

# INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, PUNE

## **POLICY DOCUMENT ON GOOD RESEARCH PRACTICES**

### **POLICY STATEMENT**

The Indian Institute of Science Education and Research, Pune is committed to conducting its business in accordance with the seven principles of selflessness, integrity, objectivity, accountability, openness, honesty and leadership and is responsible for ensuring that its research is carried out in conformity with accepted principles. The Institute expects all those engaged in research to adopt the highest achievable standards in the conduct of their research. This means exhibiting impeccable scientific integrity and following the principles of good research practice. These principles are applicable to ALL, whether they are employees of the institute, honorary or guest scientists or students, and irrespective of the sources of their funding, or their area of research.

This document provides guidelines on good practice in research and is intended for all staff (hereafter called as researchers), including persons with honorary positions, visiting positions, and students carrying out research at or on behalf of the Institute.

This document outlines key elements of good research practice, underlying the principles that should be taken into account while planning and conducting research, and while recording, reporting and applying results.

## **1.2. General Principles**

Good Research Practice (GRP) is essentially an attitude of mind. It is about the way in which research is planned and executed, the results are recorded and reported, and the benefits are disseminated, applied and exploited.

GRP can only be achieved if researchers at all levels are trained and supervised properly in a research culture that encourages frank discussion and debate. Research team leaders are responsible for seeing that a constructive atmosphere prevails and must ensure that researchers have the appropriate training and experience to carry out their duties as effectively as possible.

Supervision and checking are integral part to ensure the quality of research practice. Steps that may be needed to supervise GRP include monitoring of training and supervision of new researchers and of continuing professional development, regular checks on data recording and notebooks, and occasional checks on the day-to-day conduct of experiments.

## **1.3. Integrity**

Researchers should be honest in respect of their own actions in research and their responses to the actions of other researchers. This applies to the whole range of research work including designing of experiments, generating and analyzing data, applying for funding, publishing results, and when peer reviewing the work of other researchers. The direct and indirect contributions of colleagues, collaborators and others should be acknowledged. Researchers are accountable to the society, their profession, the institutes where the research is taking place, the staff and students involved and in particular, the sponsoring bodies. Researchers are expected to understand and apply the following principles:

- Plagiarism, deception, or the fabrication or falsification of results is regarded as serious disciplinary offence.
- Researchers are encouraged to report cases of suspected misconduct, and to do so in a responsible and appropriate manner.

The Institute is committed to managing such issues and the policy for this is given separately in the document “Misconduct in Research”

## **1.4. Conflict of Interest**

A conflict arises when a person’s judgment concerning a primary interest, such as scientific knowledge could be unduly influenced by secondary interest, such as financial gain or personal advancement. Researchers must pay as much attention to perceived and potential conflicts of interest as to actual conflicts. How one is perceived to act influences the attitude and action of others, and the credibility of scientific research at large. Researchers should declare and manage any real or potential conflicts of interest, both financial and professional. Areas of potential conflict include:

- Where researchers have an existing or potential financial interest in the outcome of the research
- Where there is a private or private practice benefit significantly dependent upon the outcome of research
- Where the researcher's professional and personal gain arising from the research may be more than might be usual for research

### **Planning the research**

All research projects should be conceived, designed and implemented according to the highest standards.

- Clear documentation of the rationale for the study and any subsequent modifications, either in laboratory note books or in project files. Each key document and any changes should be signed with date by the researcher responsible to establish the provenance of the study and protect intellectual property rights.
- Adherence to current safety practices and ethical standards
- Securing all necessary ethical and regulatory approvals
- Assessment of resources needed to ensure the study is viable within the available means
- Economy in use of resources, for example not purchasing more reagents than are needed for the planned sample size and regular review to determine when to stop the experiments.
- Regular review of progress so that new findings can be taken into account and project plan modified accordingly

### **Conducting the research**

- The legal and ethical requirements relating to human participants, animals and personal information should be familiar to each person involved in the study and they should know to whom to turn for advice.
- Equipment used to generate data should be suitable for the purpose, of appropriate design and of adequate capacity. It should be calibrated and serviced regularly by trained staff so that the performance is optimal and the results can be trusted.
- A standard operating procedure (SOP) should be maintained for each piece of equipment. There should be easily accessible instructions for the safe shutdown of equipment in case of emergency.
- SOP should be documented for all routine methods to ensure that data are collected consistently. SOP should be written in simple language, readily accessible and ideally in a standardized format.
- There should be clarity at the outset of the research programme as to the ownership and use of, wherever relevant:
  - Data and samples used or created in the course of research
  - The results of the research

The responsibility and procedures for the storage and disposal of data and samples should be made clear at the commencement of any project. Any research collaboration agreement relating to the research should contain some clauses describing necessary arrangements. Researchers should keep clear and accurate records of the procedures followed and the approvals granted during the research process, including records of the interim results obtained as well as the final research outcomes. This is necessary not only as a means of demonstrating proper research practice, but also in case questions are subsequently asked about either about the conduct of research or the results obtained. Properly maintained note books may be used in evidence when establishing ownership of inventions.

- Data should be stored in a way that permits complete retrospective audit, if necessary. Data should be stored safely, with appropriate contingency plans. Original data/images should be recorded and retained. This is particularly important when data/images are subsequently enhanced. Both original and enhanced data/images should be stored. Over-enhancement or over-interpretation of images must be resisted. Confidentiality is also important if there is a potential for commercial exploitation.
- Retention of accurately recorded and retrievable results is essential for research. Primary research data must be retained in their original form within the institute. Researchers who are leaving the institute and would like to retain data for personal use must get permission from their team leader or head of department. Publication of data does not negate the need to retain source data.
- All raw data should be recorded and retained in indexed laboratory notebooks with permanent binding and numbered pages or in an electronic dedicated note book. Machine printouts, questionnaires, chart recordings, autoradiographs etc. which cannot be attached to the main record should be retained in a separate ring-binder/folder that is cross indexed with the main record. Records in note books should be entered as soon as possible after the data are collected. Recorded data should be identified by the date of the record and/or date of collection. Supervisors should regularly review and “sign-off” notebooks of researchers to certify that records are complete and accurate. Computer generated data should be backed-up regularly; duplicate copies should be held on a disc in a secure but readily accessible archive. Wherever feasible, a hard copy should be made of important data. Copies of relevant software, particularly the version used to process electronic data, must be retained along with the raw data to ensure future access.

### **Openness**

Whilst recognizing the need for researchers to protect their own academic and where appropriate their intellectual property rights (IPR), the institute encourages researchers to be as open as possible in discussing their work with other researchers and with the public. The aim in disseminating research is to increase knowledge and understanding: its purpose should not be primarily to seek publicity for the researcher or the institute or the sponsor.

Once the results have been published, the institute expects researchers to make available relevant data and material to other researchers, on request, provided that this is consistent with any ethical

approvals and consents which cover the data and materials, and any intellectual property rights in them. Procedures for managing the transfer of material in and out of the institute are outlined separately. It is recognized that publication of some results of research may need to be delayed for a reasonable period pending protection of any intellectual property arising from the research. Any such periods of delay in publication should be kept to a minimum and this should normally be no more than 3 months.

Researchers should be careful when discussing work that is not complete or has not been published, particularly if it has not undergone peer review. Exchange of confidential information by e-mail is not recommended, especially if patent applications are anticipated.

### **Professional guidance and legislation**

Where available, the institute expects all researchers including students, trainees etc. to observe the standards of research practice set out in guidelines published by scientific and learned societies, and other relevant professional bodies.

All researchers should be aware of the legal requirements, which regulate their work noting particularly health and safety legislation and data protection.

### **Leadership and cooperation**

Head of the institute and senior colleagues should ensure that a research climate of mutual cooperation is created which all members of a research team are encouraged to develop their skills and in which the open exchange of ideas is fostered.

### **Supervision**

The Institute wishes to ensure that appropriate training and direction of research and supervision of researchers is available.

### **Training**

The Institute will plan periodic course to enable students and researchers to understand and adopt best practices in research as quickly as possible. Supervisors should encourage students and colleagues to attend relevant courses whenever offered as a part of their overall career development. Some of the indicative courses are:

- Research design
- Regulatory and ethics approvals and consents
- Equipment use
- Record keeping
- Data protection
- Management of intellectual property, including confidential information

Use of materials requiring statutory registration such as radioisotopes, pathogenic and GM organisms  
Data management  
Using animals for experiments  
Regulations involving human subjects

### **Primary data/samples/equipment**

Data generated in the course of research should be kept securely in paper or electronic format, as appropriate. Back-up records should always be kept for data stored on a computer.

Researchers should report any changes in the direction of sponsored research to the sponsor or any other relevant body. Best practice would be to discuss any change in director of the research with the sponsor prior to its implementation.

### **Intellectual Property**

Researchers must inform the Intellectual Property Cell ( or the Coordinator of the program and Director) of any intellectual property rights that may arise from externally funded research and also inform the sponsor, if they so request. Institute's policies for managing intellectual property are under preparation.

The Institute's research as well as the funding from Government agencies is done for public benefit and not for direct commercial or private gain, unless an industry is sponsoring a research program with a definite objective of finding solutions that benefit the industry. Public benefit may arise from education, i.e., Gain of knowledge that is placed in the public domain, or the case of biomedical research, improvement in the treatment or care of patients or in the prevention or cure of diseases. Government funding or charities cannot be solely for the purpose of commercial gain although commercial benefit from the exploitation of the results of the research may accrue to their inventors, the Institute and by agreement to any sponsor of research.

### **Dissemination and publication of results**

The institute encourages publication of and dissemination of results of high quality research but believes that researchers must do this responsibly and with an awareness of the consequences of any such dissemination in the wider media.

The Institute tries to ensure that sponsors understand that researchers must have academic freedom and sponsors should not discourage publication or the dissemination of research or research findings. The Institute recommends that every effort should be made to inform the sponsors of any potential publication or dissemination of the research findings. This will enable the sponsor in question to have adequate time and accurate information to protect any arising intellectual property or plan their own public relations, in conjunction with the Institute. Publicity may be important to industrial sponsors and to fund-raising agencies and is increasingly important to institute itself.

Researchers should take into account the following guidance when publishing or disseminating their research or research findings including any plans they may have to publish or publicize research at conferences or web sites.

- The sponsor should be notified in advance when the research might be published, publicized or disseminated
- Researchers should make every effort to make sure research is peer reviewed prior to it being published, publicized or disseminated. If research is placed in the public domain before peer review has been undertaken, the researcher must make this clear in any publicity
- All funding sources must be acknowledged in any publication or publicity
- Results of research should be published in an appropriate form, usually as papers in refereed journals
- Any one listed as an author on a paper should accept responsibility for ensuring that he or she is familiar with the contents of the paper and can identify his or her contribution to it. The practice of honorary authorship is unacceptable.
- The contributions of formal collaborators and all others who directly assist or indirectly support the research should be both specified and properly acknowledged.
- Work should normally be published as a coherent entity rather than a series of small parts, unless there is a legitimate need to demonstrate first discovery by publishing preliminary data.
- Quality rather than quantity is paramount; the proliferation of multi-author papers to increase quantity should be discouraged.
- Authors must not publish the same data in different journals.
- If an error is found that degrades the worth of published findings, the principle author must take efforts to publish a correction as soon as possible
- Where the findings are found to be in serious doubt, a retraction should be published speedily.
- Where fraud is suspected it should be dealt with the procedure dealing with “ Misconduct in research”.

#### **Sources of information**

- The Office of Research Integrity, USA
- MRC Good Research Practice
- University of Cambridge Good research practice
- WT/DBT India Alliance – Guidelines on good research practice

-----