



Jus Corpus Law Journal

Open Access Law Journal – Copyright © 2023 – ISSN 2582-7820
Editor-in-Chief – Prof. (Dr.) Rhishikesh Dave; Publisher – Ayush Pandey

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Application of DNA Evidence into the System of Criminal Justice

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Received 11 April 2023; Accepted 02 May 2023; Published 05 May 2023

The development of Deoxyribonucleic Acid (“DNA”) innovation is one of the foremost imperative progresses within the zone of measurable science right now utilized within the criminal equity framework. DNA is ubiquitous and is shown in each single human being. It is the basic building square for any person’s hereditary cosmetics. A DNA profile, special to a person, can be obtained through DNA profiling or DNA writing, which could be a logical handle whereby the person’s hereditary fabric is confined and changed into discernible pictures. This gives quick distinguishing proof of offenders through scientific examination of wrongdoing scene tests. This article presents the diverse present-day advances utilized in DNA scientific investigation and outlines the application of DNA proof in criminal equity in several cases. The article will moreover look at the beginning challenges in the affirmation of DNA proof at its earliest stages to organize and advance examine the evidential esteem of a DNA coordinate as well as the monstrous potential of a universal and a national DNA database. The thrust of this article is to deliver perusers a stronger understanding of the workings of DNA innovation and highlight the indispensable part it plays in criminal equity, particularly in the setting of the Singapore legal framework.

Keywords: dna, hereditary, scientific, database.

INTRODUCTION

Nowadays, wrongdoing is being committed with more advanced strategies and in an organized way. In expansion, modern sorts of wrongdoing are ceaselessly taking put. To productively

handle such circumstances, investigative specialists moreover depend on systematized and logical investigative strategies. DNA innovation is one of the investigative devices in later times after the spearheading work done by Teacher Sir Alec Jeffreys in Leicester College, London in 1985¹. Sometime recently in the 1980s, DNA was utilized for logical investigation and logical reason as it were. Presently, it has picked up a noticeable part of scientific science. Scientific science, as a logical strategy, working inside the limitation of the legitimate framework, manages rules to respectful and criminal examinations other than giving precise data around all the going to highlights of recognizable proof of hoodlums. The beginning of DNA innovation makes strides in the status of measurable science from detached to dynamic key players within the organization of equity. DNA or Deoxyribonucleic Acid could be the genetic blueprint of each human being. The chemical component of DNA within the cells of each person is one of a kind.

DNA in the legal system

The development of DNA testing(fingerprinting) empowered the separation of each person agreeing to his or her interesting hereditary profile. This uniqueness of the hereditary profile has empowered the agents, in an until now phenomenal way, to coordinate the organic test with the body of the individual concerned. This progressive innovation is utilized in wrongdoing examination, paternity testing, and migration confirmation methods all-inclusive. After the innovation and the primary fruitful utilization of the innovation, DNA fingerprinting was utilized in the case of a criminal examination including the assault and kill of two fifteen-year-old young ladies, one in 1983 and the other in 1986² in Britain close to Leicester College. With this breakthrough legal innovation, the twofold murders case was fathomed driving to the capture and confession of the killer. Taking after the fruitful application of DNA fingerprinting within the Colin Pitchfork case this technology crossed over the Atlantic to be used in the conviction of Tommy Lee Andrews in the Joined Together States in 1987³. Gary Dotson got to be the primary convict within the Joined Together States to be absolved based on DNA unique

¹ Jyotirmoy Adhikary, *DNA Technology in Administration of Justice* (Lexis Nexis Butterworths 2007)

² 'Visible Proofs: Forensic Views of the Body' (*National Library of Medicine*, 03 December 2004)

<<https://www.nlm.nih.gov/exhibition/visibleproofs/galleries/cases/jeffreys.html>> accessed 13 April 2023

³ *Andrews v State* [1988] 533 So 2d 841

finger impression proven in 1988. Like, the application of DNA technology guarantees reasonableness within the criminal equity framework. In truth, the convenience of DNA innovation has played an imperative part in the examination of wrongdoing. A few of the employments are:

- Recognizable proof of convicts in sexual attack cases;
- Recognizable proof of convicts in kill cases;
- Recognizable proof of paternity and maternity of the child;
- Recognizable proof of ruined remains;
- Common distinguishing proof of hoodlums, and
- Movement purposes.

DNA EVIDENCE IN THE INDIAN LEGAL SYSTEM

Lalji Singh at the Centre for Cellular and Molecular Science (CCMB), Hyderabad spearheaded the utilization and application of scientific DNA innovation within the Indian legal system in 1988. The primary case in which he utilized his novel innovation was in Tamil Nadu concerning a paternity debate⁴ including a child named Mary wherein two sets of guardians claimed the child to be their progeny in 1989⁵. This decision was afterward challenged by the Kerala Tall Court which maintained the decision given by the lower court concerning the legitimacy of DNA proof in 1991⁶. After this point of interest judgment, the entryways for the utilization of DNA proof within the Indian lawful framework were opened and Lalji Singh drove the campaign in utilizing DNA proof as a “silent witness”⁷ in court cases over the length and breadth of the nation. He voyaged over India conveying his reports to the courts as a scientific expert in cases related to DNA testing and proof. The utilization of DNA fingerprinting

⁴ Madhusudan W Pandit and Lalji Singh, ‘DNA Testing, Evidence Act and Expert Witness’ (2000) 47(4) Indian Police Journal <<https://www.ojp.gov/ncjrs/virtual-library/abstracts/dna-testing-evidence-act-and-expert-witness>> accessed 08 April 2023

⁵ Lalji Singh & Madhusudan W Pandit, *DNA Fingerprinting: The Witness Within* 5 (I K International Publishing House Pvt Ltd New Delhi 2012)

⁶ *Kunhiraman v Manoj* (1991) DMC 499

⁷ Amade M'Charek, ‘Silent Witness, Articulate Collective: DNA Evidence and the Inference of Visible Traits’ (2008) 22(9) Bioethics <[10.1111/j.1467-8519.2008.00699.x](https://doi.org/10.1111/j.1467-8519.2008.00699.x)> accessed 08 April 2023

innovation to assist unravel cases of assault and kill committed by high-profile, wealthy, and effective men pushed DNA into the open spotlight as an innovation of truth in a cracked criminal equity framework where witnesses were not one or the other tried and true nor reliable, i.e. inclined to “native mendacity”⁸. Opposite to the undependability of visual witnesses and their declarations, DNA was moved as an unbiased and upright measurable “genetic witness”; as Lalji Singh expressed, “DNA never tells lies”⁹. The application of DNA fingerprinting in understanding assault cases was particularly commanding in guaranteeing that this innovation picked up worthiness within the Indian legitimate framework as assault is endemic in Indian society and a cause of much media consideration and ethical panic. In India, the specialist of DNA proven as an innovation of truth-telling was never effectively challenged within the courtrooms as was the case in America. It is crucial to perceive that DNA proof could be a product altogether subordinate to the fool-proof and logical preparation utilized to get the comes about together with the capacity of the master to communicate as it were the facts. This implies that how DNA proof is handled and communicated is pivotal for its adequacy. The lawful life of DNA from the wrongdoing scene to the measurable research facility to the court may be a complex workout including distinctive on-screen characters and teachers, which incorporates the police, therapeutic officers, measurable researchers, attorneys, judges, and the media.

TYPES OF DNA TESTING PROCEDURES

Even though there are various sorts of strategies received for scientific coordinating and distinguishing proof of a person, there are two primary sorts of such testing frameworks. They are called Restriction Fragment Length Polymorphism, (RFLP) and Polymerase Chain Reaction (PCR) testing¹⁰. **There are several types of DNA testing procedures. Some of the commonly used ones are:**

⁸ Vinay Lal, ‘Everyday Crime, Native Mendacity and the Cultural Psychology of Justice in Colonial India’ (1999) 15(1) *Studies in History* <<https://doi.org/10.1177/025764309901500105>> accessed 08 April 2023

⁹ Lalji Singh, *My Travails in the Witness Box* (I K International Publishing House Pvt Ltd New Delhi 2012)

¹⁰ Ankit Srivastava et al., ‘Impact of DNA evidence in criminal justice system: Indian legislative perspectives’ (2022) 12 *Egyptian Journal of Foreign Sciences* <<https://ejfs.springeropen.com/articles/10.1186/s41935-022-00309-y>> accessed 08 April 2023

1. Diagnostic Testing¹¹

Cell-free fetal DNA testing - Non-invasive (fetal) test. It is performed on a maternal venous blood sample and can provide information about the fetus in early pregnancy.¹²

Newborn screening - Used to identify genetic disorders that can be treated soon after birth.

Diagnostic testing - Used to diagnose or rule out certain genetic or chromosomal conditions. Genetic testing is often used to confirm the diagnosis when certain conditions are suspected based on mutations or symptoms in the body. Diagnostic tests can be performed at any point in life, but are not available for all genes or all genetic conditions.

Carrier testing - It is used to identify people who have one copy of a genetic mutation that, when two copies are present, causes an inherited disease.

Preimplantation genetic diagnosis - It is performed on preimplantation human embryos as part of in vitro fertilization. Embryos are individually examined for abnormalities, and those without abnormalities are implanted into the uterus¹³.

Pre-natal diagnosis¹⁴- Used to detect genetic or chromosomal alterations in the fetus before birth. This type of test is offered to couples who are at high risk of having a baby with a genetic disorder or chromosomal abnormality.

Predictive and presymptomatic testing¹⁵- It is used to detect genetic mutations associated with disorders that appear postnatally, often later in life. These tests are useful for people who have a family member with a genetic disorder but do not have the disorder's features at the time of testing.

¹¹ 'Genetic testing' (*Mayo Clinic*, 14 April 2020) <<https://www.mayoclinic.org/tests-procedures/genetic-testing/about/pac-20384827>> accessed 08 April 2023

¹² Ignatia B Van den Veyver, 'Recent Advances in Prenatal Genetic Screening and Testing' (2016) PubMed Central <[10.12688/f1000research.9215.1](https://doi.org/10.12688/f1000research.9215.1)> accessed 13 April 2023

¹³ Genetic testing (n 11)

¹⁴ *Ibid*

¹⁵ *Ibid*

Pharmacogenomics¹⁶- determines the impact of genetic variation on drug response. If a person is suffering from a disease or medical condition, pharmacogenomics can study a person's genetic makeup to determine which drugs and dosages are the safest and most beneficial for the patient.

2. Non-Diagnostic Testing

Forensic Testing - utilizes DNA sequence for identification of a person for legal work to discern the crime.

Paternity Testing - “uses special DNA markers to identify the same or similar inheritance patterns between related individuals.”

Genealogical DNA Test - it determines the ancestral relations for genetic genealogy

Research Testing - involves pointing out unknown genes and understanding how they work and enhancing the knowledge of genetic conditions.

USE OF DNA EVIDENCE

DNA could be a capable investigative instrument since, with the exemption of indistinguishable twins, no two individuals have the same DNA. Subsequently, DNA proof collected from a wrongdoing scene can be connected to a suspect or can dispose of a suspect from doubt. Amid a sexual ambush, for case, organic proof such as hair, skin cells, semen, or blood can be cleared out on the victim's body or other parts of the wrongdoing scene. Appropriately collected DNA can be compared with known tests to put a suspect at the scene of the wrongdoing. In expansion, in case no suspect exists, a DNA profile from the wrongdoing scene prove can be entered into the FBI's Combined DNA File System (CODIS)¹⁷ to distinguish a suspect anyplace within the Joined together States or to connect serial wrongdoings. The successful utilization of DNA as proof may also require the collection and examination of disposal tests to decide the precise

¹⁶ Genetic testing (n 11)

¹⁷ Himanshu Pandey and Anhita Tiwari, 'Evidential Value of DNA: A Judicial Approach' (2017) 15 Bharati Law Review <<http://docs.manupatra.in/newsline/articles/Upload/BF936E7D-4211-4AE4-9BD7-3D721A8E424C.pdf>> accessed 08 April 2023

source of the DNA. Disposal tests may be taken from anybody who had legal get to the wrongdoing scene and may have cleared out organic fabric. When examining an assault case, for illustration, it may be vital to get an end test from everybody who had a consensual intercut with the victim within 72 hours of the charged ambush to account for the whole DNA found on the casualty or at the wrongdoing scene. Comparing DNA profiles from the proof with disposal tests may offer assistance to clarify the comes about.

When it comes to civil issues, things have gotten to be a parcel more complicated. Owing to more noteworthy mindfulness among the open and the patriarchal culture of society¹⁸, cases related to paternity confirmation have been heaping up within the courts¹⁹. In these things, DNA testing is requested as the extreme referee of truth, in cases related to the affirmation of organic parentage. This slant appears how DNA testing is progressively being instrumentalized as a shape of “genetic certification” by men to surveil, police, and teach women's sexual and regenerative choices, subsequently driving paternity debate cases within the courts. GK Goswami and Siddhartha Goswami have distinguished a slant within the utilization of DNA innovation for gracious cases wherein there's a move from the assumption of the authenticity of the child based on section 112 of the Indian Evidence Act²⁰ to a development towards a more prominent acknowledgment of hereditary tests to confirm organic parentage. Be that as it may, this jurisprudence is still advancing taking due care in choosing the acknowledgment of DNA proof when there's an “eminent need” after scrutinizing that there was “no access” between the parties involved²¹.

¹⁸ Anjali Thomas, ‘India’s Doubting Fathers and Sons Embrace DNA Paternity Tests’ (*The New York Times*, 16 August 2013) <<https://india.blogs.nytimes.com/2013/08/16/indias-doubting-fathers-and-sons-embrace-dna-paternity-tests>> accessed 09 April 2023

¹⁹ S Abdul Khader Kunju, ‘To redefine the maxim “Pater est quem nuptiae demonstrant”’ (*LiveLaw*, 24 February 2023) <<https://www.livelaw.in/redefine-maxim-pater-est-quem-nuptiae-demonstrant/>> accessed 09 April 2023

²⁰ The Indian Evidence Act 1872, s 112

²¹ *Goutam Kundu v State of West Bengal* (1993) AIR 2295; *Kamti Devi v Poshi Ram* (2001) SC 2226; *Shri Banarsi Dass v Mrs Teeku Dutta* (2005) 4 SCC 449

GOVERNANCE OF DNA DATA IN INDIA

The government presented The DNA Technology (Use and Application) Regulation Bill, 2018 in the Lok Sabha on August 9, 2018²². Amid the request for a more prominent examination of the draft charge by the resistance parties and security activists, in October 2019, the Rajya Sabha Chairman recognized the disputable nature of the Charge and alluded it to a Parliamentary Standing Committee on Science and Innovation, Environment and Woodlands to look at the Charge in detail and yield its report to the Parliament inside three months²³. The postponed report of the master committee headed by MP Jairam Ramesh was at last discharged on February 03, 2021. The report raises different issues and reports dissents by its individuals which require critical consideration. This report has been submitted to the Parliament. The Charge is still pending endorsement. The following area gives a point-by-point examination of the DNA Charge in its current avatar and gives our basic examination of the different measurements of the Charge which highlights the major issues which ought to be considered sometime recently passing it within the Parliament.

The governance of DNA data in India is primarily governed by the DNA Technology (Use and Application) Regulation Bill, 2019²⁴. The bill seeks to regulate the use of DNA technology for establishing the identity of missing persons, unidentified bodies, offenders, and other purposes. The bill has provisions for the establishment of a DNA Regulatory Board, which will oversee the activities of laboratories and institutions involved in DNA testing. The bill also has provisions for the protection of privacy and confidentiality of individuals whose DNA data is collected and analyzed. It prohibits the use of DNA data for any purpose other than the one for which it was collected, and any unauthorized disclosure of DNA data is punishable with imprisonment and fines. In addition to the DNA Technology Regulation Bill, 2019, other laws and regulations also govern the use and storage of DNA data in India. For instance, the Indian

²² DNA Technology (Use and Application) Regulation Bill 2018

²³ 'DNA Technology Regulation Bill referred to the parliamentary standing committee' (*The Economic Times*, 19 October 2019) <<https://government.economictimes.indiatimes.com/news/technology/dna-technology-regulation-bill-referred-to-parliamentary-standing-committee/71662534>> accessed 09 April 2023

²⁴ DNA Technology (Use and Application) Regulation Bill 2019; Indian Evidence Act 1872, s 45

Medical Council (Professional Conduct, Etiquette, and Ethics) Regulations, 2002²⁵, prohibit doctors from revealing any information about patients, including their genetic data, without their consent. Moreover, the Information Technology ²⁶(Reasonable Security Practices and Procedures and Sensitive Personal Data or Information) Rules, 2011, also require organizations that collect and store sensitive personal information, including genetic data, to adopt reasonable security practices to protect the information from unauthorized access, use, or disclosure. In conclusion, the governance of DNA data in India is primarily governed by the DNA Technology (Use and Application) Regulation Bill, 2019, which seeks to regulate the use of DNA technology, establish a regulatory board, and protect the privacy and confidentiality of individuals whose DNA data is collected and analyzed.

Right to privacy

The Indian Parliament is preparing to enact a law to govern the use of DNA, which can uniquely identify individuals. DNA technology has long been used globally to identify suspects and victims in criminal cases, as well as in civil cases to determine parentage and in medicine to assess an individual's susceptibility to disease. It is important to obtain the consent of the person from whom a DNA sample is taken. Recently, concerns have been raised about the compatibility of the law with the fundamental Right to Privacy guaranteed to Indian citizens under the Indian Constitution²⁷. The DNA samples are analyzed and stored in a DNA database, which can reveal a person's physical and medical history beyond the original purpose of identification. This loophole in the law infringes on the Right to Privacy. In contrast, in the UK and USA, DNA samples are only used for identification purposes and not for other purposes. The DNA Bill in India does not provide for consent in civil cases, which violates the Right to Privacy since the data collected can reveal a person's physical and mental traits without their consent. Furthermore, the law is unclear about whether it covers DNA tests conducted in medical and diagnostic settings and how such data is to be stored. The Bill requires comprehensive scrutiny

²⁵ Indian Medical Council Act 1956

²⁶ Information Technology Act 2000, s 43(a)

²⁷ Khushboo Garg, 'DNA Profiling and Right to Privacy' (*Legal Readings*, 09 June 2021)

<<https://legalreadings.com/dna-profiling-and-right-to-privacy/>> accessed 09 April 2023

and wider deliberation before it can be enacted, as it is currently flawed and potentially dangerous.

IMPACT OF DNA EVIDENCE

DNA not as it encouraged the securing of the offender but too spared the guiltless from wrongful feelings. Project Innocence may be a striking illustration of arbitrating in criminal and gracious cases, DNA has been found as a gigantic help to bargain the issue of human trafficking. The issue of human trafficking and child mishandling has been frightening for law authorization offices and human rights organizations over the globe. As per the figures of the United Nations Children's Fund (UNICEF), exceptionally enormous numbers (i.e., 300 million) of children are being misused and manhandled. Other than this, illicit selection is another genuine challenge going up against society. It has been well articulated that for the identification and recovery, DNA could be an idealized apparatus.

THE LEGAL POSITION OF FORENSIC TECHNIQUES

In India, the lawful position of the legal procedure needs to pass through a three-fold litmus test viz.

- **What is the legitimacy of such a test?**

The protected legitimacy can be challenged on the premise of Article 20 (3) of the Indian Constitution²⁸ which gives that —No individual charged with an offense should be compelled to be a witness against oneself. The reply can be drawn from *State of Bombay v Kathikalu*²⁹ where it was held by the Hon'ble Court that giving the example and information for legal examination is a bit like giving pertinent actualities inside the meaning of Sections 9³⁰ & 11³¹ of the Evidence Act³² and it does not drop beneath the parameter of prove against oneself.

²⁸ Constitution of India 1950, art 20(3)

²⁹ *State of Bombay v Kathi Kalu Oghad* (1962) 3 SCR 10

³⁰ Indian Evidence Act 1872, s 9

³¹ Indian Evidence Act 1872, s 11

³² Indian Evidence Act 1872

- **What is the evidential esteem of the scientific data gotten from the specialists?**

A common run the show is that the supposition of an individual having uncommon ability or information in a specific field should be allowable to the court of law (Article 45³³ Indian Evidence Act). In this way, the master helps and decides the reality of the issue and pertinent truth to outfit data to legal officers. Even though it isn't a conclusive confirmation but it can be utilized as demonstrative proof.³⁴ In *Madan Gopal Kakkad v Maritime Dubey and Other*,³⁵ it was held that the conclusion of the master is permissible.

- **Within the nonappearance of any concrete enactment, what stand is taken by legal concerning the tolerability of DNA forensics?**

At present in India, there's no concrete law to administer issues of tolerability of scientific procedure. Some sections i.e. Sections 53³⁶, 54³⁷, 53(A)³⁸, and 164(A)³⁹ of the Code of Criminal Procedure⁴⁰ oversee science and innovation issues to a certain amplify. In this manner, it is cleared out on legal watchfulness either to allow DNA tests or to deny any such ask. Such a condition makes perplexity and instability over subordinate legal.⁴¹ The analyst has made a constant endeavor to cover the whole lawful, logical, and social effect of utilizing this novel measurable procedure. Issues of concern and security of rights are additionally managed.

In *Asit Kapoor v Union of India*⁴² it was held that no party to a legitimate continuing can be compelled for any logical test against his/her will as it has an impact of encroaching upon his right to protection. A few critical rules are issued in *Gautama Khandu v State of West Bengal & Anr*⁴³ which is summed up as takes after: The wedding court has control to arrange for a person

³³ Indian Evidence Act 1872, s 45

³⁴ Sudhanshu Ranjan et al., 'Admissibility of DNA in Indian Legal System' (2019) 5 Journal of Legal Studies and Research

³⁵ *Madan Gopal Kakkad v Marina Dubey and Ors* (1992) 3 SCC 204

³⁶ Code of Criminal Procedure 1973, s 53

³⁷ Code of Criminal Procedure 1973, s 54

³⁸ Code of Criminal Procedure 1973, § 53(A)

³⁹ Code of Criminal Procedure 1973, s 164(A)

⁴⁰ Code of Criminal Procedure 1973

⁴¹ Sudhanshu Ranjan et al. (n 34)

⁴² *Asit Kapoor v Union of India* AIR 1986 SC 515

⁴³ *Gautama Khandu v State of West Bengal & Anr* (2018) 3 SCC 269

to experience a few therapeutic tests. Such arrange wouldn't be considered an infringement of the Right to individual freedom revered beneath Article 21⁴⁴ of the Indian Constitution.

Such control is worked out by the court when there's a solid prima facie case and adequate fabric sometime recently in the court. On the off chance that the respondent denies the therapeutic examination despite the arrangement of the court, at that point court will be entitled to draw antagonistic induction against him. Hence, the Indian legal system had received measurable proof but it is the administrative apparatus that is slacking behind in acclimatizing logical advancement which plays an imperative part not as it were to fathom tall profile cases but assault cases and post-conviction matters moreover

DNA and self-incrimination:

Recently investigating the utilization of DNA tests in criminal cases would be related to see on the off chance that it offends the principal right of the individual against self-incrimination. A Structure Seat of the Hon'ble Supreme Court, in *Selvi v State of Karnataka*⁴⁵, whereas testing the legitimacy of DNA tests on the iron block of Article 20(3)⁴⁶ of the Constitution of India, made taking after perception, "The matching of DNA samples is emerging as a vital tool for linking suspects to specific criminal acts. It may also be recalled that as per the majority decision in *Kathi Kalu Oghad*, the use of material samples such as fingerprints for comparison and identification does not amount to a testimonial act for Article 20(3). Hence, the taking and retention of DNA samples which are like physical evidence do not face constitutional hurdles in the Indian context."

The Constitution of India by Article 51A (h)⁴⁷ and (j)⁴⁸ commands that it should be the elemental obligation of each citizen of India—to create the logical mood, humanism, and the soul of inquiry and reform and endeavor towards brilliance in all circles of person and collective activity so that the country always rises to higher levels of endeavor and accomplishments. Even though

⁴⁴ Constitution of India 1950, art 21

⁴⁵ *Selvi v State of Karnataka* (2010) 7 SCC 263

⁴⁶ Constitution of India 1950, art 20(3)

⁴⁷ Constitution of India 1950, art 51A(h)

⁴⁸ Constitution of India 1950, art 51A(j)

there's no particular DNA enactment enacted in India, sections 53⁴⁹ and 54⁵⁰ of the Code of Criminal Procedure, 1973 (Cr PC) give for DNA tests suggested and they are broadly utilized in deciding complex criminal cases. Section 53 bargains that with an examination of the denounced by the therapeutic practitioner at the ask of a police officer, there are sensible grounds to accept that an examination of his individual will manage to prove the commission of the offense. Section 54 of Cr.P.C.⁵¹ advance gives for the examination of the captured individual by the registered medical professional at the ask of the captured individual. By the Amendment Act of 2005, the Cr.P.C. was revised inter alia to include modern section 53-A which commands the examination of an individual denounced of assault by a therapeutic professional. By this correction, modern clarification incorporates inside its ambit examination of blood and blood stains. Semen, sputum, swabs, sweat, hair tests, and fingernails by the utilization of modern methods within the case of sexual offenses counting DNA profiling and other tests which is vital in a specific case. Even though Section 53-A⁵² refers as it were to the examination of the blamed by a therapeutic specialist at the ask of the police officer, the court has more extensive control for the reason of doing equity in criminal cases⁵³, by issuing courses to the police officer to gather blood tests from the charged and conduct DNA test for the reason of assist examination beneath sections 173(8)⁵⁴ and 293(4)(e)⁵⁵ of the Cr PC. Separated from these arrangements, section 45⁵⁶ of the Indian Evidence Act, 1872 is more vital so distant as the suitability of DNA evidence is concerned. Section 45 bargains with the supposition of the master.

CONCLUSION

In conclusion, the use of DNA evidence in the criminal justice system has revolutionized the way crimes are investigated and prosecuted. DNA technology has provided investigators with a powerful tool to identify perpetrators, exonerate the innocent, and solve previously unsolved

⁴⁹ Code of Criminal Procedure 1973, s 53

⁵⁰ Code of Criminal Procedure 1970, s 54

⁵¹ Code of Criminal Procedure 1970, s 54

⁵² Code of Criminal Procedure 1973, s 53(A)

⁵³ Sudhanshu Ranjan et al. (n 34)

⁵⁴ Code of Criminal Procedure 1973, s 173(8)

⁵⁵ Code of Criminal Procedure 1973, s 293(4)(e)

⁵⁶ Indian Evidence Act 1872, s 45

crimes. The accuracy and reliability of DNA evidence have led to a high level of trust and confidence in the criminal justice system. However, the use of DNA evidence also raises ethical, legal, and social concerns. The collection, storage, and analysis of DNA data raise privacy, consent, and confidentiality issues. Misusing or mishandling DNA evidence can have serious consequences, including wrongful convictions and violations of human rights.

Therefore, it is essential to have appropriate policies and regulations in place to govern the use of DNA evidence in the criminal justice system. The use of DNA evidence should be guided by ethical principles and respect for individual rights and liberties. Proper training and education for law enforcement officers, attorneys, and judges on the use and interpretation of DNA evidence are also crucial to ensure its effective and fair use in the criminal justice system.