SCIENTIFIC INTEGRITY AND BEST RESEARCH PRACTICES POLICY

UNIVERSITAT
POLITÈCNICA
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Contents

INTRODUCTION

Scientific research, technological and artistic development and participation in innovation processes are a fundamental part of the essence of the Universitat Politècnica de València (UPV). By promoting development in science and scientific knowledge, we are furthering the progress of humanity and helping to improve people's quality of life.

However, scientific progress should not be pursued at any cost; it should be achieved while adhering to the ethical principles that should govern good scientific practice. It is true that there is growing pressure to get more and more results, of a higher quality and as quickly as possible. Pressure that can lead to career advancement being put before scientific and technological progress. Without question, this situation can result in poor scientific practices.

It is our responsibility to prevent this from happening and to promote scrupulous behaviour, so it has been deemed necessary to develop the Scientific Integrity and Best Research Practices Policy, to serve as a complete framework to self-regulate research activity within the UPV. A policy that is in line with the Singapore Statement on Research Integrity and the European Code of Conduct for Research Integrity, to which the UPV adheres, and the UPV code of ethics.

This policy should serve as a guide, especially for anyone who is new to the exciting world of research. We should remember that, regardless of the context of the research, there are certain boundaries that should never be crossed. Similarly, we hope that it will help to stimulate debate on the ethical issues surrounding research, confirming the need to bridge the gap between scientific and technological progress and human values.

In any event, it is important to stress that the whole university community has the obligation to abide by and enforce the Scientific Integrity and Best Research Practices Policy. Therefore, any irresponsible research practices that fall short of the expectations of the society that is served by the UPV should be reported, and we must respond to them in a clear and emphatic manner, thus creating a working environment that promotes scientific integrity.

AIMS AND SCOPE

The aim of this Scientific Integrity and Best Research Practices Policy is to promote scrupulous, responsible, rigorous and impartial research within the UPV. Research that is carried out according to the highest scientific standards, but which is also underpinned by the ethical principles that should guide all careers in science, regardless of the specific circumstances under which the research is conducted.

This policy will apply to any research that is conducted in the UPV, or by its staff or students when engaged in research work.

GENERAL RESEARCH PRINCIPLES

Research should be conducted with the highest personal integrity and the utmost scientific rigour. Only then can it help to further scientific progress. Therefore, research should be guided by the following principles:

RELIABILITY

Research should be reliable and rigorous and it should be carried out by people who are competent to conduct the research. It should be based on a comprehensive review of the state of knowledge, with a suitable design, sampling and analysis, leaving no room for the misrepresentation, omission or fabrication of data.

INTEGRITY

Integrity is an essential element of the UPV's methodology and research should be conducted in an honest, upright manner, always acting in good faith. The general public interest should always be put before any private interests. Thus, the pursuit of knowledge and solving society's problems should be the main aims of any research, which should be guided by the highest standards of scientific rigour, with research methods and practices being followed with clarity, impartiality, transparency and rationale.

Information should be disseminated in a transparent manner, with no omissions, accurately reflecting the observed truth and, insofar as is possible, from an open access perspective. You should avoid sensationalism when disseminating information and you should not prioritise career advancement over scientific progress. You should properly acknowledge the merits of every person involved in the research, avoiding plagiarism and self-plagiarism and acknowledging

authorship in a responsible manner. Integrity should also be kept in mind when making commitments, by ensuring that they are fulfilled.

IMPARTIALITY

The results should be a direct and demonstrable consequence of the research process; avoid any interpretation that is guided by interests other than the pursuit of knowledge. Impartiality and objectivity should be essential criteria when assessing publications and applications for funding, and when evaluating CVs during staff recruitment processes. Impartiality should not be compromised by any conflicts of interest which, in any event, should be declared and, insofar as is possible, avoided.

EQUALITY

Respect for true equality between women and men, offering the same opportunities to all people irrespective of their gender, sexual orientation and gender identity, background, culture, age or any other personal status. The principle of equal treatment and non-discrimination should not only be applied to processes such as recruitment, it should also condition the scope and impact of any research that is conducted, ensuring that it benefits the whole of society.

TRANSPARENCY

The UPV reaffirms its commitment to good governance and accountability to the university community and society. Consequently, it is necessary to promote open access to research results and all associated publications. Furthermore, the criteria used and appraisals made for all recruitment, retention, promotion and incentive processes should be public, clear, objective and readily accessible.

RESPONSIBILITY

It is necessary to be accountable for any actions and decisions taken, by taking responsibility towards society and the environment. Therefore, competence and excellence should be promoted, in a continuous improvement process that maximises the quality of the research conducted. It is necessary to take responsibility for the research that is performed and the resulting publications. Effective financial management is required and should be accounted for, with complete transparency. Resources should be used responsibly, promoting efficiency and minimising the impact on the environment.

RESPECT

Respect for the dignity of all people should always guide the behaviour of anyone conducting research. Additionally, it should be possible to exercise autonomy when taking part in research and it should be ensured that the people participating in the research also exercise autonomy when making the voluntary and informed decision to take part in it, with special attention paid to vulnerable individuals. Personal privacy and the confidentiality of personal data should be

respected. Each person should be treated in a way that is kind, friendly and respectful of their life skills and choices.

Any animals involved in research should also be respected. They should be replaced by other alternatives whenever possible, used as little as possible and the procedures used should be refined to cause as little pain, suffering and distress as possible. Cultural heritage and the environment should also be respected in any research where these are affected, promoting sustainable use that ensures that they are handed down to future generations.

You should be familiar with and abide by the rules applicable to every specific context in which research is conducted, always considering these to be the minimum requirements and, where possible, applying higher standards.

RESEARCH ORGANISATION

RESEARCH STRUCTURES

According to the Universitat Politècnica de València's Regulations on Research, Development and Innovation Structures, the UPV organises its research activities through the following structures:

- University departments
- Research centres
- University research institutes

The UPV's research staff are not allowed to be part of more than one research structure and their affiliation is recorded in the Official Register of Research Structures.

R&D&I groups are formed as the result of free and voluntary association based on specific lines of research. They are aimed at generating knowledge, creations, products, processes, methods and innovative systems related to basic and/or applied research and the transfer of technological and humanistic knowledge.

LEADERSHIP AND ORGANISATION OF RESEARCH TEAMS

Research groups will be led and publicly represented by the person appointed as their leader from all members of the teaching and research staff, both in scientific terms and in organisational and supervisory aspects.

The person responsible for contracts with companies, agreements or research projects with public or private funding should strictly comply with the contracts, agreements and terms of grant awards throughout their duration, except in the event of force majeure. They will also be responsible for ensuring that proper use is made of the data and samples obtained as a result of the research activity, including the recording, safekeeping and destruction of the data, ensuring compliance with the current personal data protection regulations and all confidentiality clauses, according to any agreements signed or accepted as part of the research.

Research group leaders should promote a suitable working environment, in which the work of each individual is duly acknowledged, promoting professional development, continuous training, the exchange of knowledge and cooperation with other research staff and other research groups within and outside the UPV. When the time comes, if they so wish, any member of the research group may decide to lead a new team, following the procedures established for that purpose by the UPV.

MENTORING AND SUPERVISION OF RESEARCH STAFF WHILE IN TRAINING

An important part of the activities of research groups is based around introducing talented young people to the world of research. It is vital to provide responsible mentoring that really allows trainee research staff to develop the necessary skills.

The people who supervise them should be competent enough to train trainee research staff and have the necessary material resources to conduct research or, failing that, establish suitable collaborations. Additionally, the people who supervise trainee staff should have enough time to properly meet their training needs and monitor their research work. Furthermore, they will be obliged to inform those trainee staff of the occupational health and safety regulations, and about the ethical principles that govern research in the UPV, which are contained in these guidelines.

In the case of doctoral theses, they should undertake the commitments established in the *Best practice guidelines for the supervision of doctoral theses in the Universitat Politècnica de València*.

It is important to avoid situations in which trainee research staff may believe that they are not receiving adequate attention from the people responsible for their supervision. To avoid this, it is essential to establish good communication and set realistic deadlines for the completion of training activities and the research being conducted.

In turn, trainee staff should follow the advice and recommendations of their supervisors, informing them of their progress and acknowledging their scientific contributions. Trainee research staff should acknowledge any previous work on which their research is based and protect the confidentiality of the results and data obtained in the course of their research. We recommend that supervisors and supervisees sign a

confidentiality agreement in relation to data and results, before the research work begins.

RECRUITMENT AND EQUAL OPPORTUNITIES

As outlined in the *European Charter for Researchers*, the individuals responsible for research projects or contracts who hold selection processes to recruit staff, must not discriminate between them in any way on the basis of gender, age, ethnic, national or social background, religion or beliefs, sexual orientation, language, disability, political opinions or social or economic status.

Similarly, people responsible for research projects or contracts should ensure that the staff recruited to take part in the research who are under their responsibility have fair funding and/or wage conditions during every stage of their careers, including those in the initial phase, so that they are commensurate with their legal status, performance, level of qualifications and/or their responsibilities.

Individuals involved in CV assessment processes for the purpose of recruitment should follow the recommendations stipulated in the section on peer assessments.

WORKING CONDITIONS

Supervisors of research groups should ensure that the research staff's working conditions are optimal, allowing them to access the necessary resources to perform their work to the best of their ability and always ensuring that they have the necessary workplace safety equipment. Supervisors should also ensure compliance with the current domestic legislation and UPV regulations regarding work/life balance.

FACILITIES AND EQUIPMENT

The UPV's research staff should ensure that the facilities and equipment are suitable for the work that is going to be done.

All facilities and equipment required to perform the research activities within research projects that are funded with public or private funds or as part of contracted research will be owned by the UPV.

To the extent possible, any equipment used in the UPV should undergo the preventive maintenance recommended by its manufacturer and, where appropriate, be calibrated as and when required to ensure the reliability of the measurements provided by that equipment.

Staff who are going to use the UPV's equipment should be provided with the appropriate instructions and forms to ensure their proper use and, when the difficulty of using that equipment so requires, they should have suitable training on how to use it properly.

FINANCIAL MANAGEMENT AND ACCOUNTABILITY

As in any other public body, the UPV's staff is accountable to the organisations that fund their activity and, generally, society as a whole. The members of UPV's staff who are responsible for managing research funds must do so in a responsible and efficient manner, putting the public interest before individual interests in any activities, in a way that maximises the resources obtained and the benefit to society.

COLLABORATION BETWEEN RESEARCH GROUPS AND CONTRACTED RESEARCH

The UPV's staff has a duty to society to lead and meet the demands for knowledge within its community and to help to build a more advanced society that is supported by scientific knowledge and to collaborate with other R&D&I actors from businesses or the public sector.

In particular, external partnerships should fall within a collaboration contract or agreement that is supervised and signed by the UPV, containing the clauses that will govern the relationship between both parties and their rights and obligations. Those clauses should be provided with the intellectual input of both parties, so the UPV's research staff should protect the interests of the UPV and reject any unfair or unjustified clauses. Additionally, all agreements entered into between the entity that commissions the work and the individuals responsible for conducting the contracted research will be detailed in that contract document.

When there is a possible conflict of interest during the negotiation of contracts between the UPV and external actors, special care should be taken to ensure

independence and compliance with ethical research criteria. Also avoid competing unfairly when offering services that may be offered by the private sector.

COLLABORATION WITH THIRD COUNTRIES

In the case of collaborations with third countries or where no tangible or intangible export of products or technologies can occur, bear in mind that in those cases where it may be used for both civil and military purposes, exporting such technology (which includes collaborations and the completion of theses, the publication of findings, etc.) requires an application for an export licence, as set forth in Regulation (EC) 428/2009 of the Council of the European Union.

SPIN-OFFS

Organic Law 4/2007, amending Organic Law 6/2001 on Universities, states that universities and the production sector may form partnerships by creating technology companies that are based on the university's activity. The teaching and research staff of universities may take part in their activities under the framework set forth in article 83.

The UPV has Regulations on the Creation of Companies in the Universitat Politècnica de València based on University Research Activity, which not only governs the procedure for creating such companies and their legal framework, but also the relationships between the spin-offs - called *UPV Spin-offs* - and the UPV. When creating the spin-off, and for the lifetime of the company, it should be ensured that any rights that may exist for the UPV are respected and the boundaries between the UPV's staff and resources and those of the company must be clearly defined.

Pursuant to articles 83.1 and 83.2 of Organic Law 6/2001, of 21 December, on Universities, the research groups, departments and university research institutes, and the teaching staff of the university, may enter into contracts with technology companies, through the university, to carry out scientific, technical or artistic work. In such cases, take into account the provisions of article 1.3 of Act 53/1984, of 26 December, on Conflicts of Interest of Public Sector Workers.

In any event, when contracts are signed between the UPV and *UPV Spin-offs*, safeguards must be put in place to ensure that objectivity and scientific rigour are not affected and that no aspersions are cast regarding the University as a research institution. Transparency and accountability should be the main drivers when handling these situations.

CONDUCTING RESEARCH

WORKING PROCEDURES AND METHODS

The quality of research is closely linked to the competence of the research staff, so there must be an ongoing commitment to excellence, training and adaptation.

Any research that is conducted should broaden the existing scientific knowledge. Insofar as is possible, we encourage them to support the implementation of the Sustainable Development Goals. This means that besides helping to develop science, we have a direct impact when it comes to correcting shortcomings and making the world a better place.

When considering research, you should bear in mind the state of knowledge, proposing the most scientifically suitable methods and designs to answer the questions posed by the working hypothesis. Sampling, data collection, the analysis, interpretation and discussion of results will be carried out in an honest, accurate, impartial and thorough manner, and always with the utmost scientific rigour. There is no place for the misrepresentation, omission or fabrication of data in scrupulous research.

Research staff should avoid any bias in the results and not allow aspects such as funding to jeopardise the independence of the researchers. Insofar as is possible, conflicts of interest should be avoided and, in any event, should be declared.

We must never promote research that poses a threat to human health or dignity. In any event, research should be conducted in a way that complies with the current legislation in each specific context. Specifically, it should be remembered that research with human subjects, human cell and tissue samples, embryonic stem cells, personal data, animals, genetically modified organisms and hazardous biological agents requires prior authorisation from the UPV's Research Ethics Committee (REC). Special care should also be taken when conducting research in natural spaces, with genetic resources, and on cultural heritage.

DATA AND MATERIALS MANAGEMENT

Research data makes it possible to demonstrate the progress made in experiments that are conducted. It can also allow other researchers to reproduce the results obtained and perform meta-analyses that add a greater dimension to the studies performed.

An organised record of the activities performed and data obtained should be kept. The time during which this should be retained varies according to its nature and it should comply with the current regulations applicable to the research, if any. Generally, it is recommended that published research data be retained for at least three to five years following publication or the completion of the research project. In the case of data related to patents, this should be retained for the duration thereof. In the case of data from clinical trials, at least 25 years; this may be extended in specific cases. In the case of data relating to human cells and tissues which ensures traceability, this should be retained for at least 30 years.

We should promote open access to research data, whenever this is compatible with protecting intellectual property and respecting privacy. Open access not only makes it possible to ensure maximum transparency, thus strengthening the commitment to research integrity, it also allows that data to be used in more complex related or subsequent research.

Therefore, it is necessary for access to the data to be as open as possible, by ensuring that it is findable, accessible, interoperable and reusable, i.e. in line with the FAIR data management principles (*Findable, Accessible, Interoperable and Reusable*) to which the UPV adheres. Consequently, we recommend using digital data repositories that are theme-based, to the extent possible. In databases like re3data.org, you can search for repositories of this kind by research field. In any event, the UPV has an institutional repository for datasets included in *Riunet*, which meets the requirements of the majority of funding agencies and provides a DOI to make it easier to find and access the data. We understand that in those cases where open access to data may present a conflict in the development of intellectual property protection systems, depositing the data may be delayed.

In the case of personal data, privacy and confidentiality must be ensured, by implementing the necessary security measures for this purpose and complying with the current applicable legislation.

When appropriate, in addition to the data, biological samples may be stored in biobanks, always with the prior informed consent of the donor. In such cases, comply with the stipulations in the current legislation (Royal Decree 1716/2011) and store them in authorised facilities.

RESEARCH WITH HUMAN BEINGS

CLINICAL RESEARCH WITH HUMAN BEINGS

The UPV shows its commitment to the Declaration of Helsinki by the World Medical Assembly, the UNESCO Universal Declaration on the Human Genome and Human Rights and the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine (Oviedo Convention), which outline the ethical principles for medical research on humans and should serve as a guide for the minimum requirements to be met in research that is conducted in the UPV.

Clinical research with human beings should always be conducted in a manner that strictly complies with the current legislation, in particular Royal Decree 1090/2015 and Act 14/2007 on Biomedical Research. In those cases where clinical trials are held with drugs and medical devices, remember that the study must be approved by a research ethics committee and the Spanish Agency for Drugs and Medical Devices. In any event, research staff should have a research protocol which has to be reviewed and authorised by the UPV's Research Ethics Committee.

All research should adhere to the principles of autonomy, beneficence, non-maleficence and justice. Participants should exercise their autonomy, receiving clear, understandable and accurate information about the research, and they should make a voluntary decision to take part in it. Therefore, special attention should be paid to vulnerable individuals. In those cases where consent cannot be given directly by the participant, as well as obtaining it from their legal guardians, assent must be obtained where possible.

Participants should receive an information sheet which clearly and precisely stipulates the purpose of the study and how it is going to be conducted, identifying the research staff involved, how they can be contacted, who is funding the study and whether there are any possible conflicts of interest. Identify the benefits being sought by the study, whether direct (for the participant) or indirect (because it benefits the group that they represent), and the risks entailed. If there are significant risks, it should be explained how the negative consequences of their participation will be addressed. They should be informed that participation is voluntary and that they can withdraw at any time without giving any explanations and with no negative consequences. They should also be informed if there is any form of payment for participating and the steps taken to ensure the privacy and confidentiality of the data.

Research staff should ensure that each participant understands this information and, where appropriate, clear up any doubts that may arise, before obtaining the signatures of the participants or, where applicable, their legal guardians, on the consent form to participate in the study and the data protection consent form.

Adhering to the principles of beneficence and non-maleficence implies that the individuals conducting the research are competent to do so, that the research has sufficient scientific validity and that the importance of the research objective outweighs the risk and costs to the person participating in it, with the person always taking precedence over the research. In any event, the risks and costs to participants should be minimised and limited. The life, health, dignity, integrity, right to self-determination, privacy and confidentiality of personal information of participants in the research should be protected at all times.

When recruiting participants, adhere to the principle of justice and follow unbiased scientific criteria. Research staff should provide specific protection for vulnerable groups and individuals and try to include under-represented groups in the research.

RESEARCH WITH HUMAN CELLS AND TISSUES

A lot of biomedical research is not based on the direct use of human beings as research subjects; instead it uses human cell and tissue samples. When conducting this research, you should comply with the current legislation, in particular Act 14/2007 on Biomedical Research.

In these cases, research staff will ensure that they have the informed consent of the donors of the samples. When obtaining samples from a biobank, you should have authorisation from the corresponding Research Ethics Committee (REC) to access and use them. Before conducting the research, you will require the favourable opinion of the UPV's Research Ethics Committee (REC).

Anyone who handles human biological material should complete a declaration detailing the type and source of the samples, their collection and transportation, the processing, storage and disposal procedures, the duration of the tasks that are to be performed, the risks entailed and the preventive and protective measures to take.

Research staff will ensure that adequate steps are taken to protect the privacy and confidentiality of the data associated with the samples. If the analysis of the samples provides important information about the donor's health, they should be provided with that information, unless they have expressed a wish to exercise the right not to know beforehand. In the latter case, if the information is important and vital for their biological family, the UPV Research Ethics Committee (REC) will assess whether it is appropriate to report that information.

RESEARCH WITH HUMAN GAMETES AND EMBRYOS

Research with human gametes, pre-embryos and human embryos and their biological structures should be conducted in accordance with the current legislation and with the prior authorisation of the competent bodies. In particular, you should comply with Act 14/2007 on Biomedical Research and Act 14/2006 on Human Assisted Reproductive Technologies. This research requires a prior favourable opinion from the UPV Research Ethics Committee (REC).

As in all other research involving human beings, their tissues and their cells, the informed consent of the donors is required. In the case of research with gametes, this should never be for reproduction purposes. In the case of research with pre-embryos, remember that pre-embryos should not be grown in vitro more than 14 days after oocyte fertilisation, excluding any time when they have been cryopreserved.

NON-CLINICAL RESEARCH WITH HUMANS (INTERVENTION AND OBSERVATION)

A lot of research involving human subjects is not necessarily clinical; it involves social intervention and observation and it is not necessary to take into account ethical considerations similar to those applied in the field of biomedicine. In particular, it is necessary to adhere to the principle of autonomy, always ensuring that a voluntary and informed decision is made to participate in the research. As with clinical research, participants should receive an information sheet which details the purpose of the study and how it is going to be conducted, who is going to conduct it and how they can be contacted, who is funding the study and whether there are any possible conflicts of interest. Identify the benefits being sought by the study, whether direct (for the participant) or indirect (because it benefits the group that they represent), and the risks that it entails. They should be informed that participation is voluntary and that they can withdraw at any time without giving any explanations and with no negative consequences. They should also be informed if there is any form of payment for participating and the steps taken to ensure the privacy and confidentiality of the data. Research staff should ensure that participants understand this information and, where appropriate, clear up any doubts that may arise, before obtaining the signatures of the participants or, where applicable, their legal guardians, on the consent form to participate in the study and the data protection consent form

When ensuring autonomy, pay close attention to vulnerable individuals or cases where participants are contractually dependent on the research sponsor, to prevent any form of abuse.

In any event, before this research can be conducted, it requires a favourable opinion from the UPV Research Ethics Committee (REC).

RESEARCH WITH PERSONAL DATA

Any numerical, alphabetic, graphical, photographic or acoustic information or information of any other kind about individuals who are identified or identifiable is considered personal data.

The EU's General Data Protection Regulation (GDPR) and Organic Law 3/2018 on the Protection of Personal Data and Safeguarding of Digital Rights (LOPD-GDD) require anyone who is conducting research to meet certain requirements and carry out procedures to ensure that the confidentiality, privacy and freedom of participating subjects and donors are protected.

All data that is collected about people requires protection. This not only includes identifying data such as names and addresses, but also opinions expressed in surveys or medical data such as images or medical symptoms. The following data is considered sensitive and specially protected: data on ideologies or political opinions, trade union memberships, religion or religious opinions, beliefs or philosophical beliefs, racial or ethnic background, data related to health, sex life or sexual orientation, gender-based violence and abuse, genetic data, biometric data, data related to criminal convictions and offences and data related to administrative penalties.

Special care should be taken with data processing if the participants in the research belong to highly vulnerable groups, such as minors, people with functional diversity, the elderly and people at risk of social exclusion.

For processing involving the reuse of personal data for the purposes of health and biomedical research, a favourable opinion from the corresponding Research Ethics Committee (REC) will be required.

When collecting data, you should adhere to the principles of data minimisation - so that only the necessary data is collected - and of confidentiality.

You should meet the following requirements:

1. Declaration of data processing activities to the data protection officer (DPO) of the UPV, as per this form.
2. Approval of the research project by the DPO and the UPV Research Ethics Committee (REC).
3. Obtaining and safekeeping of the informed consent of the participants.
4. Implementation of appropriate security measures.
5. Assumption of responsibility for the processing of the collected data.

The following points should be considered:

In the declaration of data processing activities, you should specify: the purpose of the data, who is collecting the data and where, how recruitment will be carried out, how the data will be processed, possible data transfers to third parties or abroad. If it is likely that the data processing poses a significant risk to the rights and freedoms of individuals it will be necessary to assess the impact of the processing, for which purpose the Spanish Data Protection Agency has a risk analysis and impact assessment tool. The aim of the Impact Assessment is to determine (a) the likelihood of unwanted situations occurring, (b) the severity of their consequences and (c) the containment measures that we have to take to prevent or mitigate their consequences.

Participants in research studies have the right to be duly informed, pursuant to the provisions of article 13 of the GDPR, about the project in which they are being invited to participate, what their participation will consist of and whether they will receive any benefit for participating in it, in addition to their rights over the data and the conditions for transferring the data.

To certify that the current personal data protection legislation is being complied with, a report must be submitted to the UPV Research Ethics Committee (REC) detailing, at a minimum, the purpose of the research, who will be recruited and how and the data that is going to be collected. An information sheet will also be provided for the participants, along with the informed consent forms, which must be signed in order to take part in the studies.

The use of “pseudonymised” personal data in research projects will require:

a. The prior favourable opinion of the research ethics committee, in accordance with the sector regulations. In the absence of any such committee, the entity conducting the research will require a prior favourable opinion from the person appointed as the Data Protection Officer.

b. Technical and functional separation between the research team and the individuals who are carrying out “pseudonymisation” and retaining the information that will enable re-identification.

c. The “pseudonymised” data to only be accessible for the research team when:

i. It has made an express commitment to confidentiality and to refrain from any re-identification activities.

ii. Specific security measures are taken to prevent re-identification and access by unauthorised third parties.

RESEARCH SUPPORTED BY ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) systems should be ethical and robust, with measures being developed to prevent any unforeseen adverse effects. In this regard, they should adhere to the following principles:

Principle of respect for human autonomy

AI systems should be designed to increase, complement and enhance people's skills, leaving ample opportunity for human choice and ensuring human supervision and control over work processes. AI systems should not cause damage or exacerbate existing damage. In this respect, they should be safe and robust from a technical perspective. Vulnerable individuals should receive special attention and be involved in the development and deployment of these systems.

Principle of fairness

The development, deployment and use of AI systems should be fair. They should ensure a fair and equitable distribution of benefits and costs and that people are not subject to unfair bias, discrimination or stigmatisation.

Principle of explainability

The processes should be transparent, with information provided about the capabilities and purpose of these systems. It should be possible to explain any decisions that are made to the parties who are directly or indirectly affected by them. When developing black box systems, it will be necessary to adopt measures that ensure traceability, auditability and transparent communication regarding the possibilities of the system.

Therefore, when conducting research on AI systems that require authorisation from the Research Ethics Committee (REC), the research group must make an explicit commitment, guaranteeing that the development of the AI system will meet the requirements regarding human control and supervision, technical robustness and safety, privacy and data management, transparency, social and environmental welfare and accountability, which are established in the "Ethics Guidelines for Trustworthy AI" prepared by the European Commission's High-Level Expert Group on Artificial Intelligence (2019) and follow the guidelines in the European Commission's White Paper on Artificial Intelligence (2020).

NEUROMARKETING RESEARCH

Neuromarketing consists of using functional magnetic resonance imaging techniques, encephalography or other biometric measurements such as galvanic skin resistance, heart rate or eye movements, etc. to determine the emotions that a given product or advertising campaign produces in consumers. Neuromarketing projects can raise ethical dilemmas given that it is capable of capturing unconscious thoughts and using them for commercial gain to manipulate consumers. However, neuromarketing can also be used for the benefit of society, through the design of campaigns to promote public health or healthy lifestyles.

For these reasons, research projects that use neuroimaging techniques or biometric measurements for any purpose other than medical diagnoses should be assessed by the UPV Research Ethics Committee (REC).

Neuromarketing research should not ever undermine human dignity and it should adhere to the principles of autonomy, privacy and confidentiality, non-maleficence and the other principles covered in the Declaration of Helsinki. In particular, special attention should be paid to the most vulnerable population groups, such as minors and the elderly, because they are susceptible to being manipulated for commercial gain.

ANIMAL RESEARCH

Using animals for scientific and/or teaching purposes should only be considered when there is no alternative, and always according to the principles of the 3Rs which set the accepted standards for research with animals:

- Replacement with alternative models and tools, without the need to use animals
- Reduction, minimising the number of animals necessary through the design and analysis of robust and reproducible experiments,
- Refinement of the procedures used, eliminating or minimising any pain, suffering, distress or lasting harm experienced by the animals, by using the most advanced *in vivo* technologies and considering the impact on animal welfare of pursuing the scientific and/or teaching objectives.

Animal welfare largely depends on the quality and professional competence of the staff supervising and performing the procedures, and the individuals responsible for the animals' daily care; hence the UPV's commitment to ensuring that competent staff

are involved in this type of research and the best possible care is provided for the animals.

Research and/or teaching activities carried out with experimental animals should comply with the current legislation (Royal Decree 53/2013 and its amended version Royal Decree 1386/2018, and Directive 2010/63/EU) and in particular, with the ethical guidelines and legislation on animal testing in research and/or teaching activities prepared by the UPV Research Ethics Committee (REC).

All staff taking part in animal research-related activities should have appropriate accreditation and training to perform the tasks assigned to them.

Up-to-date information about ethical guidelines, the applicable legislation and procedures is available on the UPV Research Ethics Committee (REC) website. The applicable ethical guidelines and legislation, and the applicable associated procedures, are linked to the regulations that are implemented throughout the Valencian Community and the development thereof.

The UPV has the following documents related to research with experimental animals:

- **Regulation** of the UPV Research Ethics Committee and the Animal Testing Ethics Committee, approved by the Governing Board at the meeting held on 26 June 2014 and partially amended on 18 July 2019.
- **Institutional declaration** on the use of experimental animals, indicating that the UPV is a signatory to the Transparency agreement on the use of animals in scientific experimentation in Spain, promoted by the Confederation of Spanish Scientific Societies (COSCE), with the support of the European Animal Research Association (EARA), launched on 20 September 2016.
- **Form 3** (Declaration of animal testing in research and/or teaching activities) with the following Annexes:
    - Annex I (Non-technical summary): Excel spreadsheet containing general information about the project (title, duration, purpose, goals and benefits, foreseen harm, application of the 3Rs rule - Replacement, Reduction, Refinement -).
    - Annex II (Application for authorisation from the València Regional Government for animal testing projects) which must be signed by the manager of the User Centre; and
    - Annex V and its corresponding sections:
        - **A**: staff involved, duration and facilities, need for express authorisation;
        - **B**: summary of procedures, fulfilment of the 3Rs, housing and husbandry conditions and animal care; and
        - **C**: specific aspects of the procedure; this must be signed by the project's principal investigator.

RESEARCH WITH GENETICALLY MODIFIED ORGANISMS

Advances in biotechnology have made it possible to alter the genetic make-up of living organisms, overcoming natural barriers that would otherwise have prevented such modifications. Without question, research in this area is furthering progress in numerous fields such as agriculture and human health. However, it should be compatible with protecting biodiversity and human health.

Therefore, we remind research staff that they must comply with the international and domestic provisions on the use of genetically modified organisms (GMOs). In particular, the contained use of GMOs, their voluntary environmental release and their marketing must be authorised by the competent bodies; this applies to both the activities performed and the facilities where they take place. Similarly, those activities must also be authorised by the UPV Research Ethics Committee (REC). In applications, specify the type of organism, the containment level that has to be used according to the risks, the containment measures and equipment that are to be used and the certification thereof by the competent authorities and any other points deemed necessary with regard to biosafety.

RESEARCH WITH HAZARDOUS BIOLOGICAL AGENTS

Research with hazardous biological agents should be conducted following an assessment of the risks resulting from exposure to this type of agent and the appropriateness of the goals being pursued, performing a thorough evaluation of the existing risks and the benefits being sought. This research should be performed in accordance with the current regulations (Act 31/1995).

The activities and the facilities in which the research is conducted should have the prior authorisation of the competent bodies and they must be carried out by competent staff. Appropriate preventive measures should be implemented at all times, to ensure the researchers' protection and the containment of the organisms according to their risk level. Remember that advice on this subject is available from the UPV's Occupational Health and Safety Service.

Additionally, before starting the research, you will require the favourable opinion of the UPV's Research Ethics Committee (REC). In the respective request, report the type of biological material being used, the containment level that has to be used according to the risks, the containment measures and equipment that are to be used and the certification thereof and any other points deemed necessary with regard to biosafety.

RESEARCH IN NATURAL SPACES OR WITH GENETIC RESOURCES

Biodiversity is not only an asset of immeasurable value which should certainly be harnessed, it should also be handed down to future generations in the same or a better condition.

Therefore, any research performed in natural spaces should be guided by the pillars of the Convention on Biological Diversity, ensuring the conservation and sustainable use of its genetic components and the fair and equitable sharing of benefits arising from such use.

In particular, remember that research conducted in natural spaces should have the prior authorisation of the competent bodies and be carried out by staff with proven competence who do not jeopardise the conservation of habitats and their components.

In the case of genetic resources, you should comply with the stipulations of the Convention on Biological Diversity and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity. In the case of genetic resources related to food and agriculture, you should also comply with the International Treaty on Plant Genetic Resources for Food and Agriculture and Act 30/2006 on Nursery Seeds and Phytogenetic Resources.

Always avoid endangering fauna and flora. You should take special care to comply with the International Plant Protection Treaty (IPPC) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

RESEARCH ON CULTURAL HERITAGE

Cultural heritage, whether tangible or intangible, is a set of resources inherited from the past, which should be handed down to future generates in the same or a better condition.

Therefore, research on cultural heritage should support its conservation and sustainable use, thus enabling us to properly preserve this valuable asset.

Remember that this research requires the prior authorisation of the competent bodies and should be carried out by staff with proven competence, to avoid jeopardising its nature and conservation.

HEALTH AND SAFETY AND THE ENVIRONMENT

When conducting research, you should always prioritise the safety of the staff who are participating in it and anyone who is sharing the facilities that you are using. Furthermore, you should prevent or minimise any impact that it may have on the environment.

All staff involved in research should be familiar with and abide by the Universitat Politècnica de València's Occupational Health and Safety Policy and help to implement the Occupational Health and Safety Plan and the regulations established nationally, in addition to those inherent to conducting each specific type of research.

The people in charge of the research will train all trainee research staff and external personnel on the current occupational health and safety regulations and plans and ensure that they comply with them.

Always try to use procedures that minimise the activity's impact on the environment. In particular, take the necessary steps to minimise, recycle or responsibly manage the waste generated while conducting research.

The whole university community has an obligation to be acquaint itself with and implement the Universitat Politècnica de València's Environmental Policy and to help to implement the Universitat Politècnica de València's Environmental Management System. Thus, remember that there are over 140 environmental legal provisions that are applicable to the UPV and must be complied with.

THE DISSEMINATION OF RESULTS

GENERAL ASPECTS OF THE DISSEMINATION OF RESULTS

Research that is conducted acquires its true value when it has been published, through the different opinions available, primarily in scientific journals, patents and popular articles.

Scientific articles must include a full and reproducible description of the methods. It is important that the description of the methods provides a true picture. For example, avoid omitting data on those occasions when the results obtained are not in line with the originally selected designs.

The results should be detailed in full. Again, avoid omitting important information. Data should be analysed properly, using the most appropriate statistical

methods in each case. As specified in the section on data management, we should promote open access to the data, in line with the FAIR principles. The results should be discussed in full, avoiding any bias and also analysing any studies that contradict the findings made.

When discussing the results, take into account any prior contributions present in the literature at that time. Avoid any type of bias, especially in terms of omitting previous results that cast doubt on or contradict the findings made.

You should fully respect intellectual property throughout the dissemination process. Therefore, you should properly acknowledge the merits of the contributions included in the text and properly cite the sources, using the original sources where possible. Bear in mind that when including a citation, you have a certain responsibility to critically analyse the source, to ensure that the text that has been included is consistent with the findings that were originally published.

You should use citations responsibly, avoiding any unnecessary use of them. In particular, you should avoid any excessive or inappropriate use of self-citations and refrain from including citations for the sole purpose of pleasing potential publishers or reviewers.

The UPV never accepts practices such as plagiarism, self-plagiarism and duplicate publication. You should properly attribute any ideas that appear in your texts to the individuals who expressed them originally and, where possible, you should paraphrase them in your own words.

Moreover, there is growing concern about the practice of dividing extensive research into small blocks, with the aim of maximising the number of articles published. This practice does not help to offer a comprehensive overview of the problem concerned and it should be avoided as much as possible.

Research staff will reveal any conflict of interest they may have in relation to the research being conducted. In particular, they will clearly identify the sources of funding or any other conflict identified in the Universitat Politècnica de València's Code of Conduct for Managing Conflicts of Interest in Research. Any Research Services used will also be acknowledged.

The UPV supports and promotes open access to teaching, scientific and technical output, as detailed in the Universitat Politècnica de València's Institutional Policy on Open Access. Therefore, insofar as is possible, we should promote open access to scientific output and we recommend adding it to the RiuNet institutional repository, while always respecting any exploitation rights granted to third parties.

AUTHORSHIP

When disseminating research results, authorship is one of the most common sources of dispute. Authorship will be recognised when a significant intellectual contribution is made to the research. In line with the *Committee on Publication Ethics* (COPE) guidelines: Authorship credit should only be based on:

1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data, and;

2) drafting the article or revising it critically for important intellectual content, and;

3) being able to present in a detailed way the personal contribution to the research as well as to discuss the main aspects of the whole research;

4) final approval of the version to be published.

Conditions (1), (2), (3) and (4) must be met.

Authors will also be accountable for the content of a publication, unless specified otherwise.

The contribution made by individuals who have provided significant support but do not meet the above criteria should be recognised in the acknowledgements section. Thus, participation that is limited to obtaining financial or material resources, providing data or participant recruitment is not, in itself, sufficient to warrant being credited with authorship and it should be recognised in the acknowledgements. In cases involving the use of samples, data or analyses obtained or performed by other entities or research staff, whether paid or unpaid, or in those cases where students take part in the research, it is advisable to establish in advance the role that they are going to play in the research and, based on the foreseen contributions, determine whether or not they will meet the criteria for being credited with authorship.

Participation as an author should never be proposed or accepted if the widely accepted standards for being credited as such are not being met. People who do meet the criteria should also not be excluded. The UPV categorically rejects guest, honorary, gift and ghost authorship practices. In the first case, a person who has made no significant contribution to the research - but they are highly respected or influential and they may increase the likelihood of the research being published - is invited to be credited with authorship. This includes cases where authorship is offered to foreign researchers to show that international collaboration has occurred when, in fact, it has not. In the second case, it is proposed to name people as authors because they hold

senior positions or simply because they have provided funds or equipment for the research. The acquisition of funding, data collection and overall supervision of the research group do not, in themselves, warrant being credited with authorship. Any contribution to research that does not meet the requirements to qualify for authorship can be recognised in the publication's acknowledgements. In the third case, authorship is offered as a gift, in expectation of a consideration in return, in the form of other authorships or similar. This includes any cases where misleading CVs are generated for inexperienced researchers with the aim of enhancing the chances of obtaining public grants or stable positions. In the final case, authorship is not attributed to people who have made a significant contribution to the research and this is an unacceptable practice within a culture where merits are recognised.

The order in which participating authors appear should follow the widely accepted guidelines in the relevant area of knowledge and it should be known and agreed upon beforehand. When several authors have made an equal contribution to authorship and this entails occupying an important position in the order (first or last), this will be noted by, for example, attributing joint lead authorship (*equal contribution*).

Although it seems disproportionate, when starting the research it is advisable to establish and agree upon the individuals who will be credited with authorship and even the order in which they will appear, when publishing research articles, popular articles or patents. Although these lists may obviously be revised over the course of the research, prior knowledge among all individuals involved will help to reduce disputes related to authorship.

Wherever possible, the specific contribution of every person credited with authorship should be highlighted. In this regard, we recommend using the *CRediT* contributor roles taxonomy. This provides visibility and recognition for each contribution made and helps to reduce disputes regarding the authorship order.

In all publications, you should adhere to the Universitat Politècnica De València's Rules for the Publication of Scientific Results and the subsequent amendments thereto. In particular, you should unequivocally recognise your affiliation by using the institutional name of the UPV.

INTELLECTUAL PROPERTY AND PROTECTING RESULTS

In addition to standard scientific publication, it is possible to publish in the form of patents or other sui generis property protection systems such as plant variety protection certificates. In this regard, the UPV promotes proper result ownership management by establishing and disseminating an intellectual and industrial property

policy that makes it possible to obtain suitable protection for any products and processes that are developed, adding value to them and promoting their marketing. Therefore, before disclosing results, you should assess the possibility of protecting them.

The UPV has a Regulation for the Protection and Transfer of Intellectual and Industrial Property Rights which, among other things, governs ownership, disclosure, the protection process, the transfer, revenue management, computer software management, other forms of intellectual and industrial property and treatment of intellectual and industrial property rights over the results of research, development and innovation activities carried out within the framework of article 83 of Organic Law 6/2001 on Universities.

Authorship of a patent or sui generis system will be credited to the research staff involved in its development through substantial intellectual contributions. However, ownership thereof will lie with the UPV as the entity that employs the research staff in the exercise of their duties. In those cases in which staff with no contractual relationship with the UPV or students may occasionally be involved, we recommend agreeing upon any transfer of rights before starting the collaborative process, to avoid any subsequent disputes.

In the case of products or processes that originate from collaboration with other public or private entities, any protection thereof should be established beforehand in a contract or collaboration agreement.

In the respective clauses, agreed upon by the parties, you will have established the type of protection sought, the distribution of ownership and the corresponding exploitation rights. However, we understand that in certain circumstances, no decision can be made on these provisions until the result actually exists. In any event, the UPV's research staff will protect the interests of the university and reject any unfair or unjustified clauses.

SCIENTIFIC DISSEMINATION

Scientific dissemination is both necessary and advisable, as it makes society aware of scientific advances and makes the return on public investment in research known. When seeking to claim any intellectual or industrial property rights, bear in mind that this must be done before it is disclosed. The dissemination process is complicated as you have to summarise the research and explain it in language that is accessible and easy to understand. This does not remove the requirement to employ the utmost rigour and objectivity and avoid exaggerating achievements and creating false expectations. Similarly, avoid disclosing interim results that have not been duly verified.

PEER ASSESSMENT

Peer reviews and assessment are routine, necessary procedures when making decisions about the publication of results, funding research and staff recruitment and promotion processes.

In the case of publishing results, it must be ensured that any reviews of papers to determine whether they are to be published are based on the utmost scientific rigour and always with the strictest impartiality. Any remarks and recommendations made should be constructive and respectful and aimed at improving the initial proposal received.

Assessment of projects should be impartial, with proposals being assessed based on the state of the art when they are received and considering the costs that are deemed reasonable in the respective area of knowledge.

Assessments of publications or projects should be rejected when there are factors that compromise the impartiality of the assessor and, in any event, all conflicts of interest must be declared. We will not accept reviews by reviewers who are deemed not to be adequately prepared to conduct them, for example, because they do not fall within their specific area of work. They will also be rejected if the assessor does not have sufficient time to carry out a thorough, worthwhile review. Assessments will never be delegated to third parties.

In both cases, the research staff involved in the assessments should maintain complete confidentiality regarding the information received during the assessment and the result thereof.

When assessing CVs during recruitment and promotion processes, the research staff should also maintain complete impartiality and confidentiality, disclosing any existing conflicts of interest.

The UPV is a signatory to the *Declaration on Research Assessment* (DORA). Thus, when assessing scientific productivity, it is necessary to reconsider any use of journal-based metrics and also assess the research on its own merits. Consequently, we must be explicit about the criteria used to reach hiring, tenure, and promotion decisions, and it is advisable to consider using multiple metrics for the specific contributions made by each contributor, according to the CRediT taxonomy and other qualitative assessments. Assessments should be free of any imprecision and they should be made public and accessible. The individuals being assessed must be able to access the data and the analyses performed so that they can verify them. Thus, it should be ensured that the entire process is completely transparent.

THE RESEARCH ETHICS COMMITTEE

According to the UPV's statutes, the Universitat Politècnica de València's Research Ethics Committee (REC) is the consulting and advisory body responsible for:

1. Issuing reports requested by institutions and researchers on research projects or papers relating to: research on human beings, the use of personal data or human biological samples, with genetically modified organisms (micro-organisms, plants or animals), pathogenic biological agents and animal testing.
2. Ensuring compliance with best research and experimentation practices with regard to individuals' fundamental rights and in the interest of preserving and protecting the environment.
3. Drafting reports for the UPV's governing bodies on any ethical problems that may arise from R&D&I activities.
4. Stimulating debate in the university community and among the public on ethical issues in research and bioethics in general, and providing training on these subjects.
5. Ensuring adherence to/compliance with the rules included in the UPV's Scientific Integrity and Best Research Practices Policy.
6. Acting as the arbitration body in the event of any doubts or disputes that may arise regarding the integrity of the research, in accordance with the UPV's Code of Conduct for Managing Conflicts of Interest in Research.
7. Ensuring the proper dissemination of any laws, regulations or reports that are published in relation to research ethics.
8. Reviewing procedures that have already been assessed or proposing the suspension of any testing that has already begun if there are objective reasons for believing that it has stopped meeting the requirements established in the project.
9. Where appropriate, coordinating with other bodies with competence on ethical issues.
10. Where necessary, requesting reports that demonstrate the suitability and appropriateness of the facilities that the UPV has to carry out a specific project.
11. Overseeing the suitability of the procedure form used to obtain the informed consent of individuals who take part in procedures and who provide biological material.
12. Proposing guidelines on providing information to patients and safeguarding personal data.
13. When research protocols involve other institutions, a favourable opinion will be required from their respective Ethics Committees or equivalent bodies.
14. With regard to the UPV, assuming the responsibilities conferred to the Approved Project Assessment Body by Royal Decree 53/2013, of 1 February and Decree 13/2007 of the València Regional Government, on the protection of animals used for testing and other scientific purposes.
15. Submitting applications for the testing procedures and certificates of acceptance to the agency within the València Regional Government with responsibility over animal testing. Generally, coordinating effectively and efficiently with that agency.
16. Any other functions it is assigned by the UPV's Governing Board

The Research Ethics Committee (REC) is chaired by whoever is acting as the Vice-Rector with responsibility for research and by the following members:

- a) Seven members proposed by the R&D&I Committee, from a field of knowledge whose research is subject to some form of regulation. One from the Department of Animal Science, with experience and expertise in animal welfare and another should be a member of the teaching and research staff who specialises in ethics, if any.
- b) A member of the UPV's Ethics Committee, proposed by that Committee.
- c) The Head of the R&D&I Management Service.
- d) A member of the R&D&I Management Service, proposed by the Head of that Service, who will act as the Secretary of the Committee.
- e) The UPV's Animal Welfare Manager.
- f) An Animal Welfare Manager from outside the UPV, appointed by the Rector.
- g) The Data Protection Officer or, failing that, an expert with sufficient knowledge of Regulation (EU) 2016/679, when the research activities concerned involve the processing of personal data or pseudonymised or anonymised data.

PROCEDURES IN THE EVENT OF A BREACH OF THE SCIENTIFIC INTEGRITY AND BEST RESEARCH PRACTICES POLICY

As remarked above, one of the functions of the Research Ethics Committee (REC) is to ensure compliance with the Scientific Integrity and Best Research Practices Policy and act as the arbitration body in matters concerning research integrity or when a conflict of interest is reported as established in the UPV's Code of Conduct for Managing Conflicts of Interest in Research.

For this purpose, any person who wishes to make a complaint or allegation regarding a breach of the Scientific Integrity and Best Research Practices Policy or the Code of Conduct for Managing Conflicts of Interest in Research may contact the UPV Research Ethics Committee (REC) directly, either providing their name or anonymously. Such allegations can also be submitted to the Vice-Rectorate with responsibility over research or to the Ombudsman of the University Community. The Research Ethics Committee (REC) may also act on its own initiative.

The Research Ethics Committee (REC) will examine any conflicts that have been identified, gathering any information deemed necessary about the individuals involved,

and from the UPV's different Services. The Research Ethics Committee (REC) will always protect the confidentiality of the information received and it will act impartially when reaching its decisions.