INTRODUCTION

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The spectacular development in molecular biology and genetics has opened up new areas in the medical field. The modern biological advances relating to human genome is ready to manipulate our lives, claiming potential benefits along with enormous repercussions. The manifold character of human genetic progress has posed various challenges in all disciplines of the society encompassing scientists, legal professionals, social scientists and society at large. Apart from other technologies, human genetics is intrinsically related to human life itself and have potential to affect the basic human rights and established social norms. It has a dramatic impact on family relations and traditional family structure. Like nuclear power technology, biotechnology has also the capacity for greater harm if not used with great wisdom. So, these issues cannot be left to the scientists alone.

Taking into account the potentials of human genetic advances, it becomes pertinent to regulate this technology. Now the questions is; who can regulate it? Whether ethical codes are sufficient to provide enough restraint against the misuse of this technology or they need legal regulation?

Here the role of law becomes more important. The prime motto of science as well as of law is to serve the society and provide maximum happiness among the people. But the problems relating to law-human genetic interface are so complex that it is not easy to identify the legal problems. These problems are not purely legal but linked with ethical, moral, social and economic problems.

So, one can never get a correct answer without posing the correct questions. This is a task which law can only fulfill, if it is adequately informed and illuminated by scientific knowledge and ethical conduct. No one is coming forward to resolve the issues raised by human genetics. The issue of privacy and confidentiality are of utmost importance when one talk about the human
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Genetic information is ultra-sensitive and may lead to discrimination and exploitation.

Genetic counselling requires more responsible role of health professionals. The issue of informed consent has become very complex, because human genetics is highly advanced technology and its complexity is proved to be a hurdle in obtaining informed consent. So the situation of poor and illiterate people become more vulnerable.

Genetic information is also capable of being used by insurers and employers and may lead to discrimination by them, setting their terms and conditions on the basis of genetic knowledge. There is no absolute guarantee about the accuracy of genetic tests. So these tests are highly predictive in nature and the terms and conditions set by insurers and employers on the basis of these certainly violate the basic human rights.

Patenting of human genetic materials is in practice. The patent laws in the United States are too lax which also allow patenting of gene fragments, the function of which are not fully known. This paves the way for commercial exploitation by various pharmaceutical companies. The patent regime which has been introduced to encourage the research works, benevolent to the mankind is failing to make a balance between individual interests and social good.

Another important issue relating to human genetics is genetic intervention in the family domain in the form of Assisted Reproductive Technologies (ART). Assisted Reproductive Technologies (ART) such as artificial insemination, In-Vitro Fertilization (IVF) and Surrogacy have shaken the traditional technologies but are beneficial to many infertile couples, enabling them to become parents and create families. The emerging legal and human rights issues because of these advancements have posed a herculian task before the legal researchers.
In-Vitro Fertilization (IVF) has turned out to be a major scientific achievement of humans in last century and new technological development in coming years would make it more effective. With the popularity of these technological developments, controversies have also arisen. Many of the organizations have argued that it is an interference in matter of the Almighty which makes use of Assisted Reproductive Technologies (ART) controversial.

Originally Artificial Reproductive Technologies (ART) was developed to treat infertility but with passage of time its use had been started to get baby for single parents and technology was commercialized, because of it more and more controversies started. Thus due to the development of reproductions technologies its commercialization and wide spread use has given birth to many ethical and legal issues. They are now posing challenge to the Indian Society. On November 2005 Amit Banerjee resident of Kolkata became a single father with the help of In-Vitro Fertilization (IVF) and gestational surrogacy. Infertility clinics in India has now become place of biological outsourcing. The fertility clinics all over the world are facing difficulty due to huge demand of ovum. Infertile couples are now approaching to Indian clinics. Low cost, easy availability of ovum, surrogates, and absence of any legal control are the reasons for attracting foreigners to India. Anand district of Gujarat, Bhopal and Indore in Madhya Pradesh are some places which are getting popularity for their In-Vitro Fertilization (IVF) clinics.

Many gay couples are coming to In-Vitro Fertilization (IVF) clinics to have children with the help of these technologies. There are also chances of selling of gametes and embryos. Such chances have increased when many developed countries have banned for creating embryo in lab to carry experiments. In such a situation they are approaching to developing and under developed countries for embryos. These events are raising many legal and ethical challenges before our law makers. So there is urgent need to resolve these legal and ethical issues.
Apart from above mentioned challenges there are many other challenges e.g. parentage of child born through donated gametes or embryos or by gestational surrogate, rights of child born through In-Vitro Fertilization (IVF), rights and liabilities of donor of gametes, which also demands urgent solution. In this work legal and ethical issues related to In-Vitro Fertilization (IVF) and gestational surrogacy, and the possible solution of such issues have been discussed. For this purpose related laws of different countries and some foreign case laws have also been analyzed.

The courts are posed with various complex problems relating to family law. The laws relating to this new reproductive technology are not uniform and vary from country to country on the basis of their particular political, cultural and religious set up.

Artificial insemination by donor presents many problems; whether it amount to adultery or cruelty, entitling for divorce? What about the anonymity of sperm donor and the resulting child’s right to know his genetic origin? What would happen if a single women wishes to be artificially inseminated?

The problems relating the surrogacy arrangements are - which mother law should recognize, genetic or biological? Whether contract pregnancies are legally valid? What would happen if surrogate mother refuse to hand over the child? Whether do commercialization of surrogacy arrangement lead to the exploitation of poor women? and many more.

Human cloning and Stem Cell Research (SCR) is the most alarming aspect of genetic revolution. The debate encompasses various issues as procreative liberty, individuality, personal autonomy and many other which are yet to be identified.

The tremendous advances in pure science made during the 20th century have completely changed the relation between science and society. Through its technological applications, science has become a dominant element in our lives.
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It has enormously improved the quality of life. It has also created great perils, threatening the very existence of the human species. Scientists can no longer claim that their work has nothing to do with the welfare of the individual or with state policies. It shall be liability of law which is meant for regulation of society to regulate the affairs happening in scientific arena.

With the astonishing developments and advancements in every field, the tentacles of law have been no longer confined to traditional matters and issues, and that is why law has demonstrated its application in every nook and corner of ongoing disciplines and evolving fields of knowledge. Field of science particularly medical science is not an exception to this stark reality. It is evident from the numerous innovations that the approach and method of studying law have also been changed. Hence, it is a well known fact that law has got some sort of its elements in almost all the walks of life.

Law being an instrument of social control often encountered with scientific development happening in society. Since the day of emergence of human society, pace of growth of society depends largely upon scientific inventions and discoveries. Whether it was discovery of fire or invention of wheel, it works as oil in the wheel of development. Whether it was invention of weapons or life saving drugs or printing machine or atom bomb, all has made direct impact upon the society and compelled legal institutions to make regulation on the subject.

Whether these issues can be sorted out by prohibitive laws or their require a deep inquiry into its nature and its impact on the forth coming society? It is the main question before the legal scientists. Therapeutic cloning and Stem Cell Research (SCR) involves research on early embryos which raises the questions of dignity of human embryos and its commercial trade.

Although the human genetic advances are more prevalent in developed countries but Assisted Reproductive Technologies (ART) are becoming
familiar in countries like India and no country can escape from these technological advances. So it becomes very essential to develop better understanding of these technologies and legislate better laws to deal with the problems arising out of it.

1. The Choice of Topic:

The present study mainly concentrates and guides the choice:

a) To identify the nature of the problem arising out of human genetics and its impact on the present legal system and basic human rights.
b) To compare legal position in various countries over Surrogacy, In-Vitro Fertilization, Cloning and Stem Cell Research.
c) To analyze provisions concerned under International legal and human rights instruments.
d) To know about the present Indian position regarding Modern Reproductive Techniques.

2. Need for the Study:

There is a very close relationship between science, law and society. The scientific, legal and technological developments have great impact on the values of the society. Recent developments in molecular biology and genetics have posed new challenges before the law and have raised ethical, social, cultural, economic and legal issues with long-term implications for humanity.

The present study is an attempt with a view to locate various issues relating to Human Genome and Modern Reproductive Techniques and to suggest to overhaul our legal system in tune with these developments. Law changes with the society so it has to respond various challenges posed by human genetics which have a dramatic impact on the society and human rights. So, it is expedient to have integrated look over the various legal and human rights issues along with the comparative legal position in various countries because these technological advances have potential to infringe the basic human rights. Such a great issue cannot be left to the scientists alone but it requires a
strong regulatory mechanism, not solely based on ethical codes but on legal considerations.

3. The Objective of The Study:

Due to the development of reproductive technologies, its commercialization and wide spread use, many ethical and legal issues emerged which are unresolved. Modern Reproductive Technologies and Genetics pose various challenges before law and human rights not only in India but in whole world. They are compelling the lawyers and human rights activists to cope with these technologies by redefining the legal and human rights instruments in tune with the current pace of molecular biology and genetics advances.

The proposed research works intends to locate various legal and human rights issues relating to Human Genome and Modern Reproductive Technologies emphasizing the role of law. Recent developments in molecular biology and genetics have forced us to rethink and redefine our legal system.

Thus I am of the firm view that an interdisciplinary discussion of such an important area is imperative and necessary. The proposed research study is an attempt to look at the various legal and human rights issues related with Human Genome and Modern Reproductive Technologies along with comparative legal position in various countries.

4. Hypothesis:

The research work proceeds on the following hypothesis:

a) Development in the field of human genetics has serious impact on the society and the extent is unlimited because of constant development.

b) The innovation and application of human genome and modern reproductive technologies is at its pinnacles but to deal with the outcome there is no comprehensive legislations in our country should be developed with the required pace.
c) The Constitutional provisions and judicial response in relation to breach of privacy and confidentiality issue arising out of human genetics are not so explicit to resolve the problems.

d) At present the field of human genetics and modern reproductive technologies is a very hot issue not only in India but in rest of the world as well. To meet out the challenges legal mechanism should be evolved, developed and proper restriction should be imposed on these kind of technologies.

5. Scope of the Study:

a) The concept of Human Genetics, Human Genome and Modern Reproductive Technologies.

b) Evolution and progressive development in regulation and guidelines by Indian Council of Medical Research (ICMR) in India in the field of Modern Reproductive Technologies.

c) The steps taken by United Nations through the Conventions to tackle the problem.

d) Laws relating to Human Genome and Modern Reproductive Technologies in various countries along with judicial response, Conventions at International level and present Indian perspective.

e) Legal limitations, difficulties and possible remedial measures.

6. Impact of the Study:

The new technology may be a bane or boon to the society and human civilization, specially the molecular biology, human genetics and modern reproductive technologies which is so closely related to human beings. The subject matter of the study is so delicate that it has its own inherent controversies and concerns. Therefore, the impact of the study would certainly helpful to add the knowledge and to develop legal framework in India on the subject.
7. Research Methodology:

The proposed Research work is doctrinaire and analytical. It is based on critical, descriptive and analytical study of various legislations of different countries, International and regional Conventions and present situation in India. The proposed study has been carried out in a very objective, systematic and unbiased manner. All the primary as well as secondary documentary sources have been utilized to make the study advanced, orderly and methodical. Various reports, articles, judicial decisions, international, national, Constitutional norms and national measures have been taken as important research tools. The research has been pursued by consulting various institutional libraries. The study will certainly enrich the existing knowledge about the legal and human rights aspects relating to modern reproductive techniques.

8. Chapter-wise Introduction:

The brief chapter-wise contents are, as under:

**Chapter I** pertains to a brief retrospect about *Human Genome* and *Genetic Information*, its impact on Human rights in general and specifically on privacy and confidentiality issue.

**Chapter II** deals with impact of patent laws regarding patenting of *Human Genome* and its impact on third world countries.

**Chapter III** attempts to reflect the issues about various *Artificial Reproductive Technologies*, their constitutionality and its impact on society and family laws along with critical evaluation of the concerned head and comparative legal position in various countries.

**Chapter IV** deals with concept of gestational surrogacy and issue relating to commercialization of surrogacy arrangement. Issue relating to legitimacy of the child and human rights of the child born through *Modern Artificial Reproductive Technologies* or better to state through surrogacy.
Chapter V attempts about issues relating to Human Cloning and Stem Cell Research and critical evaluation of the concerned subject and current position in various countries.

Chapter VI contains the conclusions arrived at and suggestions made on the concerned matters.

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