tata institute of fundamental research
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Guidelines on Academic Ethics

1. Preamble

The Tata Institute of Fundamental Research (TIFR) expects all its members to follow the highest standards of academic ethics. The present document outlines these standards and how they are to be followed, in the form of guidelines.

While all of us are required to follow ethical norms originating from the values that inform the Constitution of India, the special nature of academic activities places special responsibilities upon us at TIFR. These take the form of moral obligations towards our fellow members, the Institute, the public at large, academicians all over the world, and our own academic disciplines. Academic members of TIFR pursue diverse activities including the conduct of research, publication of articles, training and mentoring, administration of science and interfacing with the public and press. In all these contexts, the best scientific atmosphere requires awareness, sensitivity and careful adherence to ethical norms.

This document prescribes various types of necessary and desirable academic practices, and also highlights several types of practice that are not acceptable. It sets down procedures to investigate alleged cases of ethical misconduct and remedial actions to be taken by the authorities whenever such misconduct may have occurred. This document is not exhaustive and could undergo revisions in the future.

This document has drawn upon the document “Scientific Values: Ethical Guidelines and Procedures” of the Indian Academy of Sciences, with their kind permission.

2. Conduct of Research

2.1. Responsibilities of a research investigator

Research at the Institute is conducted either individually, or within informal collaborations, or in organized groups conducting research on specific projects. In a wide variety of research projects, some combination of faculty members, postdoctoral researchers, laboratory staff, students and/or external collaborators may be involved. All individuals participating in a given project are responsible for their own actions and should make sure these are consistent with, and uphold, high ethical standards.

In experimental research projects there is usually a Principal Investigator (PI) or a set of co-PI’s who lead the project. The PI’s are also expected to play a leading role in ensuring ethical standards.

He or she should closely and regularly monitor the experimental procedures used and formulate policies for recording data and compiling results in the form of publications and reports. It is advisable to formulate norms in this regard which should be made known to all the participants in the research project. The PI should also ensure careful supervision and appropriate mentoring of young researchers including students and postdoctoral fellows. In the case of informal collaborations, more common in theoretical disciplines, there may not be a designated PI but all members involved are expected to play an appropriate role to ensure that ethical standards are upheld.

2.2 Responsibilities of a student

In additional to their ethical responsibilities as researchers, graduate students at TIFR are required to adhere to the highest ethical standards in their conduct during courses, assignments and examinations and in their behaviour towards other members of the research community.

2.3 Data management

In both independent and collaborative research, every effort must be made to ensure that data are collected and computations performed with complete honesty. False statements and/or deliberate distortions are unacceptable. Fabrication, falsification or improper manipulation of data are highly unethical and must not be resorted to for any reason. Investigators in any given field should familiarize themselves with the methods of handling and processing data that are considered acceptable/unacceptable in their field. The procedures for recording and storing data will also vary from subject to subject, but in each case they should be well formulated in advance and scrupulously followed. Researchers should be aware that it is not uncommon for the correctness of a research publication to be questioned, even after publication.

Particularly with experimental work, defending the publication requires properly recorded raw data to be produced and its absence or premature destruction could be treated as suspicious. A well maintained lab notebook provides not only a permanent record of results and protocols for future publications, but also serves as critical evidence for a claim of priority in the case of patent applications and as proof of adherence to appropriate ethical standards. Tampering with or manipulating records in a laboratory notebook is considered to be fraudulent activity. It is recommended that research related data, lab notebooks and material be stored in a secure manner so that if required the scientific validity of the data can be examined. Generating, recording and publishing false data are fraudulent practices that must be scrupulously avoided.

2.4 Ownership

Physical materials including lab notebooks, data sets etc arising out of research performed at TIFR, will remain the property of TIFR unless explicitly decided otherwise. The same holds for software and processes having commercial value.

2.5 Responsible use of funds

The management of research funds requires adherence to TIFR financial policies and regulations. This is applicable to both funds received from TIFR and from external granting agencies. Efforts should be made to ensure reasonable and efficient use of resources following transparent and fair processes.

2.6 Sharing of facilities

Equipment installed at TIFR is expected to be shared in a collegial spirit with colleagues who have the background to operate the equipment and require access for their own research, as long as such access does not impede the original purpose for which the equipment was purchased. Wherever time-sharing is appropriate, transparent procedures for this should be put in place.

2.7 Experiments involving human beings or animals

All experiments that involve use of animal and human research subjects require ethical permission and approval. Experiments involving animals come under the purview of the TIFR Institutional Animal Ethics Committee (IAEC) which functions based on the guidelines of CPSEA (Committee for the Protection, Case and Supervision of Experimental Animals). Experiments involving human subjects come under the purview of the TIFR Institutional Human Ethics Committee (IHEC) which functions based on the guideline of ICMR (Indian Council of Medical Research).

2.8 Safety and environment

It is the moral responsibility of a scientist that his/her research activity should not endanger others by compromising their safety or health or by creating environmental hazards. TIFR expects all its members to incorporate safety and environmental concerns into research practices. In this regard it is important that applicable environmental guidelines, regulations and laws are followed, and that appropriate licenses/permits and clearances are obtained for the handling, storage or disposal of hazardous material. In particular within experimental laboratories the PI's should take responsibility for ensuring that the work area is safe, and that research practices of the group do not endanger the research team, visitors or the public. In this regard the PI's are expected to encourage team members to undergo appropriate training to maintain safety and environmental standards.

3. Training

3.1 Student recruitment, assessment and allotment

Recruitment of students to TIFR should involve a fair and transparent procedure. While assessing merit during a selection can involve some subjective features, particularly during interviews, care must be taken to ensure that extraneous considerations – namely, any attribute of the student that has no bearing on academic ability or potential – are rigorously avoided. Assessment of the performance of students, made through examinations and by course or thesis guides, must also be carried out with maximum objectivity. The assessment procedure for a course or project should be made clear to the student from the beginning. The same holds when students are allocated to research programmes, for which purpose a fair and transparent procedure should be put in place and made known to all candidates.

3.2 Research supervision

It is self-evident that during the course of their research activity, students tend to absorb and internalize the ethical atmosphere within their group. For this reason among others, research supervisors should display the highest ethical standards when dealing with students. Conflicts

between students and others in their group, or between students and guides, are not uncommon in academia. Supervisors should be aware of the potential for this type of problem. Potentially troublesome issues should be identified and dealt with as soon as possible, ideally before they graduate into full-blown conflicts. Claims and counter-claims about relative contributions are a particularly problematic area which supervisors need to handle with manifest fairness and clarity.

It is recommended that graduate students meet regularly with their doctoral thesis committee, whose role is to monitor the progress of the student's thesis work, to ensure the student and thesis advisor work efficiently to meet graduate school related deadlines, and to mediate resolution of disputes should they arise.

3.3 Ethics in teaching

TIFR members involved in teaching and training of graduate students should treat the intellectual development of students as their highest priority. They should strive to ensure the highest quality in their course content, competence in teaching methodology and fairness in assessment of assignments and examinations. They are also expected to maintain confidentiality of student records and communications, and maintain dignity in the classroom environment.

3.4 Ethical training to students

Students at TIFR should receive direct ethical training, preferably on a regular basis. A mandatory ethics module should be provided at the time of joining as part of the orientation. Additionally course-specific and laboratory-specific ethical training should be imparted at the appropriate times.

4. Publications

4.1 Authorship

The authorship of scientific publications is a very important issue since it is the way in which scientists receive credit for their contributions. All listed authors of a publication should have contributed significantly to it. It is inappropriate to offer "guest authorship" to anyone who has not made any significant contribution. Likewise, it is wrong to exclude from authorship anyone who deserves to be an author. It is unethical to include anyone as an author of a paper without their clear consent. The order of authorship can also be important.

It is not possible in this document to list precisely what constitutes a significant contribution to a publication, or what is an appropriate authorship order. This is because community standards vary widely from subject to subject. Researchers should familiarize themselves with the standards in their field and, importantly, the criteria laid down by the journal to which their work is submitted. Deliberate failure to follow these criteria would be treated as ethical misconduct, not only towards the journal but also towards TIFR.

4.2 Plagiarism

The Oxford Dictionary defines plagiarism as *"the practice of taking someone else's work or ideas and passing them off as one's own"*. In the context of scientific research, it can involve

unattributed lifting of textual material or scientific ideas or actual research results. The most extreme example would be a deliberate attempt to pass off someone else's entire research project as one's own. However, it can also involve (deliberate or unintentional) incorporation of some ideas or results of other researchers, without proper attribution, within one's own research publication. Though the degree of severity can vary, plagiarism always amounts to ethical misconduct and requires redressal.

The use of someone else's work in one's own is not by itself unethical. A limited amount of textual material in someone else's paper can be copied if it is clearly marked as a quote (typically by enclosing it within quotation marks) *and* the source is explicitly cited *where the quote starts or ends*. Alternatively, text may be paraphrased with a general indication of where the concepts originated. Occasional re-ordering or substituting of words is not sufficient to count as paraphrasing: the recommended procedure is to read and understand the source material, then put it away and express the idea in one's own words. Besides textual material, the incorporation of ideas, figures, graphs etc from other sources in a manner that conveys a false impression that they are original amounts to plagiarism.

Taking one's own published results and reproducing them in another work as if they were new is "self-plagiarism". "Duplicate publication" – submitting the same research results to two or more journals and treating them as separate publications – is also a form of self-plagiarism and must be avoided.

Plagiarism is an issue not only for scientific publications but also internal reports, textbooks, monographs and grant proposals. The considerations above apply equally in all these cases.

4.3 Thesis writing

A thesis typically involves collecting a large amount of material, both previously established and original. The manner of presentation must be such as to make clear what has been taken from other sources with appropriate acknowledgement and permissions if required, and what is the original content. For a student, thesis writing is often the first major occasion that requires taking personal responsibility to handle ethical issues. Guidance must be imparted to make sure that data is presented appropriately and plagiarism, even inadvertent, is avoided.

4.4 Responsibility of referees

Scientists who are asked to review a manuscript or a research proposal have a responsibility to ensure they do not misuse their advance access to the information and ideas in these documents. The use of such advance access to publish a competing work, or carry out research that preempts the proposed project, would be highly unethical.

5. Confidentiality

Several aspects of academia require the maintaining of strict confidentiality. The proceedings and Minutes of certain meetings, as also assessments for hiring and promotion, are not to be discussed publicly. It is particularly important for the health of the Institute that candidates about whom

positive or negative comments are made in meetings by specific members should not learn about these comments. Such leaks could compromise the ability of Institute members to give honest assessments. They can create resentment, or conversely an inappropriate sense of obligation, on the part of a candidate. Unauthorised email circulation of confidential Minutes or other privileged communications, within or outside the Institute, amounts to a serious breach of academic ethics. For this purpose it is best to consider all official emails and communications to be confidential unless it has been expressly clarified to the contrary.

6. Science management

6.1 Evaluations: hiring, promotion, awards

In a research institute, assessment of candidates for hiring, promotion and awards is a regular activity. While this necessarily involves some degree of subjective judgement, it is essential that an assessor take great care to eliminate personal biases and extraneous considerations and proceed in a manner that is visibly fair and balanced. The general criteria for hiring, assessment and awards should, as far as possible, be laid down in advance. It is inappropriate to introduce new criteria, not previously agreed upon, during an assessment process purely for the purpose of favouring or disqualifying specific candidates. When referee evaluations are used, they should be sought in writing.

6.2 Technology and materials transfer

Research conducted at TIFR is based on the principle of the free dissemination of scientific knowledge, and this also applies to research at TIFR funded by industry. TIFR subscribes to the principle that inventions and discoveries emerging from publicly funded research should be made available for public benefit through appropriate technology transfer. Whenever inventions are patented or technology emerging from TIFR research is licensed for commercial use, care must be taken that the principle of free dissemination of scientific knowledge remains paramount. Patentable inventions based on work done at TIFR are to be assigned to TIFR.

When conducting research activities supported by external granting agencies or jointly with other research institutions, TIFR members must consider entering into clear agreements (formal or informal but explicit) which cover the nature of the collaboration, materials and technology transfer (whenever relevant), authorship of resulting publications and ownership of patentable inventions. These agreements must be consistent with the principles enunciated above.

Memorandums of Understanding (MOU's) are essential for industry-funded research. They should clearly state the manner of sharing of proprietary data, time lines to avoid delay of publications and procedures to be followed for patentable data. Potentially patentable inventions that arise from industry-funded research carried out at TIFR are to be subject to stipulations of the MOU between the industry and TIFR, set in place prior to the commencement of the research.

6.3 Bias and discrimination

The TIFR academic community is enriched by the presence of people of different ethnicities,

genders, ages, affiliations, backgrounds and sexual orientations. It is incumbent on the members to so conduct their academic affairs that there is no direct or indirect bias or discrimination against any individual based on the above categories.

TIFR aims for the full and equal participation of women in all academic activities. It is everyone's responsibility to foster a gender-neutral and supportive environment to achieve this goal.

6.4 Bullying and harassment

In academia it is essential to promote an atmosphere of free and frank debate and exchange of ideas. In this context, any form of bullying or harassment by individuals or pressure groups is not acceptable.

6.5 Interaction with public and media

Statements made to the media should be as objective, fair and balanced as possible. The same holds for scientific information conveyed to the public. Scientists are expected not to use the media to promote their own personal image or create a false or exaggerated impression of their achievements.

7. Conflict of interest

Several types of situations can arise in academia where a person experiences a conflict of interest. Reviewers of manuscripts may find that the contents of the manuscript have a potential impact on their own research or financial interests. Assessors for a hiring/promotion/award may be personally related to a candidate. Researchers who are also shareholders of a company may find themselves in a situation where their research could impact the company's financial situation.

In all such cases it is essential for researchers to promptly disclose foreseeable conflicts of interest. It is not sufficient for the researcher to consciously decide to handle the matter objectively. The decision on whether the conflict of interest requires definite action (such as the researcher withdrawing from a committee) should be taken by other responsible colleagues. Foreseeable research conflicts should be reported to the Director TIFR and potential conflicts while reviewing manuscripts should be reported to the journal editor. In case an assessor has a personal relation to a candidate in an interview, this fact should be communicated to the committee Chair (or if the assessor in question is the Committee chair, then to the appointing authority of that Committee).

8. Reporting of misconduct

Suspected ethical misconduct at TIFR must be reported to the Director. There will be no reprisal for complaints made in all sincerity and good faith, even if they later turn out to be unfounded. However, complaints that turn out upon investigation to have been falsely made with deliberate intent to malign the accused will be treated as a serious form of ethical misconduct.

Complaints can be made by anyone, not necessarily an Institute member. They must be signed and

carry the full name and address of the complainant. Some relevant documentation must be supplied along with the complaint in order for the Director to be able to decide whether there is a *prima facie* case. The complainant should not give wide publicity to the complaint at this stage. Such publicity, if it occurs, can be treated as ethical misconduct even if the complaint is found to have merit and continues to be investigated.

9. Mechanism to address complaints

The Director will appoint a standing Committee on Academic Ethics for a pre-determined duration whose task is to investigate ethical complaints and also impart ethical training from time to time. The Director may also consult a broad-based Advisory Committee on ethical issues that involves Deans, Centre Directors and other faculty members.

9.1 Course of action

Upon receiving an ethics complaint, the Director TIFR should decide whether there is *prima facie* merit in the allegations. Finding such merit does not imply that the complaint has been upheld but only that it has not been found obviously invalid or frivolous. To decide this, the Director may consult the Ethics Committee.

At this stage, if appropriate the Director may, in consultation with the Ethics Committee, explore the possibility of an amicable solution through mediation. If this is successful the complainant will modify or withdraw the complaint in writing. However, the complainant should not be coerced to accept mediation.

If the Director is satisfied that the complaint merits investigation it should be passed on in full, including supporting documents, to the Ethics Committee. Simultaneously the Director should communicate it to the subjects of the complaint, informing them that an investigation will take place with which they are required to cooperate fully. Their response to the complaint should be invited and passed on to the Ethics Committee. The Director should also inform the complainant that the complaint has been referred to a Committee for investigation.

During the investigation period, both the complainant and the subjects of the complaint may submit information or documents to the Director, who shall forward these (if relevant) to the Ethics Committee. During this period they should not communicate with the Committee except when invited to do so, and should also minimise their communications with the Director on this matter.

The Ethics Committee should investigate the complaint carefully and with due discretion. During this period it should try to hold a face-to-face meeting with both the complainant and the subjects of the complaint if possible. At the end of its investigations it will submit a written report to the Director TIFR indicating the extent to which merit has, or has not, been found in the complaint, and suggesting remedial action if any is required. The Committee must not publicise the report at this stage.

On receiving the report, the Director should communicate it in full both to the complainant and to the subjects of the complaint and invite their response. Thereafter the Director may decide to accept

the report in full and implement it, or accept it partially, or reject it totally. This decision should be communicated to the Ethics Committee. The final verdict on the case, including any redressal required, will take the form of a written statement by the Director communicated to the complainant, the subjects of the complaint and the Ethics Committee. The Ethics Committee report may be attached to this statement in full or part, if relevant.

9.2 Time frame

The investigation of an ethics complaint cannot easily be assigned a time-frame. However for relatively simple cases it is desirable that the first report be submitted within 3-4 months. More complex cases, particularly those requiring detailed investigation of scientific issues, can take as long as six months to a year or even more.

9.3 Interference with the investigation

Any attempt to interfere with the functioning of the Ethics Committee in any manner, or refusal to cooperate with the investigation, constitutes an ethical violation by itself. This should be reported by the Committee to the Director for appropriate action.

9.4 Availability of results of ethics investigations to TIFR members

Members of TIFR are entitled to request the Director for access to the final report of the Ethics Committee, and the Director's written statement to the concerned parties, upon completion of the investigation.

June 4, 2012.