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Evolution of Forensic DNA in Indian Legal System

SANCHITA JAIN¹ AND AYUSHI SRIVASTAVA²

ABSTRACT

“DNA is the fingerprint of 21st Century” - John Walsh.

DNA process could be a powerful new forensic technology that several argue is that the greatest tool within the history of forensic science. But as is usually the case for new technologies, its acknowledgement by society was not straightforward. Each person on the planet can be acclaimed polymorphism in the succession of his or her DNA, which he or she earn from his or her biological parents and is indistinguishable in each cell of the body. The utilization of DNA profiling in the criminal equity framework is a crucial issue in criminal specialists today. The innovation is changing profiling has been depicted as an effective achievement in criminological science. The forensic use of polymer identification could be a noteworthy commitment to associate degree innovation. This paper mainly focuses on presenting DNA profiling and DNA fingerprinting, one of the great discoveries of the late 20th century, has revolutionized forensic investigations. This paper shortly recapitulates thirty years of progress in forensic chemical compound analysis that helps to convict criminals, exculpate the wrong defendant, and determine victims of crime, disasters, and war.

Also focuses on current normal ways supported short bike repeats (STRs) moreover as lineage markers (Y body, mitochondrial DNA) area unit lined and applications area unit illustrated by welfare work examples. The constitutional validity of DNA test has been challenged in many instances as it violates right to life, right to privacy, etc has been discussed in the paper and how DNA can be misused and the situation in India and other countries. At last but not the least, Benefits and risks of expanding forensic DNA databases are discussed and what the future holds for forensic DNA fingerprinting.

Keywords: *DNA fingerprinting, Forensic DNA profiling, short tandem repeat, Lineage markers, Forensic DNA database, Privacy rights, Short tandem repeat.*

¹ Author is a student in India.

² Author is a student in India.

I. INTRODUCTION

"Any sufficiently advanced technology is indistinguishable magic" - Arthur C. Clarke

DNA is the abbreviation of Deoxyribo Nucleic Acid. It is present in the genes of all human cells.³ It's present in white corpuscles only but not in red corpuscles. The structure of the DNA is such that it determines the behaviour, both human and body characteristics etc. of an individual. The structure of DNA is such that it varies from individual to individual as each individual has a unique DNA.

DNA analysis can also be termed as DNA typing or DNA profiling. In DNA analysis samples of blood, hair, semen etc. are matched to DNA taken from specific individuals. DNA analysis has become a common form of evidence in criminal as well as civil trials. In civil litigation, it is particularly in cases involving the determination of Paternity of an individual.

One half of our biological mother's DNA and one half of our biological father's DNA is comprised in the child's DNA. The children obtain 50% of DNA from their parents. Thus, it ensures that the DNA is unique, and it allows for accurate testing of parentage and direct descendants through a DNA paternity test.

What is DNA evidence and how it is used?

DNA evidence is playing a major role in deciding criminal cases in India, both to convict the guilty and to acquit those wrongly accused or

convicted.

In DNA analysis for a criminal investigation, highly sophisticated scientific equipment are used, first a DNA molecule from the suspect is collected, and then selected segments are isolated and measured. Then the suspect's DNA profile is matched with the one obtained from a sample of physical evidence to see whether the two match. If it does not match, the suspect may be eliminated from consideration. If a match happens, a statistical analysis is performed. The courts use this statistical result in deciding whether a suspect is guilty or innocent.

DNA evidence has been the most important evidence in crime solving since Sir Alec Jeffrey's first reported about his DNA profiling technique in 1984. He used DNA for forensics, in order to verify the confession of a 17 year-old boy in two cases of rape and murder in Midlands. The tests henceforth, proved that the teenager was not the perpetrator and then the actual attacker was caught eventually, by using DNA testing. Since then, the use of DNA analysis in forensic investigations has been steadily growing⁴

II. ADMISSIBILITY OF DNA IN INDIAN LEGAL SYSTEM

DNA evidence was first accepted by the courts in India in 1985. The method of DNA profiling used today in India is based on polymerase chain reaction (PCR) and uses short tandem repeats (STR). These techniques have revolutionized the speed and efficiency of the DNA test. These

³Britannica, the Editors of Encyclopaedia. "DNA". Encyclopaedia Britannica, 1 Nov 2020, <https://www.britannica.com/science/DNA> Accessed 31 Aug 2021

⁴ DNA PROFILING AND THE FORENSIC USE OF

DNA EVIDENCE IN CRIMINAL PROCEEDINGS: https://www.jstor.org/stable/43953503?seq=1#page_scan_tab_contents

techniques are very reliable in various countries. “Father of DNA fingerprinting” in India, Dr. Lalji Singh, developed and used this technology in India for the first time in 1988.

As the DNA test provides perfect identity but its admissibility before the court always depends on its accurate and proper collection, preservation and documentation which can be believed to be reliable enough to be used as evidence. Till date no specific legislation are there in India which specifies the guidelines to the investigating agencies and the court regarding the procedure to be adopted in the cases that involve DNA evidence. Moreover, no specific provisions are provided by the Indian Evidence Act, 1872 and Code of Criminal Procedure, 1973 to manage science, technology and forensic science issues in DNA procedure. The investigating officer has to face many troubles because of lack of any such provisions in collecting evidences which involves modern mechanism to prove the accused person guilty.

A police officer is authorized to get the assistance of a medical practitioner in good faith for the purpose of the investigation as provided under Section 53 of Code of Criminal Procedure, 1973. But, it does not authorise a complainant to collect any blood, semen etc. in order to bring the criminal charges against the accused. The amendment in Cr. P. C. by the Cr. P. C. (Amendment) Act, 2005 has added two new sections which gives power to the investigating officer to collect DNA sample from the body of

the accused and the victim with the help of medical practitioner.⁵

These sections provides for examination of both the accused of rape and the rape victim by the medical practitioner. But the admissibility of these evidences is still controversial as decisions of the Supreme Court and various High Courts in various cases remained conflicting.

In 2003, the initiative to draft a Bill regulating the use of DNA samples for crime-related cases was begun. Later in 2006, a committee was established by the Department of Biotechnology (DoB) to make recommendations for the drafting of the DNA profiling Bill which was known as the DNA Profiling Advisory Committee, 2006, which came as the Human DNA Profiling Bill, 2007. The 2007 draft Bill was prepared by the Department of Biotechnology along with the Centre for DNA Fingerprinting and Diagnostics (CDFD).

In 2007, the draft Human deoxyribonucleic acid identification Bill was made public, however was never introduced in Parliament.

In February 2012, a new version of the Bill was leaked. When passed, the Bill will initiate a state-level DNA databases which will further merge into a national-level DNA database, and proposes to regulate the use of DNA for the purposes of protection and welfare of the society and also to provide justice to all.

The Bill established a DNA Profiling Board which is responsible for 24 functions, including the specific list of instances for human DNA

⁵ DNA PROFILING AND THE FORENSIC USE OF DNA EVIDENCE IN CRIMINAL PROCEEDINGS:

https://www.jstor.org/stable/43953503?seq=1#page_scan_tab_contents

profiling and the sources of collection, prescribing guidelines for storage and destruction of biological samples. It also mentions the standards and procedures for establishment and functioning of DNA laboratories and DNA Data Banks. The lack of compatibility and policy indicates that there is a need in India for standardising the collection and use of DNA samples. Although DNA evidence generally prove to be helpful in solving crime investigation but the current 2012 draft Bill does not specifically provide for the critical safeguards and technical standards which are essential to prevent the misuse of DNA and protect the rights of the individuals.

DNA can reveal very personal information about an individual like medical and family history, and location, unlike other types of identifiers, such as fingerprints. Thus, having a DNA database with a broad scope and adding more DNA profiles onto a database, increases the potential for misuse of information stored on the database, because there is a lot of chance for identification, trailing of people, and access to private data.

Currently, the Bill protects against such misuse to a certain extent by limiting the information that will be stored with a DNA profile and in the indices, but the Bill does not mention it whether the DNA profiles of individuals convicted for a crime will be stored and searched independently from other profiles. Additionally, though the Bill limits

the use of DNA profiles and DNA samples to identification of perpetrators, it allows for DNA profiles and other information for the purpose of identification research, protocol development, or quality control provided that it doesn't contain any in person distinctive info and doesn't violate moral norms.

In the Indian Evidence Act, 1872, there are such provision as Section 112⁶, which helps to determine the paternity of the child and states that a child born in a valid marriage between mother and her husband within 280 days of the dissolution of the marriage, and the mother remaining unmarried proves that the child belongs to the former husband, unless proved otherwise but again there are no specific provisions regarding the modern scientific techniques. DNA analysis plays a major role in determining the paternity of a child in civil cases. Need of this evidence is also important in the criminal cases, and in the maintenance proceeding under Section 125 of the Code of Criminal Procedure⁷ in the criminal courts. But, on several occasions Supreme Court held that right to life and personal liberty is not an absolute right.

III. BENEFITS OF DNA ANALYSIS

- *Accuracy*

The DNA evidence is more reliable over Narco analysis⁸ as a result it is getting widely accepted.

⁶Birth during marriage, conclusive proof of legitimacy

⁷Order for maintenance of wives, children and parents

⁸Narco analysis involves the injection of a drug, sodium pentathalon, which induces a hypnotic or

sedated state in which the subject's imagination is neutralized, and they are expected to divulge true information.

The narcotic analysis is a subjective method due to which there arises a possibility for people to fool it. People can lie but DNA does not lie. There have been doubts earlier that 2 twins can have identical DNA sequence.

But now due to advancement in technology it has been established that no two twins can have same DNA. Narco analysis isn't accepted as evidence by the courts due to its unreliability.

Apart from crimes, it's also used for some other purposes like non- criminal functions like paternity tests, the credibility of client product, and diagnosing.

- **Reliability**

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IV. DNA ANALYSIS IN ACCORDANCE TO CONSTITUTION

The DNA fingerprinting cannot be analysed without the perspective of self-incrimination under Article 20 (3) and the question of violation of private space of an individual and its consequences related under Article 21 of the Constitution of India.

The Indian courts are uncertain in accepting the evidence which is based upon DNA Test because it challenges the Right to privacy and the Right against self-incrimination of an individual.

The Constitution of India provides immunity to an accused against self-incrimination under the Article 20(3) – ‘No person accused of an offence shall be compelled to be a witness against himself’. The article is based upon the legal maxim “nemo tenetur prodre accusare pisum”, which means “No man is obliged to a witness against himself.”

There are a number of judicial pronouncements under these articles that have descendants like a pendulum that is resulting in expanding the uncertainty with respect to the legal position of the DNA technology. There are cases in the Hon'ble Supreme Court which held that the Right to Life and Personal Liberty is not absolute and it can be subject to certain restrictions.

In *Kharak Singh v. State of Uttar Pradesh*⁹, the apex court held that the Right to Privacy is not guaranteed under the Constitution. The courts have authorized DNA tests on a few occasions

⁹ 1963 AIR 1295, 1964 SCR (1) 332

which are to be used in an investigation for producing evidence.

In the case of *Kanchan Bedi v. Gurpreet Singh Bedi*¹⁰, the question arose on the parentage of the infant, and the mother of the infant filed an application for conducting DNA test, to which the father of the infant opposed and argued on his rights that are being violated. The Hon'ble Court held that where the parentage of a child is suspicious and in question, a person who is directed to go for a DNA test doesn't amount to a violation of fundamental rights. The Court leaned on the judgement given in *Geeta Saha v. NCT of Delhi*, where the bench have ordered a DNA test to be held on the foetus of a rape victim.

There is a famous *ND Tiwari* case which involves the use of DNA fingerprinting in India. In the said case, *ND Tiwari* a politician was alleged by *Rohit Shekhar* that he is his biological father. This case raised many legal issues with respect to the accuracy of DNA testing and whether the persons have the right to keep the result of such test in private. According to the laws in India, an individual can't be forced against his/her will to give DNA evidence. But in this case, the court ordered *ND Tiwari* for his blood samples in the large interest of the public. The courts can force the people to give their blood samples in order to provide justice.

¹⁰ 2003 IAD Delhi 252, AIR 2003 Delhi 446, 103 (2003) DLT 165, I (2003) DMC 458, 2003 (67) DRJ 297, 2003 RLR 229

¹¹ *The People of the State of California v. Orenthal James Simpson*, 1995

V. DIFFICULTIES IN USING DNA ANALYSIS IN INDIA

• Handling of Samples

The DNA test provides perfect identity but its admissibility before the court always depends on its accurate and proper collection, preservation and documentation. As it was seen in the famous *OJ Simpson case*¹¹, improper handling of DNA evidence can lead to the acquittal of the guilty. The procedure of collection and preservation of DNA samples is very important and needs to be done properly using the sterile gloves and forceps. If bare hands are used in the collection process, DNA will get mixed up with the DNA of that person collecting it.

However in India the police constables are not trained on how to collect DNA samples. In other countries, when a crime occurs, first the forensic investigators and scientists go to the crime scene to collect forensic data and are properly trained for it. But in India, first an untrained constable goes there and he acts according to his intuitions and end up washing up the body. This removes and destroys the vital DNA evidence. So they shall be trained to handle forensic evidence and to properly collect it and seal it. But when there is some contamination or tampering with the evidence, it can be found out in the test result. But the court does not accept this contaminated evidence.¹²

¹² *Evidential Value of DNA: A Judicial Approach*: <http://docs.manupatra.in/newslines/articles/Upload/BF936E7D-4211-4AE4-9BD7-3D721A8E424C.pdf>

- **Storage of Samples**

In countries like UK and US, the DNA samples are stored in National DNA Database. The police is not authorised as such to retain the DNA recovered from crime site; their job is confined to just collection and deposition. Unlike in India, the police have uncontrolled powers to collect and retain the DNA of suspects even after acquittal. This raises concerns about the misuse of DNA database and may interfere with the privacy of the individuals or of suspects even after acquittal. DNA of all convicts should be stored in the database so that it becomes easy to apprehend multiple offenders.

- **Lack of Test Centres**

There are enough facilities and test centres for the DNA testing and fingerprinting in foreign countries. But in India, there are not many facilities people have to go to *Centre for Cellular and Molecular Biology or CCMB¹³ in Hyderabad just for doing a DNA test*. This may not be feasible for everyone. With due regard to the efficiency of this technology, there should be sub-branches and test centres of this institution in every corner of the country. Also it must be made sure that people from all parts of the country can readily have DNA testing.

VI. WHAT FUTURE HOLDS FOR DNA FINGERPRINTING?

The forensic community, as it forever has, is facing the question that in which direction the

DNA fingerprint technology is developing. A growing number of experts are convinced that DNA sequencing will shortly replace methods based on fragment length analysis and there are many arguments for this.¹⁴As the Next Generation Sequencing (NGS)¹⁵technologies are emerging, the forensically useful information can be expanded and analyzed quickly and cost-efficiently.

VII. CONCLUSION

DNA analysis is a very crucial invention which helps the legal experts to solve many such crimes which were not possible to solve before as no evidence were present. This invention saved many lives and convicted the guilty providing justice to many people. DNA Science proved to be very useful for public at large as there are many examples present which clearly indicates that it really helped the common people to get justice. The Courts have considered the reliability of DNA testing and also included the results of DNA test as evidence. The DNA evidence can punish or acquit a suspect in the court of Law. However, the accuracy of the technique has been challenged many times but its fruitfulness cannot be denied. This is a great example of how scientific technology has reached the common man to ensure justice. It helps to resolve paternity cases, and is useful in identification, crime investigations and other legal matters.

¹³The Centre for Cellular & Molecular Biology (CCMB) is a premier research organization in frontier areas of modern biology.

¹⁴ DNA Profiling and the forensic use of DNA

evidence in criminal proceedings” Vol. 53, No. 2

¹⁵Next-generation sequencing (NGS) is a massively parallel sequencing technology that offers ultra-high throughput, scalability, and speed.

“The greatest single achievement of nature to date was surely the invention of the molecule DNA: Lewis Thomas”.
