opinion based on personal convictions.

Any communication made via the social networks must respect the same rules.

4. Responsabilité dans le travail collectif

À travers ses activités professionnelles, le chercheur s'engage dans les missions qui lui sont confiées par son employeur, en respectant les règles de bonne conduite en vigueur dans l'institution.

Les responsables de collectif et, plus généralement les chercheurs ayant une mission d'encadrement et de formation, doivent consacrer une attention suffisante pour faire partager le projet collectif, expliciter la contribution et accroître les compétences de chacun dans une dynamique collective.

Le respect dans les relations de travail constitue un comportement à promouvoir. Les discriminations, le harcèlement, l'abus d'autorité relèvent de fautes professionnelles.

La falsification, la fabrication de données, le plagiat sont les manquements les plus graves à l'intégrité. Ils doivent être signalés à l'institution et combattus.

4. Responsibility in collective work

Through their professional activities, researchers fulfil the mission assigned to them by their employer, according to the rules of good practice current within that institution.

Those responsible for collective work and, more generally, those researchers having a supervisory and educational role, must devote sufficient attention to sharing the collective project, clarifying the contribution and developing the skills of all those involved, thus creating a collective dynamic.

Respectful work relationships should be encouraged, with discrimination, harassment and abuse of authority being considered professional misconduct.

The falsification or fabrication of data and plagiarism are deemed the most serious breaches of integrity. They must be reported to the institution concerned and be tackled.

5. Impartialité et indépendance dans l'évaluation et l'expertise

Lors de l'évaluation d'un projet de recherche, d'un laboratoire ou d'un collègue, le chercheur examine tous les dossiers avec impartialité, en déclarant ses liens d'intérêt et en se récusant s'il constate un conflit potentiel d'intérêts, incompatible avec l'exercice impartial de l'évaluation.

Il est tenu de respecter la confidentialité des délibérations et de s'interdire l'utilisation des données communiquées pendant la procédure d'évaluation.

Pour une expertise exercée au titre de l'institution, le chercheur se doit de respecter les termes de la charte nationale de l'expertise et de sa déclinaison à l'échelle de son institution d'appartenance.

5. Impartiality and independence in assessment and expertise

During the evaluation of a research project, a laboratory or a colleague, the researcher shall examine all files with impartiality, and disclose any potential conflict of interest and should withdraw, if it is incompatible with an impartial assessment. They are required to respect the confidentiality of any deliberation and to refrain from using any data provided during the evaluation procedure.

In the case of an expertise carried out in the name of an institution, the researcher must respect the terms of the national charter on scientific expertise and the specific version which applies to their institution.

6. Travaux collaboratifs et cumul d'activités

*Les travaux collaboratifs, en particulier en dehors de l'institution et à l'international, feront l'objet d'accords préalables avec les partenaires publics ou privés et doivent préserver l'**indépendance** du chercheur, concernant notamment la fourniture de données, leur exploitation, leur propriété intellectuelle et leur communication. Ils mobilisent les mêmes règles déontologiques, impliquant une responsabilité d'intégrité, de transparence et d'honnêteté.*

Dans le cas des activités de conseil ou d'expertise menées en marge du travail de recherche, les chercheurs sont tenus d'informer leur employeur et de se conformer aux règles relatives au cumul d'activités et de rémunérations en vigueur dans leur institution. Les liens d'intérêts qui en découlent doivent faire l'objet de déclaration lors des activités de communication.

6. Collaborative work and plurality of activities

Collaborative work, particularly outside the institution and internationally, shall be subject to prior agreements with the public or private partners and must preserve the independence of the researcher, notably concerning the provision and use of data, their intellectual property rights and communication. Such work is covered by the same ethical rules, with a responsibility to ensure integrity, transparency and honesty.

Should the advisory or evaluation activities be carried out in conjunction with or peripheral to the research work, researchers are required to inform their employer and to comply with their institution's rules concerning plurality of activities and remunerations. Any interests which may arise from such work must be declared in any communication.

7. Formation

Les règles déontologiques doivent être intégrées aux cursus de formation, en particulier au sein des cursus de master et de doctorat, et leur apprentissage doit être considéré comme participant à la maîtrise du domaine spécifique de recherche.

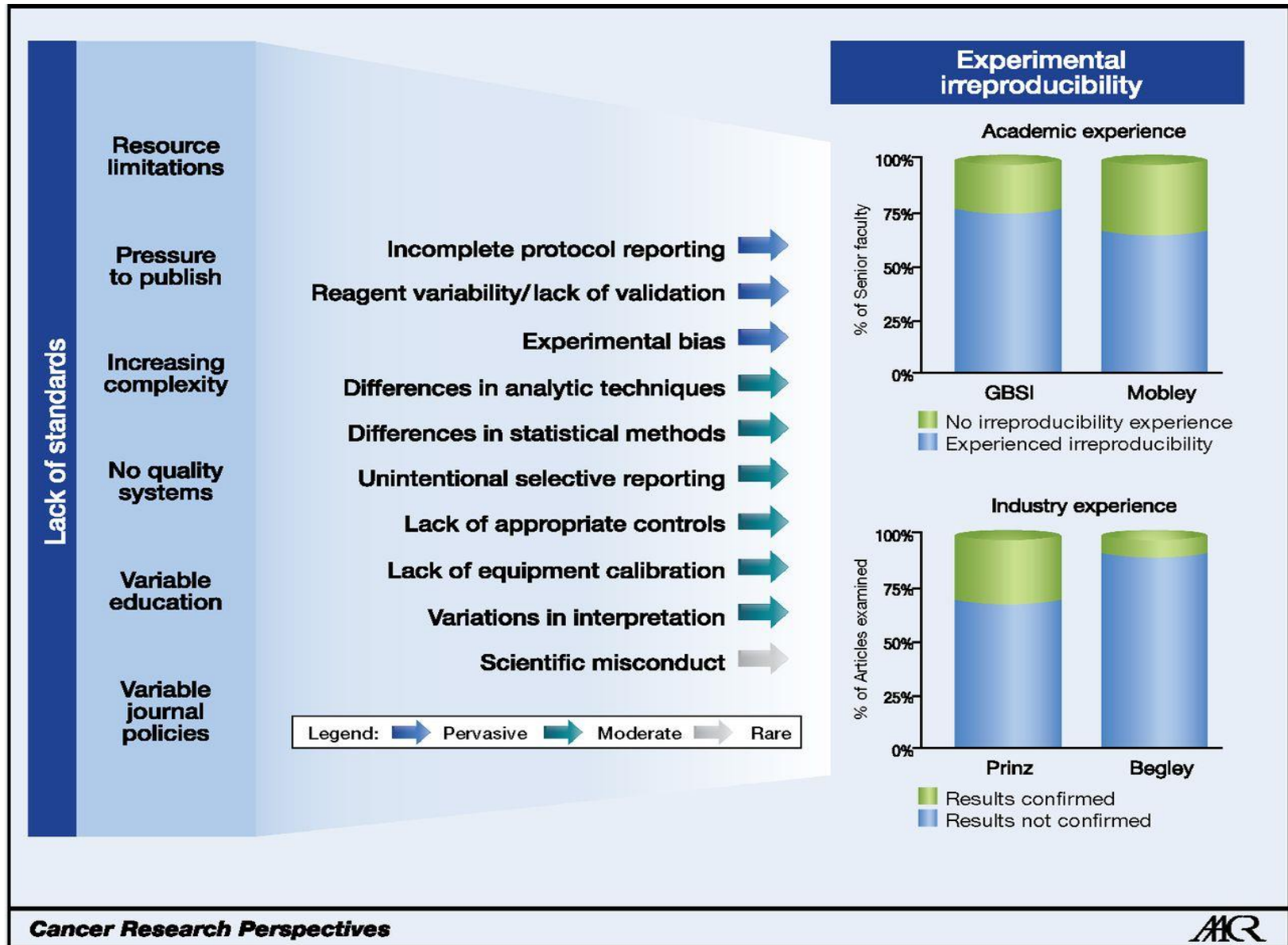
7. Training

Research integrity rules must be integrated into educational curricula, particularly those for Master and PhD degrees, and learning them should be considered an integral part of mastering the specific domain of research.

Formation obligatoire pendant le doctorat et serment du doctorant.

Formations exigées par des financeurs internationaux, des institutions à l'étranger, des donneurs d'ordre privés.

Importance du respect des principes de l'intégrité scientifique



IT'S A SLIPPERY SLOPE TO RESEARCH MISCONDUCT

It doesn't matter if you're an undergraduate researcher, a graduate student, a post-doc, or a principal investigator who is performing federally funded research, writing a research paper, or leading a research program; research integrity matters at every level.

Small lapses in judgment could lead to a slippery slope ending in research misconduct.

Be vigilant against these common lapses:

1. TAKING SHORTCUTS

Lack of care in experimentation that might impact reproducibility

2. CHEATING

Such as puffery, which is inflating your resume, can establish dangerous behavior patterns

3. "BEAUTIFICATION" OF IMAGES

Removing an unwanted feature, even if unrelated to the result, could be scientifically significant



4. LACK OF APPROPRIATE CONTROLS

Failure to perform a control with the experimental sample could affect result interpretation

5. COMPOSITE IMAGES

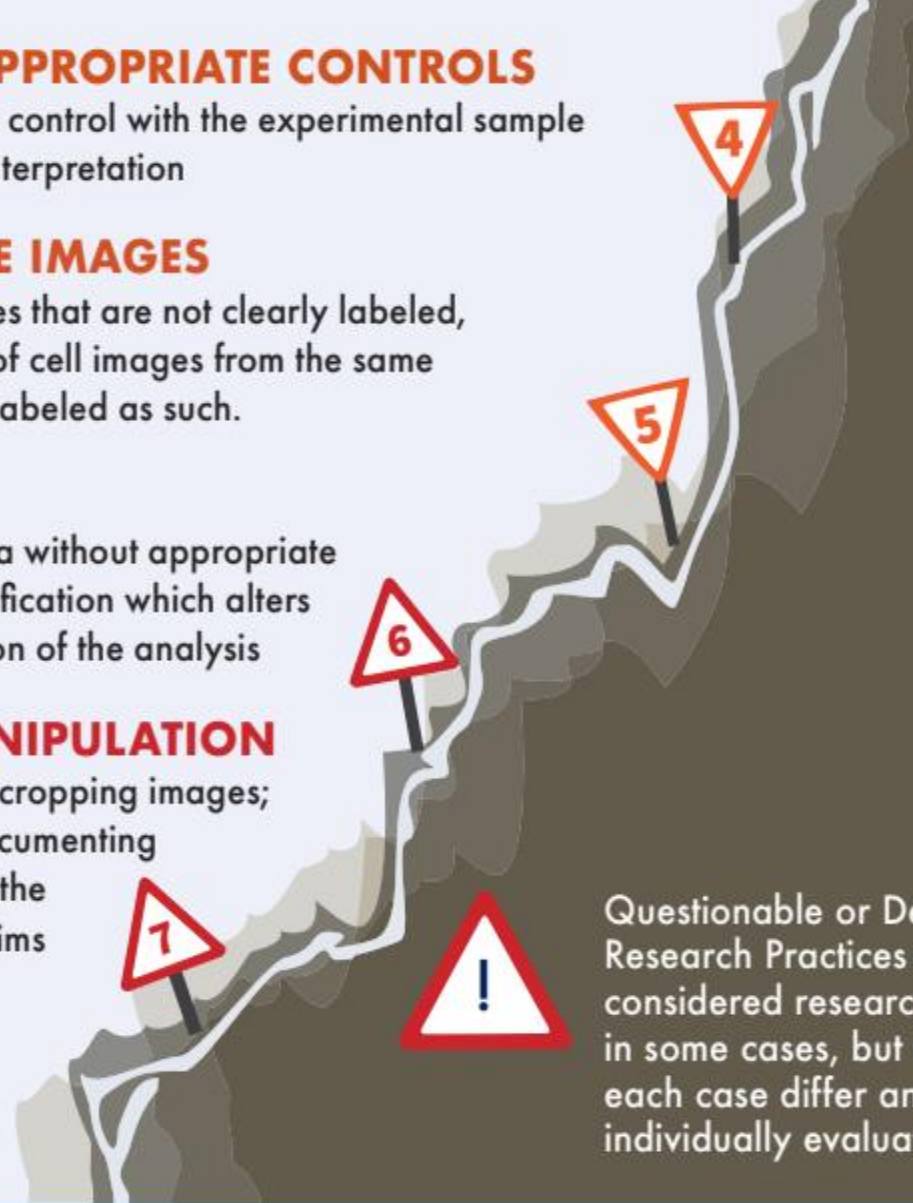
Assemblies of images that are not clearly labeled, such as a montage of cell images from the same experiment but not labeled as such.

6. OUTLIERS

Omitting outlier data without appropriate pre-experiment justification which alters the overall conclusion of the analysis

7. IMAGE MANIPULATION

Splicing, cutting, or cropping images; without properly documenting changes, that alters the results or falsely claims a result which was not obtained.



Questionable or Detrimental Research Practices may be considered research misconduct in some cases, but the facts of each case differ and must be individually evaluated.



ori.hhs.gov



@HHS_ORI



#ORledu



What are the ethical rules to be applied?



When you draft a manuscript for the purposes of publishing the results of your research in a scientific journal, **you must ascribe legal authorship to all those persons who:**

- have played a **substantial role in designing the project and its experimental protocol, in preparing the results, and/or in analyzing and interpreting the results;**
- have taken part in drafting the article, or have **carried out a revision of the text representing a significant contribution** in terms of its intellectual content;
- **explicitly endorse the final version of the manuscript**, both in terms of its scientific content and the list of authors, and **thus accept direct personal responsibility for it**; the latter being also a requirement of the publishers.



These rules of authorship are applied independently of any question of status, and remain equally valid if in the meantime you have moved to another laboratory.

Those persons who have contributed to the research conducted without fulfilling the three criteria above should be **thanked at the end of the article**, if they agree.

Exemples de documents qui servent de support au traçage et discussions

Le **cahier de laboratoire** qui protège le laboratoire et la personne

Le **document de projet** qui inclut la fiche qui va/ qui a fait quoi

L'**accord de mobilité** qui détaille les engagements réciproques pour les exploitations futures

L'**accord de collaboration**

Comment les utiliser ?

Encourager la discussion ouverte : organiser de fréquentes réunions d'équipe avec relevé de décisions « on the spot »

Trouver des méthodes pour des pratiques collectives dans l'esprit d'une démarche qualité

Proposed documents that support the tracing and discussions

The **lab notebook** protects the lab and the person

The **project document** which will/should be used to discuss who will and who did do what

The **agreement for mobility** explains the reciprocal commitments for all the future operations

The agreement for collaboration

How to use them ?

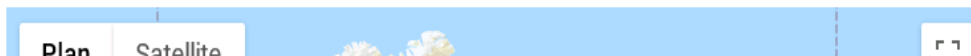
Encourage open discussions: team meetings with a short record of decisions made "on the spot »

Think to collective procedures of good practices in the spirit of a quality approach



Welcome to ReproducibiliTea

We are a grassroots [journal club initiative](#) that helps young researchers create local Open Science journal clubs at their universities to discuss diverse issues, papers and ideas about improving science, reproducibility and the Open Science movement. Started in early 2018 at the University of Oxford, ReproducibiliTea has now spread to 71 institutions in 19 different countries. We are completely volunteer run, and provide a unique and supportive community for our members.



Aims

Review Commons is a platform for high-quality journal-independent peer-review in the life sciences.

Review Commons provides authors with a Refereed Preprint, which includes the authors' manuscript, reports from a single round of peer review and the authors' response. *Review Commons* also facilitates author-directed submission of Refereed Preprints to affiliate journals to expedite editorial consideration, reduce serial re-review and streamline publication.

Review Commons transfers Referred Preprints on behalf of the authors to bioRxiv and [17 affiliate journals](#) from EMBO Press, eLife, ASCB, The Company of Biologists, Rockefeller University Press and PLOS.



On January 20 and 21, 2020, over 30 representatives from preprint servers, publishers, preprint servers, standards, indexing and metadata infrastructure organisations, and beyond,

SOYEZ PROACTIFS

TOUS VOS PROBLEMES SONT COMMUNS ET
DONC A PARTAGER (AVEC DISCERNEMENT)