

Human genomic profiling in criminal justice administration: an Indian experience

Abstract

In the recent era of development, the process of investigation has achieved new milestone by introducing second generation forensic; whereby forensic DNA profiling has been considered to be effective and accurate way of criminal investigation. Though use of DNA profiling in the process of investigation was welcomed by over more than sixty countries all over the world including USA, UK and China; the same is facing great number of objections in certain countries including India. While the new forensic sciences undoubtedly offer an unprecedented degree of certainty and reliability, these characteristics alone do not necessarily render them less susceptible to misuse. The key concern regarding use of DNA profiling is to collection, use and procurement of data; as through use of the same, the jurisdiction has been transferred from individual biological body and given in the hands of agents of power. With the help of the present article author tries to examine how far the DNA profiling techniques are reliable in criminal administrative system with special focus on Indian legal system.

Keywords: DNA profiling, genetic, administration, forensic

Volume 8 Issue 5 - 2020

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Received: September 16, 2020 | **Published:** October 27, 2020

Introduction

The human genome is considered to be map of human, which contains entire information regarding genetic inheritance of human organism. With the development in the era of science, the scientific progress made in the field of cellular biology falls under into four main phases over the four quarters of 20th century. Firstly, the cellular basis of heredity: the chromosome; secondly, the molecular basis of heredity: the DNA double helix; and thirdly, unlocking the informational basis of heredity, with the discovery of the biological mechanism by which cells read the information contained in genes and with the invention of the recombinant DNA technologies of cloning and sequencing by which scientists can do the same.¹ The genesis of Genomic profiling can be traced back in 1984-1986 whereby, attempts were made to use the entire human genome for medicinal, research and other purposes by the US Department of Energy and others.² The idea which was being incorporated in the scientific meeting held in the year 1984, has been eventually developed and by the end of 1995, not only in United States but countries like United Kingdom, China, Germany, Europe, France have also developed the genome projects for the purpose of medical, research and criminal investigations.³

India's age-old proficiency in medical science can be traced back from Charak Samhita and Shushrut Samhita dated back to 200 B.C. and 200 A.D respectively, which gave birth to number of clinical research laws in India. The use of forensic evidence for the purpose of criminal investigation has its' roots placed in the various legal provisions. Even though the traditional forensic evidences; such as Handwriting, fire arm, bite, fingerprinting, has played tremendous

role in the process of criminal administration; presently, the new generation of forensic science is capable of uncovering and inculcating criminal offenders at the grater magnitude than the traditional forensic evidences.⁴ DNA profiling is considered to be an inevitable part of new generation forensic evidences. As the need of new generation forensic evidence has been identified some of the provisions of Criminal Procedural Code has been amended to some extent whereby the investigating agency has been allowed to take the DNA samples from the crime scene. Though the procedural law has been amended to the certain extent with intent to accommodate the new generation forensic evidence, the same was not suffice as it failed to provide the detailed process regarding collection, storage as well as usage of the same. With the intent to overcome the shortcomings in the existing legal provisions for identification of victims in mass disaster, missing persons, criminal investigation, etc. in the year 2016, Department of Bio-technology introduced a Bill on DNA technology which permits the investigating authorities to use and create data base of the human genomic. DNA profiling technology which is considered to be one of the most effective scientific technology, is being found effective in the criminal justice system as such kind of test of party will be used as a corroborative evidence.⁵

The DNA Technology (Use & Application) Regulation Bill, 2019 though passed in Lok Sabha but lapsed in Rajya Sabha was the only ray of hope for the adoption of new generation forensic evidence in the criminal administrative process. The said Bill not only authorises the investigating agency to use the human genomic or DNA samples for the purpose investigation but also permits to retain such data in their records for the future investigation. The said use or retention of the genomic records of criminal may be based upon the Biological Theory of criminology and Morden Bio criminology which suggest

¹Nature Publishing Group International Human Genome Sequencing Consortium, Initial Sequencing and analysis of the human genome, NATURE. 2001;860.

²Committee on Mapping and Sequencing the Human Genome, National Research Council, National Academy Press, Washington DC, 1988.

³Dr. U Satyanarayana, biotechnology 148 (books and allied ltd kolkata, 3rd. ed., 2008).

⁴Erin murphy, the new forensics: criminal justice, false certainty, and the second generation of scientific evidence (california law review, june 2007, vol 95, p.721).

⁵Simpson v. Collinson, (1964) 1 All ER 262.

that, the criminals are physiologically different from non-criminals, and there are special kind of chemicals, minerals and vitamins are there in the criminals which are considered to be absent in the body of non-criminals. The Indian criminal justice system which is based on the “Presumption of Innocence” may face adverse effect with the use of human genomic profiling in the criminal investigation.

DNA profiling: meaning

Human body is made of nucleus cells and each of the said nucleus cell carries chromosomes; which further carry linearly arranged genetics unit, which are materially referred as Deoxyribonucleic Acid (DNA).⁶ DNA is genetic material which makes every individual different from each other; except in the case of identical twin DNA molecules of each individual differs from others which is why the same is considered to be one of the most effective technique of identification.

The intent of DNA profiling technique is to find out the difference amongst the various DNA samples collected from the individuals. DNA profiling uses advanced techniques developed by molecular biologist to ‘home in’ on the area of DNA where there are differences among individual DNA fingerprinting /profiling techniques is of greatest advantage as it helps in;

- Organ transplantation (in medical science)
- Establishment of biological relationship of two or more person
- Identifying missing children and in cases of child swapping
- Post conviction of DNA testing for exoneration
- To solve the paternity dispute
- To solve the other criminal cases
- The cases of inheritance or succession, adoption, maintenance of minor child, etc.⁷

The different techniques which are being widely used for the purpose of DNA profiling includes Restriction Fragment Length Polymorphism (RELP), Polymer Chain Reaction (PCR), Short Tandem repeat (STR), Variable Number of Tandem Repeat (VNTR),⁸ out of which Polymer Chain Reaction (PCR) technique is considered to be most effective technique in respect of DNA profiling as with the help of PCR technique even smallest biological molecule can be tested. In the said technique the double stranded DNA extracted from the biological material is dissociated in to single strands by incubation at high temperature. Each strand serves as a template for the replication of their complication of their complimentary sequences. PCR is a technique through which the DNA of the person can be replicated from the smallest biological molecules. This technique has two components which are, “Template DNA “and “DNA Polymerase”.⁹

DNA profiling-evidentiary value

Rapid development in the scientific techniques has craved its way to the filed of criminal investigation as well; whereby, it has made the job of the authorities easier to determine guilt or innocence. DNA profiling is one of the second generation forensic, is commonly used technique now a days in the process of criminal investigation, whereby

⁶J.R.K. Abhichandani, *The Gene Age- A Legal Perspective*, 2003.

⁷Genetic Science, “Human Health and Gene Patent”, A.L.R.C Issue Paper 27 Intellectual Property Rights Over Genetic Material.

⁸Ibid.

⁹Mullis K.B. on *The Unusual Origin of PCR*, 1990 Ed.

the authorities would collect the sample available at the crime scene and use the same afterwards for the purpose of identification of suspect. At the same time, it is not only being used to solve the criminal cases, but the same is being used to resolve the civil dispute including the question of paternity, immigration, identification of decedents, etc.

In the year 2005, two new sections have been added through the amendment in the provisions of Criminal Procedural Code with intent to add the provision of DNA tests in the process of criminal investigation. Section 53 – A(2)(IV) provide that the registered medical practitioner conducting such examination shall, without delay, examine such person and prepare a report of his examination giving the following particulars, namely : 53-A(2)(iv) the description of material taken from the person of the accused of DNA profiling. Section 164A (2) (iii) provides that the registered medical practitioner to whom such woman is sent shall, without delay, examine person and prepare a report of his examination giving the following particulars, namely:- 164A (2) (III) the description of materials taken from the person of the woman for DNA profiling.¹⁰

DNA can be considered as one of the most reliable evidence in the court of law, as it has accuracy of about 99% correctness; if, the tests have been done correctly with the use of correct techniques. In the case of *Gautam Kundu vs. State of West Bengal*,¹¹ the Apex Court has issued certain guidelines regarding under what all situation DNA tests can ordered to be done and the admissibility of DNA evidences;

- 1) That courts in India cannot order blood test as a matter of course.
- 2) Whenever applications are made for such prayers in order to have roving inquiry, the prayer for blood test cannot be entertained.
- 3) There must be a strong prima facie case that the husband must establish non access in order to dispel the presumption arising under section 112 of the Indian Evidence Act.
- 4) The Court must carefully examine as to what would be the consequence of ordering the blood test; whether it will have the effect of branding a child as a bastard and the mother as an unchaste woman.
- 5) No one can be compelled to give sample of blood for analysis.¹²

In the case of *Bachhubhai Khasiya Vs. State of Gujarat & Another*,¹³ the Apex Court held that, it is dangerous to rely on the DNA evidence as a conclusive proof in absence of other corroborative evidence in that regard.¹⁴ In another case of *Chandan Pannalal Jaiswal Vs. State of Gujarat*¹⁵ it was held that, the DNA analysis is a powerful identification technique and it should be used carefully. Therefore, case in collection, custody and manipulation by biological sample (s) is of great importance for the validity of this analysis.¹⁶ In case of *Halappa v. State of Karnataka*¹⁷ it was held by the court that the blood sample of the accused of an offence of the rape can be taken without his consent for the purpose of DNA test. It is not the violation of Art 20(3) because the offence of rape is very serious offence and it is an offence against the society at large.¹⁸

¹⁰Ibid.

¹¹(1993)3SCC418, p.428.

¹²Ibid.

¹³2009(4) R.C.R. (criminal) 186.

¹⁴Ibid.

¹⁵2004CriLJ (3088) Guj.

¹⁶Ibid.

¹⁷2010, Cri.L.J.4341.

¹⁸Ibid.

Thus, time and again it is being held by the Hon'ble Apex Court that, the DNA evidence is admissible in nature, but the same needs to be corroborated with the other evidences.

DNA technology (use & application) regulation bill, 2019 -key highlights

Department of Biotechnology, under the recommendation made in the 271st Law Commission Report has introduced DNA Technology (Use & Application) Regulation Bill, 2019. The said Bill has been passed in Lok Sabha but lapsed in Rajya Sabha due to not having required support. The Bill has been introduced with intended to provide regulations for use & application of DNA technology for purposes of establishing the identity of certain categories of persons including the victims, offenders, suspects, under trials, missing persons and unknown deceased persons and for matters connected therewith or incidental thereto.¹⁹

The provisions of this Bill have empowered the authorities to use as well as to store the unique genetical identification of an individual for the purposes so specified in the objective clause. The key element provided under the Bill is to establishment of National DNA data bank and Regional DNA data bank whereby all the samples collected from crime scene as well as an individual will be stored and the same will be used in future course for the purpose of identification of suspect, victims, etc.²⁰ every Data bank so established shall maintain indices for the following categories of data;

- a crime scene index
- a suspects' or under trials' index
- an offenders' index
- a missing persons' index
- an unknown deceased persons' index²¹

with intent to create a supervisory authority, the Bill also provides the provision regarding establishment of DNA Board which will supervise the working of DNA data bank and laboratories.²²

Though the Bill was introduced with intend to facilitate the justice delivery system but it has certain key issues involved with it. The major concern attached to the Bill is violation of right to privacy of an individual. As the provisions of Bill empowers the authorities to collect the DNA samples of an individual who is suspect of a criminal case, even without obtaining his consent when the punishment prescribed is more than seven years of imprisonment.²³ At the same time, the authorities are empowered to store the data so collected for the future.

¹⁹Preamble, The DNA technology (Use & Application) Regulation Bill, 2019.

²⁰Section 25, The DNA technology (Use & Application) Regulation Bill, 2019.

²¹Section 26, The DNA technology (Use & Application) Regulation Bill, 2019.

²²Section 3, The DNA technology (Use & Application) Regulation Bill, 2019.

²³Section 21, The DNA technology (Use & Application) Regulation Bill, 2019.

In the present time when right to privacy has already been declared as the fundamental right under Article 21 of the Constitution of India by the Apex Court,²⁴ obtaining and procuring the biological information of an individual without consent is considered to be violation of right to privacy. Another major concern attached to introduction of the Bill was, in the absence of Data protection laws, passing of such Bill would lead to misuse of data as well as there is higher amount of threat in data hacking. Apart from the issue of privacy, another key concern involved in the Bill is, it is against the basic principle of criminal justice system; as the principle of innocence until proven guilty is considered to be the bases of criminal justice system, introduction of this Bill is in clear violation of the same, as it procures the data of an individual and use the same in the future investigation purpose whereby the guilt would be presumed and not innocence. Another concern attached to it is, collecting and using the DNA data of an under trial without his consent will amount to self-incrimination which is violative of Article 20(3) of the Constitution of India. Apart from the legal aspect, the major issue annexed to it is the technical requirements and possibility of correctness of technique so used. Thus, the Bill, though expected to support the investigation and justice delivery process, but the same has failed to answer certain major issues attached to it.

Conclusion

The use of forensic evidence in the process of criminal investigation is common in our legal system; whereby with the change in time, it is expected to have adoption of different techniques and methods in the same. DNA profiling is considered to be one of the best techniques in case of investigation, as the accuracy rate of this technique is far higher than others. The Indian courts have time and again accepted the DNA evidences and delivered the judgments; whereby it is being reiterated by the courts that the same can be used as a corroborative evidence and not otherwise. Considering the present time when the crime rates are increasing day by day, for facilitate the process of investigation, the legislature has come up with the Bill who empowers the authorities to procure the data of an individual and use the same whenever the requirement arises in the process of investigation. Though, considering the present era, DNA profiling and maintenance of data is required so as to facilitate the process of investigation, the key concern of privacy, self-incrimination and presumption of innocence as well as data protection requires to be address as quickly as possible so as to enable the smooth function of investigation process.

Acknowledgments

None.

Conflicts of interest

The author declares there are no conflicts of interest.

²⁴K Putthaswamy Vs. Union of India (2017) 10 SCC 1.