Ethical Policies on the Human Genome, Genetic Research & Services

PREAMBLE

In view of the tremendous growth of interest on the human genome, resulting from various conceptual and technological breakthroughs, genetic research and services have been growing at an accelerated pace. Such research and services impinge on human society, both at individual and group levels, resulting in various ethical concerns. In 1997, the UNESCO issued the Universal Declaration on the Human Genome and Human Rights. To consider whether any amendments are required in this Universal Declaration, to liaison with the International Bioethics Committee of UNESCO, as also to develop national policies for human genetic research and services, a National Bioethics Committee was constituted with the approval of the Minister of Science & Technology, Government of India, in November 1999. This Committee deliberated on various issues concerning the human genome. The policies provided in this document resulted from these deliberations. These policies have been so formulated that they are harmonized with the Ethical Guidelines for Biomedical Research on Human Subjects developed by the Indian Council of Medical Research in 2000.

MEMBERSHIP OF THE NATIONAL BIOETHICS COMMITTEE

The committee has experts (Scientific and Legal) covering the areas of basic research, genetics, genomics, education and legal aspects. (Please see Appendix)

INTRODUCTION

Genetic research involving humans has already provided benefits to humankind in the form of drugs, vaccines, diagnostics and other knowledge for better management of health and disease. With the availability of biotechnological tools and techniques, new vistas in molecular medicine have opened up for human welfare. Such research involves the collection and analyses of information (e.g., clinical, demographic) and biological samples (such as blood and other tissues) from individuals or groups of individuals. Sometimes, genetic research involves the administration of foreign material to individuals and analysis of resultant effects. There are potential risks involved in the collection of information and samples. The results of genetic research and services also have the potential of creating adverse effects, physical and/or mental, on individuals or groups of individuals. It is important to recognize that the results may have impact not only on those who are the principal focus of the research but also on others. It is, therefore, necessary to conduct genetic research involving humans and to provide genetic services following certain ethical principles and procedures so as to minimize harm, and to maximize benefits, to those human beings who may participate in such research. Results of genetic research often lead to the creation of intellectual property rights that are of national commercial interest. It is, therefore, important to harness and to share these commercial benefits appropriately. Such research is often conducted collaboratively by scientists belonging to multiple institutions. In particular, when such collaborations involve foreign institutions and/or private companies, it is crucial to safeguard national interests.

The purpose of this document is to outline the national ethical policies for the human genome, genetic research and services. It is intended that this document will provide guidance for researchers, service providers, ethics committees, institutions, organizations and the public on how such research and services should be designed and conducted so as to conform to recognized ethical principles and values.

Since it is not possible to foresee all potential problems or harm that can arise from genetic research and services, these policies may need revision from time to time. The principles and policies indicated in this document offer guidance for ethically sound research and practice.

This Report has drawn on internationally accepted ethical principles. Accordingly, this Policy document is recommended for use by any individual, institution or organization conducting genetic research or providing genetic services.

PRINCIPLES

One of the essential requirements for research is that of the integrity of researchers. This includes the commitment to research questions that are designed to contribute to knowledge, a commitment to the pursuit and protection of truth, a commitment to reliance on research methods appropriate to the discipline and honesty.

Ethical considerations are as germane to good research as are scientific considerations. Ethical inadequacies in a research proposal are as significant as scientific inadequacies. It is, however, important to recognize that scientific inadequacies also have ethical implications.

Consistent with Declaration of Helsinki (adopted by the World Medical Assembly in 1964, and amended in October 2000) and the Universal Declaration on the Human Genome and Human Rights (UNESCO, 1997), the basic ethical principles that should be followed in genetic research and services are :

1. Autonomy: Choice of participation is autonomous, voluntary and based on informed consent; persons or groups with diminished autonomy should be given protection.
2. Privacy: Identifiable information (clinical, genetic, etc.) of individuals or groups is confidential and should be protected.
3. Justice: There should be no discrimination against individuals (born or unborn including embryo) or groups. No harm should be done and benefits should be maximized.
4. Equity: There should be equitable access to information, tests and procedures.

POLICIES

Integrity, Respect and Beneficence

- All researchers should be guided by the principle of integrity, which is expressed in a commitment to the search for knowledge, to recognized scientific procedures of research conduct and in the honest and ethical conduct of research and dissemination and communication of results.

  Human Genome and Genetic research must be conducted by professionally qualified investigators. The experimental and other procedures used in research should be quality and safety assured prior to their implementation.
- When conducting genome and genetic research involving humans, the guiding ethical principle for researchers is respect for persons which is expressed as regard for the welfare, rights, beliefs, perceptions, customs and cultural heritage, both individual and collective, of persons involved in research.

The culture and traditions of the group to which the participant belongs must be respected. It is desirable that a group be consulted prior to undertaking research on the group with the purpose of understanding whether implementation of the proposed research protocols may cause disrespect or harm to them in any way.

- In human genome and genetic research no participant or group must be exposed to more than a minimum acceptable risk. If it is anticipated that research exposes a participant or a group to a specific risk, this should be disclosed. Each participant must have the right to demand compensation from the investigator for any injury or harm arising from his/her participation. Appropriate liability agreements should be drawn between the researcher and the participating individual and/or group before commencement of the research.

- Each research protocol must be designed to ensure that respect for human rights, dignity and well-being of the participants and of the group to which the participants belong takes precedence over the expected gains to knowledge.

Justice

1) The ethical value of justice requires that, within a population, there is a fair distribution of the benefits and burdens of participation in research and, for any research participant, a balance of burdens and benefits.

Accordingly, a researcher must

(a) design research so that the selection, recruitment, exclusion and inclusion of research participants is fair;

(b) make appropriate arrangements to provide liberty to every participant to withdraw from the research, and demand destruction of data or samples collected from him/her, at any time, without being penalized in any way for withdrawal;

(c) not impose any unfair burden of participation in research on any individual or group, and, therefore, no inordinate inducements, monetary or otherwise, should be offered to individuals or groups for participation;

(d) establish agreements for sharing of benefits arising out of the research (such as, intellectual property rights, access to products or procedures, capacity building) before commencement of a research study;

(e) not discriminate in the selection and recruitment of actual and future participants by including or excluding them on the grounds of race, age, gender, disability, vulnerability or religious or spiritual beliefs except where the exclusion or inclusion of particular groups is essential to the purpose of the research;

(f) provide protection to participants with reduced autonomy (e.g., children, disabled or vulnerable individuals) during the conduct of research;

(g) not undertake research that may place the embryo and foetus of a pregnant woman at an undue risk of any kind.

Consent

1) Before recruitment of any individual/group in human genome and genetic research, consent of the participants must be obtained.

The ethical and legal requirements of consent have two aspects: the provision of information and the capacity to make a voluntary choice. So as to conform with ethical and legal requirements, obtaining consent should involve :

(a) provision to participants, at their level of comprehension and in a language or method understandable to them, of information about the purpose, methods, demands, risks, inconveniences, discomforts, and possible outcomes of the research; and

(b) the exercise of a voluntary choice to participate.

Where a participant lacks competence to consent, a person with lawful authority to decide for that participant must be provided with that information and exercise that choice.

It is, therefore, recommended that :

(i) A researcher must explain the purpose of the research, the foreseeable risks and benefits of participation and alternative procedures, if any.

(ii) Consent obtained from each participant, and the participating group (where applicable), must be documented.

(iii) Consent is valid only for the research for which it is given by the participant (primary use). If the information or samples for primary use are to be used for other purposes or for sharing with other investigators (secondary use), clear mention of such secondary uses must be made during the process of obtaining informed consent. New consent must be taken for any use for which consent was not explicitly obtained. However this will not be required if the sample is used as an 'Unidentified' or 'Unlinked' sample.

(iv) Consent from a potential participant who is a minor or is so handicapped that she/he is incapable of providing informed consent (e.g., persons who are legally incompetent, physically or mentally challenged) may be taken from a close biological relative, such as parents, sibling, or from a legally authorized representative. For a mentally ill person, a psychiatrist should certify his/her capability of providing voluntary informed consent.

(v) If information pertaining to a deceased individual is required, this information may be obtained from a close biological relative or from a legally authorized representative.

(vi) Data pertinent to research may be collected on relatives of a participant, provided that no information revealing the identity of the relative is collected.

(vii) When research pertains to a specific community (e.g., an ethnic group, an organization of patients), it is desirable to obtain group consent before obtaining individual consent. Group consent must also be documented.

(viii) Consent of parents must be taken for collection and use of biological material from a dead foetus for the purpose of research.

(ix) For research based on information in databases or samples in repositories,

(a) no consent of the donor/ participant will be required if the information/ samples are unidentified,

(b) individual informed consent of the donor/ participant will be required if the information/ samples are identified,

(c) individual informed consent of the donor/ participant will be required if the information/ samples are coded, unless the owner(s) of the database or repository and the research investigator mutually agree not to provide/ receive the research findings based on the information/ samples.

(x) For research based on human biological materials collected during and as part of a clinical procedure or medical care, an informed consent for research use of the samples should be obtained separately from that obtained for the clinical procedure.

(xi) A person may refuse to participate in a research project or withdraw from a research project without giving any reason or justification.

Dissemination of Research Results

Researchers should be encouraged to disclose their findings, after these have been scientifically validated. The results of research (whether publicly or privately funded) and the methods used should normally be published, with appropriate IPR protection wherever relevant, in ways which permit scrutiny and contribute to public knowledge. Disclosure of findings with significant implications for the health of a participant must be carefully done to the participant after obtaining her/his consent, and only when an appropriate ameliorative course of action (such as a medical treatment or life-style change) is readily available. In such cases, appropriate medical advice, referral or counselling should be provided to the participant by a trained professional. Disclosure of research information should not be done if it can have adverse societal implications, national or international.

Gene Therapy & Human Cloning

- Somatic cell gene therapy research and service may be done with appropriate safety measures. Gene therapy may be undertaken when it is the only therapeutic option or it is indisputably

considered superior to other existing options. Appropriate protocols as developed by Department of Biotechnology, Govt. of india must be followed.

- Considering the present state of knowledge, germline therapy in humans shall be proscribed. However, research on embryonic stem cell biology may be undertaken with adequate safety measures.
- As a principle, human cloning shall not be permitted.

Genetic Testing and Counseling

- Individuals, laboratories or institutions providing genetic testing services should be licensed or registered by the appropriate Governmental authority. Such service providers should operate in accordance with nationally accepted standards for scientific accuracy, confidentiality of information and bioethics. No disclosure of results of genetic testing should be made to the patient in the absence of genetic counselling.
- When genetic testing of an individual reveals that he/she has a predisposition to suffer disease or disability in the future, then the tested individual shall have the right exercised by freedom of choice whether to be informed of the results of such testing.
- Interventions based on results of genetic testing should be carried out under appropriate medical advice.

Genetic Privacy and Discrimination

- Discrimination of any kind on the basis of genetic characteristics or information shall be prohibited.
- Immediate and effective measures, particularly in the fields of teaching, education, culture and information, shall be implemented with a view to removing prejudices based on genetic characteristics and variability.

Intellectual Property Rights and Benefit Sharing

1) The human genome, part of human body or any human material in its natural state cannot become the subject of a direct financial gain.

2) International Law allows for the identification of ownership of sovereign rights over human genetic material (like any other biodiversity plants, animals and microbes) which shall be implemented.

3) Intellectual property based on the human genome may be patented or otherwise recognized in accordance with national laws and international treaties.

4) All patents filed in India or abroad utilizing such biological material must disclose the source of the material and associated information so as to protect the economic interests of the original source/ nation.

5) It will be obligatory for national/international profit making entities to dedicate a percentage(e.g., 1% - 3%) of their annual net profit arising out of the knowledge derived by use of the human genetic material, for the benefits of the community.

6) Protection of Intellectual Property Rights (IPR) must be ensured and adequate safeguards taken for sharing of benefits arising from clinical trials based on pharmacogenomic studies in a given population.

DNA and Cell-line Banking

1) The sample collector must obtain explicit informed consent of the donor for DNA banking or for cell-line transformation and banking. The process of seeking informed consent for purposes of banking must clearly state, in addition to possible risks and benefits, the conditions under which samples from the Repository will be provided to other researchers, how long the samples will be preserved in the Repository and what may be the costs to individual researchers to obtain samples from the Repository. The sample collector must also explicitly inform every donor that he/she reserves the right to order destruction of his/ her sample from the Repository at any time. If any commercial use is made of the samples in the Repository, appropriate written benefit-sharing agreements, consistent with the policies stated earlier, must be jointly signed by the donor, sample collector and Repository Director. It is also desirable that community consultations be held prior to collection of samples to be stored in a Repository, and group consent be obtained.

2) Any DNA/ Cell-line Repository must have its own Ethical Review Committee.

3) Before any sample is placed in the Repository, the Ethical Review Committee must ensure that the sample was collected as per national ethical policies and guidelines.

4) Any researcher who intends to use samples from a Repository must submit a Statement of Research Intent, which must be approved by the Ethical Review Committee of the Repository. The Repository's Ethical Review Committee will be responsible for determining whether the intended research is consistent with the informed consent provided by the donor, and, where applicable, of the group.

5) Unless scientifically essential, the Repository must not provide to an individual researcher any information linked to the samples. When linked information is to be provided, only the minimal information as required for the intended research must be provided.

6) The identity of the Repository from which samples were obtained must be revealed in all reports/ patents/ copyrights arising out of these samples.

7) No samples placed in the repositories or obtained from the repositories can be shared with any scientist/ organisations within and beyond the boundaries of India, without approval of 'National Bioethics Committee' / or Department of Biotechnology, Government of India.

International Collaboration

1) To encourage human genetic research, to promote international dissemination of scientific knowledge concerning the human genome and to foster scientific and cultural cooperation, collaborative research with other countries may be undertaken, with appropriate protection of intellectual property rights.

2) To safeguard national interests, all human genetic research involving international collaboration must be undertaken after formal clearance of the national government. This will also apply to private sector research.

3) In international collaborative research, when genetic material from India forms the primary basis of such research, intellectual property rights should be protected with a majority share of the patent, if any, being held by the collaborating Indian institution/organisation. At least 10% of the benefit accruing from such a patent should be used by the individual institutions to develop better services for the population(s) that provided genetic materials. A minimum of 10% of intellectual property rights should be held by Indian institution/organisation in any international collaborative research.

IMPLEMENTATION OF ETHICAL POLICIES

National or an Institutional Ethical Review Committee must clear all genomic/ stem cell research involving humans to be undertaken in India. The Ethical Review Committee will ensure that national ethical policies and recommendations are followed.

When a research study involves the administration of a new chemical/ biological entity, the advice/approval of the Drugs Controller General of India should be taken.

All Ethical Review Committees involved in reviewing international collaborative research must ensure that the research complies with the Indian national ethical policies and guidelines and also those of the sponsoring/ funding country. Appropriate ethical clearances must be obtained from India and other relevant countries, including the sponsoring/ funding country, involved in the research. If some ethical rules of any of the relevant countries cannot be implemented in any of the host countries, then the Ethical Review Committees of all the countries must be informed and appropriate waivers obtained.

In all publications/ patents applications, the source of the genetic material is to be clearly stated, without compromising the privacy of the participants.

Research results/ inventions involving genetic material obtained from the jurisdiction of a foreign nation should be accepted for publication/ patenting only after the appropriate ethical guidelines have been followed.

Categories of Human Biological Materials

Repository Collections

Unidentified specimens : For these specimens, identifiable personal information was collected or, if collected, was not maintained and cannot be retrieved by the repository.

Identified specimens : These specimens are linked to personal information in such a way that the persons from whom the material was obtained could be identified by name, patient number, or clear pedigree location (i.e. his or her relationship to a family member whose identity is known.).

Research Samples

Unidentified samples : Sometimes termed 'anonymous,' these samples are supplied by repositories to investigators from the collection of unidentified human biological specimens.

Unlinked samples : Sometimes termed 'anonymized,' these samples lack identifiers or codes that can linked a particular sample to an identified specimen or a particular human being.

Coded samples : Sometimes termed 'linked,' or 'identifiable,' these samples are supplied by repositories to investigators from identified specimens with a code rather than personally identifying information ,such as a name or a Social Security number.

Identified Samples : These samples are supplied by the repositories from identified specimens with a personal identifier(such as a name or a patient number) that would allow the researcher to link the biological information derived from there search directly to the individual from whom the material was obtained.

Definitions

Research is defined as a systematic scientific activity designed to develop or contribute to knowledge that can be generalized. The present Report considers only research that is biomedical in nature, involving human participants. Such research includes, but is not limited to, investigations for testing biological or medical hypotheses, evaluating a diagnostic procedure or a drug, determining the mode of inheritance of a disease or trait, mapping disease genes, etc.

Biomedical research is distinct from medical practice which solely caters to the needs of an individual, and generally pertains to interventions (usually in the form of diagnosis or therapy) with the goal of enhancing or maintaining the well-being of an individual.

A participant in biomedical research is a living human being who provides identifiable private information or tissue samples to the research investigator through direct interaction or allows himself/herself to be subjected to interventions required by the research protocol. For the purpose of this report, 'identifiable' implies that the identity of the participant can be readily ascertained from the private information (that is, information not in the public domain prior to the participant providing the information to the investigator in question) provided to the investigator.

Often genome research is conducted on information or samples collected earlier, possibly by other investigators(detailed in Annexure I). Such information or samples may be: (a) unidentified - that is, without any identifiable private information, (b) identified - that is, with identifiable private information to which the identity of the donor/participant can be linked. Sometimes, data or tissue sample repositories send coded information or samples to research investigators. Coded information or samples do not permit the research investigator to link the information or samples to the donors/participants, but the repository can link the research findings to the donors/participants.

Depending on the objectives and protocols, a biomedical research study often pertains to a group or a community. A group or a community may be defined as a collection of individuals sharing some common characteristics, such as ethnicity, geographical proximity of habitat, a common disease, etc. The working definition of a group or community may vary from one study to another, and may need to be identified during the study.

LIST OF THE MEMBERS OF NATIONAL BIOETHICS COMMITTEE

Prof. M. S. Valiathan Honorary Advisor Manipal Academy of Higher education Madhav Nagar Manipal - 576 119	Chairman
Dr. (Mrs.) Manju Sharma Secretary, Department of Biotechnology, New Delhi	Member
Prof. P.N. Tandon Emeritus Scientist, All India Institute of Medical Sciences, New Delhi	Member
Prof. G. Padmanaban Emeritus Scientist, Department of Biochemistry,Indian Institute of Science, Bangalore - 560 012	Member
Prof. H.O. Gautam Chairman, University Grant Commission Bhahadur Shah Zafar Marg, New Delhi - 110002	Member
Prof. H. Sharat Chandra Indian Institute of Science, Bangalore - 560 012	Member
Dr. S.S. Agrawal Emeritus Scientist, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Rae Bareli Road, Lucknow	Member
Prof. N.K. Ganguly Director General, Indian Council of Medical Research, Ansari Nagar, New Delhi - 110 029	Member

Mr. Rajiv Dhavan Senior Advocate, Supreme Court of India, New Delhi	Member
Dr. S.K. Brahmachari Director, Centre for Biochemical Technology, Mall Road, Delhi - 110 007	Member
Prof. Partha Majumdar Indian Statistical Institute Kolkata	Member
Shri U.K.Jha Additional Legal Adviser & Officer on Special Duty, Directorate General of Supplies & Disposals, 5, Parliament Street , New Delhi - 110 001	Member
Dr. V.K. Vinayak Adviser (Medical), Department of Biotechnology, New Delhi	Member
Dr. T.S.Rao Scientist-F, Department of Biotechnology, New Delhi	Member Member Secretary till 25th June, 2001)
Dr. Alka Sharma Scientist - C, Department of Biotechnology, New Delhi	Member Secretary