

Laws and Issues Related to DNA Profiling in Criminal Investigation in India: A Critical Study

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Abstract: *The rapid implementation and continuing expansion of forensic DNA databases around the world has been supported by claims about their effectiveness in investigations as it gets easy to find the accused by matching their DNA with the samples found at the crime scene and on the other hand challenged by assertions of the resulting intrusiveness into individual privacy and violating their fundamental rights as given under Constitution of India. These two competing perspectives provide the basis for ongoing considerations about the categories of persons who should be subject to nonconsensual DNA sampling and profile retention as well as the uses to which such profiles should be put. The presentation of DNA profiling has represented some genuine difficulties to the lawful privileges of an individual, for example, Right to Privacy and Right against self-implication which is the reason it's been declined as proof by the Courts some of the time. Additionally, the acceptability of the DNA proof under the watchful eye of the court consistently relies upon its exact and legitimate assortment, protection and documentation which can fulfill the court that the proof which has been placed in front of it is solid. There is no particular enactment present in India that can give certain rules to the investigating offices and the court, and the strategy to be received in the cases including DNA as its proof. In some case, a few arrangements permit assessment of individual blamed for assault by clinical expert and the clinical assessment of the assault casualty separately yet the suitability of these confirmations has stayed suspicious as the assessment of the Supreme Court and different High Courts in different choices stayed clashing. Judges don't deny the logical exactness and decisiveness of DNA testing, however now and again they don't concede these confirmations on the ground of lawful or protected preclusion and once in a while the open arrangement. The DNA Bill, 2019 though benefits by providing for the mandatory accreditation and regulation of DNA laboratories, the Bill seeks to ensure that with the proposed expanded use of this technology in the country and there is also the assurance that the DNA test results are reliable and the data remain protected from misuse or abuse in terms of the privacy rights of our citizens. But on the other hand, it has raised concerns like misuse of information from DNA samples can reveal not just how a person looks, or what their eye color or skin color is, but also more intrusive information like their allergies, or susceptibility to diseases. As a result, there is a greater risk of information from DNA analysis getting misused safety issues that the question of whether the DNA labs accredited by the Regulatory Board are allowed to store copies of the samples they analyses. And if so, how the owners of those samples can ensure the data is safe or needs to be removed from their own indices and issues over storage as it's not clear if DNA samples collected to resolve civil disputes will also be stored in the databank (regional or national), although there is no index specific for the same. If they will be stored, then the problem cascades because the Bill also does not provide for information, consent and appeals.*

Keywords: DNA, Intrusiveness, Effectiveness

1. Introduction

Today, crime is being perpetrated in an organised and sophisticated way and adding to it, new sorts of crimes are constantly taking place. To effectively and efficiently handle such circumstances and situations the investigating authorities rely upon scientific and systematic method of investigation. The DNA technology is one of the most reliable investigative tools in the recent times after the innovation of such technology and pioneering work done in 1985 by Professor Sir Alec Jeffreys in Leicester University, London [1]. Prior to such innovation before 1980's, DNA was utilized only for scientific work and scientific researches. Presently, it has acquired a prominent role and importance in forensic science and criminological science. Forensic and criminological science, as a logical strategy, working within the limitation of the general set of laws, manages to provide rules and guidelines to civil and criminal examinations and investigations other than giving exact data or accurate information about the features of identification of criminals [2]. The beginning of DNA innovation improves the situation with forensic and criminological science from uninvolved to dynamic vital participant in the administration of law. DNA or Deoxyribonucleic acid is a hereditary outline of each individual.

The synthetic segment or chemical component of DNA in the cells of every individual is unique.

This is the sole deciding component to identify one individual from another with the exception of the hereditarily indistinguishable twins.

The development of the said science can be utilized to identify the criminals with an extraordinary precision when biological proof is recuperated at the crime scene. Simultaneously it can likewise be utilized to excuse people erroneously blamed or indicted for violations. Consequently, DNA innovation is viewed as the best one to discover reality. The idea of forensic science isn't new to the legal executive framework. Argentina was the primary nation to consolidate legal proof for a criminal examination in 1902. Sir William Herschel introduced the unique finger impression proof for the ID of the suspect. Indeed, even the Indian legal executive depends on proof like a unique mark, DNA investigation, posthumous since ages. Of late, there has likewise been a leap in the utilization of cutting-edge legal techniques like narco-examination, lie identifier, and that's only the tip of the iceberg [3]. The scientific examination has made elevate the basics of criminal science that there is no ideal wrongdoing. It helps in impartiality,

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i.e., to convict the blameworthy and acquittal the honest.

DNA evidence is playing a larger role than ever before in criminal cases throughout the country, both to convict the guilty and to exonerate those wrongly accused or convicted. This increased role places greater importance on the ability of victim service providers to understand the potential significance of DNA evidence in their clients' cases. In forensic DNA analysis continue to have a tremendous impact on the criminal justice system. The positive side of this revolution is that it offers enhanced opportunities to convict the guilty and exonerate the innocent. For example, new DNA technologies permit the analysis of smaller and different kinds of biological samples than was possible just a few years ago. DNA, sometimes called the building block or genetic blueprint of life, was first described by the scientists Francis H. C. Crick and James D. Watson in 1953. Crick and Watson identified the double-helix structure of DNA, which resembles a twisted ladder, and established the role of DNA as the material that makes up the genetic code of living organisms. The pattern of the compounds that constitute the DNA of an individual life-form determines the development of that life-form. DNA is the same in every cell throughout an individual's body, whether it is a skin cell, sperm cell, or blood cell. With the exception of identical twins, no two individuals have the same DNA blueprint. It was first proposed in 1985 by the English scientist Alec J. Jeffreys. By the late 1980s, it was being performed by law enforcement agencies, including the Federal Bureau of Investigation (FBI), and by commercial laboratories. It consists of comparing selected segments of DNA molecules from different individuals. Because a DNA molecule is made up of billions of segments, only a small proportion of an individual's entire genetic code is analysed [4].

In DNA analysis for a criminal investigation, using highly sophisticated scientific equipment, first a DNA molecule from the suspect is disassembled, and selected segments are isolated and measured. Then the suspect's DNA profile is compared with one derived from a sample of physical evidence to see whether the two matches. If a conclusive non-match occurs, the suspect may be eliminated from consideration. If a match occurs, a statistical analysis is performed to determine the probability that the sample of physical evidence came from another person with the same DNA profile as the suspects. Juries use this statistical result in determining whether a suspect is guilty or innocent. DNA technology makes possible the study of human variability at the most basic level—the level of genetic material, DNA. Previous methods using blood groups and proteins have analysed gene products, rather than DNA itself [5]. In addition to providing more direct genetic information, DNA can withstand environmental conditions that destroy proteins, so old, badly degraded samples of bodily fluids still can provide abundant information. If the array of DNA segments (markers) used for comparison is large enough, the probability that two unrelated persons (or even close relatives, except identical twins) will share all of them is vanishingly small. The techniques for analysing DNA are already very powerful; they will become more so. If the array of DNA markers used for comparison is large enough, the chance that two different persons will share all of them becomes vanishingly small. With appropriate DNA test

systems, the uniqueness of any individual on the planet (except an identical twin) is likely to be demonstrable in the near future. In the meantime, the justification for an inference that two identical DNA profiles come from the same person rests on probability calculations that employ principles of population genetics. Such calculations are, of course, subject to uncertainty. When in doubt, we err on the side of conservatism (that is, in favour of the defendant). We also discuss ways of keeping laboratory and other errors to a minimum. We emphasize that DNA analysis, when properly carried out and interpreted, is a very powerful forensic tool. DNA analysis is only one of a group of techniques that make use of new and increasingly sophisticated advances in science and technology. Some of the subjects involved are epidemiology, survey research, economics, and toxicology. Increasingly, the methods are technical and statistical, as with forensic DNA analysis. The issues are at the interface of science and law, and involve the difficult problem of accommodating the different traditions in the two areas. [6]

The Former Justice MarkendeyKatju, in his book *Law in the Scientific Era* [7] said: Science has, almost certainly, existed since ancient times. Yet, in prior age, science (for example the study of nature's law) and innovation (for example the utilization of these laws for delivering socially valuable merchandise) were practically autonomous exercises, having no interlink. The consequence of logical disclosures and specialized developments speed up the quick advancement of both science and innovation and the extreme change of society. The result of scientific discoveries and technical inventions accelerate the rapid progress of both science and technology and the radical transformation of society. Moreover, in the modern scientific era, subjective knowledge based on experience is largely replaced by objective experimental deterministic knowledge that minimizes chance and probability factors and ensures certainty in our lives [8]. Applying DNA technology ensures fairness and honesty in the criminal justice system. In fact, the DNA technology has played an important role in the investigation of crime. Some of the uses mentioned are:

- 1) Identifying the convicts in rape cases,
- 2) Identifying the convicts in murder cases,
- 3) Identifying the paternity and maternity of the child,
- 4) Identifying the mutilated remains,
- 5) Identifying the criminals, and
- 6) The Immigration purposes

1) Identifying the convicts in rape cases:

DNA proof is exceptionally helpful in rape cases. Following the occurrence of assault, the organic proof recuperated at the wrongdoing spot or the example gathered from the casualty's body is contrasted and that of the examples gathered from the suspect using DNA innovation. The aftereffects of correlation may assist with setting up if the suspect has submitted the assault. On the off chance that the suspect has submitted assault, it tends to be set up with a more noteworthy precision.

The Supreme Court in *Pokar Ram v. State of Rajasthan*, [9] observed: "The release of an arrested person on bail did not appear to make any difference, since he did not cease to be an arrested person or an accused person for the purpose of Section 53 of Criminal Procedure Code, if the examination

therein is found to be necessary by the Court for the purpose of proper investigation or an effective trial". [10]

2) Identifying the convicts in murder cases:

In murder cases, the DNA innovation is utilized to recognize the genuine guilty party who has perpetrated the wrongdoing. The charged who perpetrated murder may frequently leave some natural proof at the crime location like blood stains, hair roots, and organic liquids. In commonly blood smudged articles like weapon, blade, and blood smudged garments of the casualty might be seized from the ownership of the blamed. Every one of these material confirmations are valuable for DNA examination, which shows the presence of the denounced on the wrongdoing spot.

Santhosh Kumar Singh v. State through CBI, [11] This case was famously known as *Priyadarshini Matoo's case*. Priyadarshini was a 25-year-old law student, who was found raped and murdered at her house by his senior Santhosh Kumar Singh. The case was handed over to Centre for Bureau of investigation. During investigation, the post-mortem was conducted and the samples were sent for DNA analysis. The post-mortem report ruled out rape. But the DNA test confirms the rape on victim

3) Identifying the paternity and maternity of the child:

For the most part all people acquire DNA design from their organic guardians. On the off chance that the paternity or the maternity of the youngster is questioned, the simple correlation of DNA got from the dad or the mother with that of the kid can offer a secure with a more noteworthy exactness. Furthermore, at times the female child is traded for a male infant in clinics. In such a case, DNA test takes care of the issue. The genuine guardians of the child can be distinguished by DNA test. Essentially, the distinguishing proof of a missing individual or an expired individual can likewise be recognized using DNA Technology. For instance, in India, DNA distinguishing proof was made to recognize the parentage of youngsters missing from their folks during the wave assaults in December 2004.

In *Kunhiramanv. Manoj* [12] it was the first paternity case in India, which was solved by DNA fingerprinting in the Court of Chief Judicial Magistrate of Thalasseri. The Chief Judicial Magistrate held that the Evidence of Expert is admissible under Section 45 of The Indian Evidence Act, 1872. So also, the grounds on which the opinion is arrived at are also relevant under section 51 of The Indian Evidence Act. Dr. Lalji Singh (PW4) is an expert in the matter of molecular biology and the evidence tendered by him is quite convincing and I have no reason why it should not be accepted. Just like the opinion of a chemical analyst, or like the opinion of a fingerprint expert, opinion of Dr. Lalji Singh (PW4), who is also expert in the matter of cellular and molecular biology, is also acceptable. [13]

In *Goutham Kundu v. State of West Bengal*, [14] the Supreme Court expressed the most reluctant attitude in the application of DNA evidence in resolving the paternity dispute arising out of maintenance proceedings. In the said case, the father disputed paternity and demanded blood grouping test to determine parentage for the purpose of

deciding whether a child is entitled to get maintenance under section 125 of the Code of Criminal Procedure, 1973 from him.

In *Nandlal Wasudeo Badwaikv. Lata Nandlal Wasudeo Badwaik & Anr*, [15] the fact of the case was that the wife filed a maintenance proceeding under Section 125 of Criminal Procedure Code 1973 claiming maintenance for herself and her daughter. [16]

4) Identifying the mutilated remains:

In India, DNA innovation was utilized to recognize the mangled remaining parts of the person in question and the presume who kicked the bucket in Rajiv Gandhi Assassination case in 1992. It was additionally used to recognize bodies recuperated from mass graves in Gujarat, after the Hindu-Muslim uproars in 2002. It was likewise used to set up the personality of casualties who passed on in twin pinnacle assaults in the United States of America in 2001[17].

5) Identifying the criminals:

In some cases, the police may capture numerous people on the doubt that the wrongdoing has been perpetrated by any of them. During that event, some organic proof recuperated by the police at the wrongdoing spot or from the casualty can measure up to associates through the utilization with DNA innovation to recognize the genuine guilty party. Truth be told, DNA innovation isn't just to distinguish the genuine guilty party yet in addition to excuse the honest suspect in the event that he/she isn't enjoyed wrongdoing [18].

6) The Immigration purposes:

DNA testing is frequently used in family-based movement situations where a United States inhabitant or resident wishes to support a relative for entrance into the United States. In such cases, the support and their family members are needed to demonstrate their natural relationship through DNA testing (paternity test, maternity test, and family relationship test) [19]. DNA testing guarantees that worldwide candidates who are fake can be recognized and kept from entering the country. Most created nations use DNA test for the help of movement measure.

In this way DNA innovation is of gigantic use under the criminal equity framework and it is by and large successfully utilized everywhere on the world. In the criminal examination, DNA is essentially used to interface the criminal with a wrongdoing. What's more, additionally, DNA is viewed as an amazing weapon against a wrongdoing on account of its objectivity, logical exactness, trustworthiness, and fair-minded character. As a result of the uniqueness and its uses for recognizable proof of individual with a more prominent exactness in wrongdoing identification, the majority of the created nations have applied the DNA innovation to their examination to discover the genuine offenders particularly in the United Kingdom which is the origin of DNA innovation and the United States of America which contains the biggest DNA data set on the planet. The United Kingdom established Criminal Justice and Public Order Act, 1994 [20]. The United States of America instituted DNA Identification Act, 1994 [21]. In India, a few arrangements identifying with DNA testing is

joined under Criminal Procedure Code 1908, Indian Evidence Act 1872 and the Prevention of Terrorism Act, 2002. Both the United Kingdom and the United States of America have DNA information bases to store guilty party's DNA profile, captured individual's DNA profile, unidentified dead body's DNA profile, missing individual's DNA profile and crime location proof DNA profile for their future reference [22]. By and large the United Kingdom and the United States of America use DNA to settle wrongdoings in any of the ways:

- 1) Where a suspect is distinguished, an example of that individual's DNA can measure up to the proof from the crime location. Or then again
- 2) Where a suspect has not yet been distinguished, natural proof from the crime location can be broke down and contrasted with wrongdoer's profile in DNA information base. Or on the other hand
- 3) Crime scene proof can likewise be connected to other crime location proof DNA profile in DNA information base.

Simultaneously, the DNA innovation can likewise be utilized for the avoidance of future wrongdoing. For instance, accept that an individual is indicted for assault. At the hour of his conviction, the blamed is needed to give an example of his DNA, and the subsequent DNA profile is gone into a DNA data set. Following quite a while, again another assault is submitted by a similar individual. The clinical inspector gathers the natural proof from the assault casualty and the proof is tried.

The subsequent profile is contrasted and the DNA information base which has effectively been put away. Assume it is coordinated with the previous profile, at that point the charged will be captured, attempted, and condemned for his subsequent wrongdoing. In this strategy, the individual is kept from carrying out another wrongdoing because of the dread of natural example which has effectively been put away [23].

The police in Columbia, South Carolina, have delivered a sketch of a potential suspect in January 2015. Maybe than a craftsman's delivering dependent on witness depictions, the face was created by a PC depending exclusively on DNA found at the location of the crime. It could be the first run through a presume face has been put before general society along these lines, however it won't be the last. Specialists are progressively ready to decide the actual attributes of wrongdoing suspects from the DNA they abandon, giving what could turn into an incredible new apparatus for law requirement [24].

In any overall set of laws, the presentation of new logical innovation has made genuine test to legitimate and essential privileges of an individual like 'Right to Privacy' and 'Right against self-implication'. What's more, this is the main motivation behind why courts here and there are reluctant in tolerating the proof dependent on logical strategy. In such a circumstance, the legal executive needs to adjust science and law just as to adjust the cultural interest and a person's advantage. In India, the DNA is viewed as one of the fortuitous confirmations [25].

DNA is an incredible insightful instrument in light of the fact that, except for indistinguishable twins, no two individuals have a similar DNA. Subsequently, DNA proof gathered from a crime location can be connected to a presume or can wipe out a suspect from doubt. During a rape, for instance, organic proof like hair, skin cells, semen, or blood can be left on the casualty's body or different pieces of the crime location. Appropriately gathered DNA can measure up to realized examples to put a suspect at the location of the crime. Also, if no speculate exists, a DNA profile from crime location proof can be gone into the FBI's Combined DNA Index System (CODIS) to recognize a presume anyplace in the United States or to interface sequential wrongdoings to one another. The compelling utilization of DNA as proof may likewise require the assortment and examination of end tests to decide the specific wellspring of the DNA. Disposal tests might be taken from any individual who had legal admittance to the crime location and may have left natural material. When researching an assault case, for instance, it very well might be important to obtain an elimination sample from everyone who had consensual intercourse with the casualty inside 72 hours of the supposed attack to represent the whole DNA found on the person in question or at the crime location. Contrasting DNA profiles from the proof and end tests may help explain the outcomes. [26]

Forensic science is encountering a time of fast change, in the wake of the emotional advancement of DNA profiling. The quality of triumphalism here is uncommon: it is the victory of response against progress and is likewise the embodiment of the gap among law and science. [27] DNA has entered the jargon of the man in the city. [28] Perhaps less due to the lovely work of those, for example, Watson and Crick [29] as more due to the emotional effect DNA profiling has had on wrongdoing discovery. Many will share the view that DNA profiling is the best development in measurable science since the acknowledgment of finger impression IDs by the courts when the new century rolled over. The inquiry regularly posed of a DNA profile "Is it comparable to a finger impression?" Like numerous clearly straightforward inquiries, it doesn't have as basic an answer, and offers us a chance to consider an entrancing. The significant contrast between unique mark distinguishing proof and DNA profiling is that the previous has not been gotten from a rational assemblage of information and measurable thinking, while the last has. This has prompted a crucial contrast between the ways that the two sorts of proof are introduced at court [30]. At the point when unique mark ID is introduced the master will express that he or on the other hand she is sure that a specific wrongdoing mark was made by the originator of a given model print. The heaviness of a DNA profiling match, be that as it may, will be introduced through a mathematical articulation — ordinarily a "match likelihood" [31].

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