

The Expanding Contours of DNA Testing: A Critical Analysis of Evolving Jurisprudence

Dr. Vinod Kumar¹, Mehakpreet Kaur², Dr. Mona Goel³

¹Assistant Professor, Department of Laws, Guru Nanak Dev University, Amritsar.

²Research Scholar, Department of Laws, Guru Nanak Dev University, Amritsar.

³Assistant Professor, Department of Laws, Guru Nanak Dev University, Jalandhar.

ABSTRACT

Law is a dynamic concept. With the advancement of science and technology, the relevance of scientific evidence has also multiplied leaps and bounds. Presumption based on abstract principles of morality, human behaviour, public policy, ordinary course of nature etc. can never have an upper hand over the scientific evidence accepted by the global society. In order to uphold the validity and authenticity of scientific evidence and to bring it out of the domain of right to privacy and right against self-incrimination under Article 21 and 20(3) of Indian Constitution respectively, Parliament enacted the Criminal Procedure (Identification) Act, 2022. Conventional legislations like Indian Penal Code, 1860, Criminal Procedure Code, 1873, Indian Evidence Act, 1872 etc, often came in conflict with modular scientific evidence. At the time when such laws were enacted, the Legislature could not even imagine that something called DNA Testing could ever come into existence and become fundamental for identification of individuality. In contrast, the Criminal Procedure (Identification) Act, 2022 was designed to accommodate modern forensic techniques and now operates alongside the newly introduced Bharatiya Nagarik Suraksha Sanhita (BNSS), which replaced the CrPC, 1973. With this background in mind, researchers have made a sincere effort to culminate the different contours of DNA testing, conflict between scientific evidence and presumptions of conventional law.

Keywords- DNA Testing, DNA Profiling, Criminal Procedure (Identification) Act, 2022, Bhartiya Nagrik Suraksha Sanhita, 2023, Article 20(3) and Article 21.

INTRODUCTION

Law is not a static edifice - it evolves, reshapes and redefines itself in response to the changing pulse of society. The modern advancements in science and technology have significantly transformed the legal landscape, elevating the importance of scientific evidence in the pursuit of justice.¹ Traditional legal presumptions rooted in abstract ideals of morality, human behavior, public policy or the so-called 'ordinary course of nature' no longer eclipse the credibility of scientific proof that is widely recognized across the globe.² To reinforce the reliability and admissibility of such evidence and to shift it beyond the protective shields of the Right to Privacy under Article 21 and the Right against Self-Incrimination under Article 20(3) of the Indian Constitution, the Parliament enacted the Criminal Procedure

¹ M.P. Jain, *Indian Constitutional Law* (Kamal Law House, Calcutta, 9th edn., 2025).

² Jyotirmoy Adhikary, *DNA Technology in Administration of Justice* 267 (Lexis Nexis, New York, 1st edn., 2008).

(Identification) Act, 2022.³ This law was clear shift toward the convergence of the law and science and the classical laws like Indian Penal Code of 1860, the Criminal Procedure Code of 1973 and Indian Evidence Act of 1872, which were designed in a time when it was hard imagining such a revolutionary technology as DNA Testing.⁴ In contrast, the Criminal Procedure (Identification) Act, 2022 accommodated various modern forensic techniques and now operates alongside the newly introduced Bharatiya Nagarik Suraksha Sanhita (BNSS).

DNA Testing is a revolutionary tool in forensic science that utilizes the unique genetic blueprint of individuals to link them to crime scenes, identify victims or establish biological relationships. DNA or 'Deoxyribonucleic acid' is actually the genetic material found in the cell of an organism.⁵ Everyone is born with a distinct DNA, which is exclusive to an individual (except in the rare occurrence of identical twins that share a single, fertilized egg). DNA never changes and remains the same throughout life. It is part of every cell in the human body. DNA is made of two linked strands that wind around each other to resemble a twisted ladder shape known as a double helix.⁶

DNA evidence refers to biological material collected from a crime scene or an individual that contains DNA, which can then be analyzed to create a unique genetic profile. DNA evidence can be obtained from any biological material such as bone, blood, semen, saliva, hair, skin, etc.⁷ Forensic laboratories then use various techniques to amplify tiny amounts of DNA, allowing them to generate a DNA profile even from degraded or minute samples. This profile is then compared to DNA from suspects or victims or against DNA databases. The results of DNA Testing can lead to following outcomes:

- Match (Inclusion): The DNA profiles are indistinguishable, indicating a common source.
- Exclusion: The profiles differ, which is a sign of different sources.
- Inconclusive: The data does not provide a clear result, often due to insufficient or degraded samples.

However, DNA Testing is an evolving area of law and States vary in their laws governing the collection of DNA from accused.⁸ Sometimes a Court order is required to retrieve a reference from an interested person. Reference samples are always collected from victims unless they refuse to cooperate with the investigation; in that case, a Court order might be required.⁹

DNA Profile vis-a-vis DNA Sample

'DNA Profile' is distinct from 'DNA Sample' which can be obtained from bodily substances whereas, a DNA profile is a record created on the basis of DNA samples made available to forensic experts for examination.¹⁰ Keeping of the record of DNA profiles by the enforcement agencies has no mention in the Criminal Procedure Code, 1973, however, Section 53A(2)(iv) and Section 164A(2)(iii) of CrPC

³ Vaibhav Yadav, "Analysis of India's Criminal Procedure (Identification) Act, 2022: Determining Potential Misuse and Possible Violations of Fundamental Rights" 60(2) *International Annals of Criminology* (2022).

⁴ Shaifali Dixit & Chandrika, "The Legal Implications of the Criminal Procedure (Identification) Act, 2022: A Comprehensive Analysis of Constitutional, Criminal, and Forensic Dimensions" Vol V, *Shimla Law Review* 166 (2022).

⁵ V.R. Dinkar, *Justice in Genes; Evidential Fact of Forensic DNA Fingerprinting* (Asia Law House, Hyderabad, 1st edn., 2008).

⁶ Supra Note 4.

⁷ D.K. Ganguly, *Ganguly's Police Diaries* 1331 (Skyline Publications, Allahabad, 2020).

⁸ A. Srivastava, A. Harshey, et.al., "Impact of DNA evidence in criminal justice system: Indian legislative perspectives," 12:51, *Egyptian Journal of Forensic Sciences* (2022).

⁹ Supra Note 4, at 14.

¹⁰ Sufiya Ahmed, "DNA Profiling and Human Right: Issue and Challenges for Criminal Justice System in India," *ILI Law Review* (2022).

(inserted by the Amendment Act of 2005) casts a duty on the Registered Medical Practitioner examining a person accused of rape to prepare a DNA profile without delay. Further, Section 4 of the Criminal Procedure Identification Act, 2022, has made a provision for recording of DNA profiles by National Crime Bureau, to engage it as a legal tool to link the suspect to a Specific Criminal Act by matching the DNA sample with the DNA profile.¹¹ The DNA records of more than one lakh suspects have been stored in the database of National Crime Records Bureau (NCRB) and more than 2,600 measurement collection units have been established across India. To support the above system, the NCRB launched the National Automated Fingerprint Identification System (NAFIS) in 2022 which fully automates the fingerprint matching process and provides instant matching capabilities across the country. Creating and maintaining DNA profiles of offenders can be a useful practice as newly obtained DNA samples can be readily matched with existing profiles that are already in the possession of law enforcement agencies.¹²

DNA TESTING: PRACTICE AND PROCEDURE

The past decade has seen great advancement in a powerful criminal justice tool- DNA. DNA is helpful to identify criminals with incredible accuracy when biological evidence exists. By the same token, it can be used to save suspects and exonerate persons mistakenly accused or convicted for crimes.¹³ All in all, DNA Testing technology is increasingly becoming vital for ensuring accuracy and fairness in the criminal justice system. Collection of evidence for DNA Testing is the primary duty of the Investigation Officer to investigate and collect evidence from crime scenes. Section 51 of BNSS (Section 53 of the Crpc) allows a police officer to seek the aid of a medical professional in good faith to conduct an inquiry. However, it does not allow the complainant to collect blood or other evidence to establish criminal charges against the suspect.¹⁴ It helps to solve crimes in one of the following ways-

1. In cases where a suspect is identified, a sample of that person's DNA can be compared to evidence collected from the crime scene. The results of this comparison may help to establish whether the suspect has committed the crime.
2. In cases where the suspect has not yet been identified, biological evidence from the crime scene can be analysed and compared to offender profiles in DNA databases to help identify the perpetrator. Crime scene evidence can also be linked to other crime scenes through the use of DNA databases.¹⁵

BNSS allows the Investigating Officer to acquire DNA samples from the bodies of the suspect and the complainant with the assistance of a medical practitioner. These clauses permit medical investigation of the rape suspect and medical assessment of the rape victim, respectively. However, the acceptability of these pieces of evidence has continued to be an issue due to different opinions of the Supreme Court and several High Courts in various rulings.¹⁶ Judges do not reject the scientific correctness and conclusiveness

¹¹ *Supra* Note 10.

¹² *Selvi vs. State of Karnataka*, (2010) 7 SCC 263.

¹³ *Supra* Note 9, at 1325.

¹⁴ R.V. Kelkar, *Criminal Procedure* 456-460 (Eastern Book Company, Lucknow, 7th edn., 2024).

¹⁵ B.B. Pande, *DNA Fingerprinting and the Criminal Justice System* 120-145 (Universal Law Publishing, Delhi, 2nd edn., 2018).

¹⁶ Sufiya Ahmed, "DNA Profiling and Human Rights: Issues and Challenges for Criminal Justice System in India," 7 *Indian Law Institute Journal* 85 (2020).

of DNA testing, but in some situations, they refuse to recognize this evidence due to statutory or constitutional prohibitions as well as public policy considerations.¹⁷

It is important to follow the legal guidelines when conducting DNA tests. The consent of all parties involved is typically required before conducting a DNA test. This includes the person from whom the sample will be collected, as well as any other parties whose DNA may be involved in the test. DNA Testing must be conducted at authorized and accredited laboratories. These laboratories should have the necessary expertise and equipment to perform accurate and reliable DNA tests. In legal cases, such as paternity disputes, criminal investigations, or other matters where DNA testing is required, a court order may be necessary. The concerned party can approach the Court and request a DNA test. The Court will evaluate the merits of the case and issue an appropriate order. DNA samples are collected from the individuals involved, typically through non-invasive methods like swabs from the inner cheek. The samples are then sent to the authorized laboratory for analysis. The laboratory analyzes the DNA samples to determine the genetic information and compare it between individuals. The results are interpreted and reported by the laboratory. In legal proceedings, the DNA test results can be presented as evidence. The laboratory may provide expert testimony to explain the results and their significance.¹⁸

The admissibility of DNA evidence is generally governed by the Section 35 of Bhartiya Sakshya Adhiniyam, 2023, which grants admissibility to the expert opinion evidence. For instance, Section 51 and 52 of BNSS allow for the medical examination of suspects, including the collection of DNA samples, especially in cases of sexual offences. However, some judicial precedents have rejected its admissibility considering the facts of the case.

As regards the duties of Doctors are concerned, the Department of Health and Family Welfare, Government of Punjab (Health Branch) in its notification issued vide No. 5-2018.C5 dated 31.12.2018 circulated to all the Departments of Punjab at District and Subdivision Level in the State of Punjab with appended *Medicolegal Manual dated 25 August 2018, Manual of Instructions on Conduct of Medicolegal Examination including Post Mortem Examination* from which relevant portion for the determination of instant application are reproduced as under-

- a) The clothes should be examined for any evidence of injuries, struggle marks and stains and compared with the inquest papers.
- b) Examination from head to heel/toe, first front and then back aspect of the body must be done in a systematic way so as to see all the parts of the body. Details of the injuries in respect of type, size, location/situation, direction, edges, ends, colour changes/ healing process, surrounding area, foreign bodies, etc. be described/noted down in the PME. The photographs of the injuries/parts may be taken with scale/measuring tape kept alongside.
- c) Examination of the dead body should be thorough and complete. All the body cavities and the organs should be carefully examined even though the apparent cause of death has been found in one of them. Extensive mutilation must be avoided.
- d) Post-mortem findings shall be recorded in the prescribed performa/report.
- e) Sample of blood, molar teeth, plucked hair with roots, bones and deep red skeletal muscle may be collected in case of unidentified, decomposed/putrefied dead bodies for identification by DNA. Police must coordinate to send the sample to authorized lab viz. State FSL or Central FSL.¹⁹

¹⁷ *Supra* Note 4 at 258.

¹⁸ *Supra* Note 10.

¹⁹ *Ibid.*

- f) When natural death is suspected to be the cause of death; relevant organs need to be preserved and the same may be forwarded to the Professor & Head of Pathology of the concerned Medical College. Any other test as required may also be conducted.
- g) Medical Officers should refer to standard text books to understand the procedures of conducting PME. Medical officers may seek help from forensic medicine specialists regarding court evidence.
- h) Each page of the Post mortem report should bear PMR No./Date/Initials of the Medical Officer. One copy to be retained by the Medical Officer, another copy to the police, further copies as required accompanying the request for examination to the Chemical Examiner/FSL/Pathology Department.
- i) Opinion must be based on scientific facts. The Medical Officer shall opine about injuries whether ante-mortem or post-mortem, cause of injuries and type of weapon used, if possible.
- j) If a pregnant female is brought, the examination points of the foetus must be observed and opinion on intrauterine age and sex be given.

However, in the present scenario, despite circulation of the above said notification with appended Manual by the Government of Punjab to the quarters concerned, the same is not being followed in *stricto sensu* form by Department of Health and Family Welfare at District level and at Sub-divisional level. Furthermore, it has become a tendency in every department of Government that the concerned personnel ask the applicant concerned to supply an order of Court, even on trivial matters such as for supply of a copy of Post-Mortem Report, copy of Medico-Legal Report etc.

CONSTITUTIONALITY OF DNA TESTING

The introduction of the DNA technology is perceived to pose a serious challenge to legal and fundamental rights of an individual such as Right to Privacy, Fair trial and Right against Self-incrimination. A person's right to privacy, dignity and bodily integrity should be respected.²⁰ However, the fact that the accused must still be believed to be innocent till the guilt is proved against him is also one of the important aspects which has to be kept under consideration. This principle is called the 'Presumption of Innocence'. In other words, the accused is entitled to take advantage of reasonable doubt in respect of the crime as alleged against him.²¹ Thus, for DNA evidence to be admissible in Court, it must balance the rights of both the parties and should meet certain legal standards to ensure its reliability and integrity.

The specific rules can vary by jurisdiction, but general principles apply such as- the scientific methodology used for DNA analysis must be generally accepted within the scientific community as reliable and accurate. The evidence must be meticulously collected, packaged, transported and stored to prevent contamination, degradation or tampering. A strict 'chain of custody' must be maintained and documented from the crime scene to the laboratory and then to the courtroom. Any break in the chain of custody can compromise the admissibility of the evidence. Further, the DNA analysis must be conducted by qualified forensic scientists in accredited laboratories and their testimony must be presented by experts who can explain the procedures and results clearly and accurately. The laboratory must follow established and validated protocols for DNA extraction, amplification, profiling and interpretation. When a DNA match is found, forensic experts provide a statistical probability of that match occurring by chance in the general population. This statistical significance helps the court

²⁰ *Supra* Note 3.

²¹ Abhijeet Sharma, Guide to DNA Tests in paternity determination and criminal investigation (a Lawyer's handbook) 146 (Lexis Nexis, Gurgaon, 2007).

understand the strength of the evidence. In some jurisdictions, issues related to the right to privacy or the right against self-incrimination (e.g., compulsory DNA sample collection) may be raised, requiring careful balancing of individual rights with public interest in justice.²² The observance of these basic principles adds to the genuineness of the DNA test reports.

Apart from this, Section 7 of Bhartiya Sakshya Adhiniyam, 2023 declares relevant any fact which goes towards establishing identification of a person along with Section 39 of Adhiniyam, which incorporates the necessity of expert opinion. DNA evidence is also acceptable due to Directive Principles given under Article 51-A (j) and (h) of the Constitution. Section 51 of Bhartiya Nagrik Suraksha Sanhita, 2023 authorises DNA profiling of suspects at the investigation agency's request. Section 52 of the Sanhita specifically allows DNA profiling for rape suspects. But whether a person can be compelled to provide a sample for DNA in such matters can also be answered considering the *Test of Proportionality* laid down in the unanimous decision of this Court in *K.S. Puttaswamy v Union of India*²³, wherein the Right to Privacy has been declared a constitutionally protected right in India. Therefore, Courts need to examine the proportionality of the legitimate aims being pursued when ordering a DNA test, as stated by the Supreme Court. This includes whether it is arbitrary or discriminatory, whether it may have an adverse impact on the person and whether the encroachment upon the privacy and personal autonomy of the person being subjected to the DNA test is justified. The Supreme Court believes that DNA tests should not be ordered routinely but only in deserving cases. Forcing an unwilling party to undergo a DNA test infringes the personal liberty and right to privacy of the individual, the apex court added.

EXPANDING CONTOURS OF DNA TESTING

The word “Satyameva Jayate” is inscribed on the Indian psyche and legal system with no real manifestation in the outer world. The quest for truth is always overtaken by fact and logic. Realness has no reality/real place in the justice system. The evolution of DNA technology from the laboratory to forensic science, a science applied to legal or courtroom purposes, has involved both the scientific and legal communities.²⁴ DNA technology has continued to rapidly evolve and had such a dramatic impact on crime detection and such has been the magnitude of its success that even International Crime Prevention and Detection Organizations like - INTERPOL, have also accepted it and are now whole heartedly, supporting the new crime investigation tool. Invention of DNA technology has been found to be extremely useful for civil as well as criminal proceedings. Some of the areas in which DNA technology has rendered great help include:

(a) Law relating to parentage related issues- Paternity and Maternity-

Parentage identification deals with paternity/maternity, legitimacy of the child etc. In child abandonment cases, a DNA test is necessary to prove a child's parentage. In property, inheritance and maintenance disputes, rape and many other issues, DNA is necessary to reach the finality and justness of the issue. However, doubts still arise in cases as to the use of DNA tests in cases governed by presumption of Section 116 of the Bhartiya Sakshya Adhiniyam, 2023.²⁵

²² *Supra* Note 3 at 273.

²³ (2017) 10 SCC 1 (India).

²⁴ *Supra* Note 17.

²⁵ *Supra.*, Note 9 at 1327.

In the landmark case of *Nandlal Wasudev Badwaik v. Lata Nandlal Badwaik*²⁶, the Supreme Court held that the Indian Evidence Act was enacted at the time when modern scientific techniques were not in existence. When the truth is known there is no scope of presumption but where there is conflict between conclusive proof and modern scientific techniques, the latter must prevail over the prior.²⁷ However, later in the judgment of *Ivan Rathinam v. Milan Joseph*²⁸, the Supreme Court stated that “The advent of scientific testing has made it much easier to prove that a child is not a particular person’s offspring. To this end, Indian courts have sanctioned the use of DNA testing, but sparingly. Forcefully undergoing a DNA test would subject an individual’s private life to scrutiny from the outside world. That scrutiny, particularly when concerning matters of infidelity, can be harsh and can eviscerate a person’s reputation and standing in society. Therefore, if it is proved that the married couple had access to each other at the time of the child’s conception, the child is deemed legitimate, thereby establishing the paternity of the couple, excluding the demand for a DNA test.”

For many years, the legal fiction of Section 112 of Indian Evidence Act or Section 116 of Bhartiya Sakshya Adhinyam followed the irrebutable presumption of legitimacy which could only be challenged by proving ‘non access’. However, recently in the case of *Nikhat Parveen v. Rafique*²⁹, the Supreme Court altered this position and reiterated that ‘legal fiction’ is not maintainable in contrast with the ‘scientific fact’. This presumption compelled forced fatherhood and men had to maintain children even though scientific results were contrary. It resulted in DNA tool becoming a primary tool rather than remaining an ‘assisting tool’ in ‘paternity disputes’ and upheld the significance and primacy of DNA tests. However, the Court also pointed that lower Court often shows hesitation to order DNA tests.

(b) Proof of Adultery-

Though adultery is no longer an offence, it remains a ground for divorce. In cases of adultery, if the married woman got conceived and suppressed this fact of pregnancy from her husband, the husband could easily get confirmed of such pregnancy by his wife through her paramour. Further to know the chastity of the women and the sacredness of the nuptial contact, the DNA is very much needed to ascertain the truth or otherwise of such suspected pregnancy and infidelity of the wife, the husband can take the very extreme step of killing her or the child. Hence to avoid such unfortunate incidents, DNA tests can prove helpful.³⁰ On the other hand, in a recent judgment of *Aparna Ajinkya Firodia v. Ajinkya Firodia*,³¹ the Supreme Court held that merely because either of the parties has disputed a factum of paternity, it does not mean that the Court should direct a DNA test or such other test to resolve the controversy. Only in exceptional and deserving cases, where such a test becomes indispensable to resolve the controversy the Court can direct such test. The question as to whether a DNA test should be permitted on the child, is to be analysed through the prism of the child and not through the prism of the parents. The child cannot be used as a pawn to show that the mother of the child was living in adultery. It is always open to the husband to prove by other evidence, the adulterous conduct of the wife, but the child’s right to identity should not be allowed to be sacrificed. “To enable one of the parties to the marriage to have the benefit of fair trial, the Court cannot sacrifice the rights and best interests of a third party to the lis, namely the child”.

²⁶ (2014) 2 SCC 576.

²⁷ S.K. Sharma, “Presumption of Legitimacy Over by Expert Opinion in India: A Critical Analysis of *Nandlal Wasudeo Badwaik v. Lata Nandlal Badwaik*” *Paripex- Indian Journal of Research*, 3(5) 124-126 2014.

²⁸ (2025) SCC OnLine SC 175 (India).

²⁹ 2026 INSC 399.

³⁰ *Supra* Note 21 at 153.

³¹ (2023) SCC OnLine SC 161 (India).

A Family Court, no doubt, has the power to direct a person to undergo medical tests, including a DNA test and such an order would not be in violation of the Right to personal liberty under Article 21 of the Constitution.³² However, the Court should exercise such power only when it is expedient in the interest of justice to do so, and when the fact situation in a given case warrants such an exercise, namely:

1. DNA tests of a minor child are not to be ordered routinely, in matrimonial disputes. Proof by way of DNA profiling is to be directed in matrimonial disputes involving allegations of infidelity, only in matters where there is no other mode of proving such assertions.
2. DNA tests of children born during the subsistence of a valid marriage may be directed, only when there is sufficient prima-facie material to dislodge the presumption under Section 112 of the Evidence Act. Further, if no plea has been raised as to non-access, in order to rebut the presumption under Section 112 of the Evidence Act, a DNA test may not be directed.³³
3. A Court would not be justified in mechanically directing a DNA test of a child, in a case where the paternity of a child is not directly in issue, but is merely collateral to the proceeding.
4. Merely because either of the parties has disputed a factum of paternity, it does not mean that the Court should direct a DNA test or such other test to resolve the controversy. The parties should be directed to lead evidence to prove or disprove the factum of paternity and only if the Court finds it impossible to draw an inference based on such evidence, or the controversy in issue cannot be resolved without DNA test, it may direct DNA test and not otherwise. In other words, only in exceptional and deserving cases, where such a test becomes indispensable to resolve the controversy the Court can direct such test.
5. While directing DNA tests as a means to prove adultery, the Court is to be mindful of the consequences thereof on the children born out of adultery, including inheritance-related consequences, social stigma, etc.³⁴

(c) Crime detection

DNA testing has helped in law enforcement as it helps in identifying criminals and solving difficult crimes. On the other hand, DNA supported evidence helps in proving that many convicted people are actually innocent. DNA analysis, also called DNA typing or DNA profiling, examines DNA found in physical evidence such as blood, hair, and semen, and determines whether it can be matched to DNA taken from specific individuals. DNA analysis has become a common form of evidence in criminal trials. Needless to mention over here that DNA is also perishable in nature.³⁵ DNA Testing has immense legal significance in crime detection due to its high accuracy and reliability. Its evidence is admissible as it links a suspect to a crime scene, a victim to a perpetrator or excludes individuals from suspicion. This is particularly crucial in cases like sexual assault, murder, and robbery. DNA evidence has been instrumental in overturning wrongful convictions, freeing individuals who spent years in prison for crimes they did not commit. This highlights its power in rectifying miscarriages of justice.³⁶

Advances in DNA technology allow for the re-examination of old, unsolved cases (cold cases), often leading to the identification of perpetrators decades later. The increasing use and accuracy of DNA profiling can act as a deterrent to potential offenders, knowing that even minute traces of biological

³² *Supra* Note 9 at 1342.

³³ *Supra* Note 21 at 149.

³⁴ *Ibid.*

³⁵ Grahanna N. & Nandini S.N., "DNA Fingerprinting and Its Implications on Indian Criminal Justice System," 2:2 International Journal of Law and Social Sciences 290 (2025).

³⁶ *Supra* Note 6.

material can lead to their identification.³⁷ However, it's crucial to understand that while powerful, DNA evidence should not be the sole basis for conviction. Courts often emphasize the need for corroborating evidence.

(d) Maintenance-

Section 144 of Bhartiya Nagrik Suraksha Sanhita, 2023 states that it's the duty of the man to maintain his wife, legitimate or illegitimate children, parents as long as they can't maintain themselves. So the man can take the defence that the children do not belong to him. So in these situations DNA tests provide the ultimate conclusive remedy to determine the paternity and maternity of the child so that he can claim maintenance.

(e) Inheritance and Succession-

Under Hindu Marriage Act, 1955 an illegitimate child (legitimized by the virtue of Section 16) inherits the property of his parents in which the father is the coparcener. Thus, under such circumstances to establish the legitimacy or illegitimacy of such children and to inherit the property, the DNA test is the only perfect medical evidence for inheritance or non-inheritance of the properties.

THE CRIMINAL PROCEDURE (IDENTIFICATION) ACT, 2022: HARMONIZING DNA EVIDENCE STANDARDS

The Criminal Procedure (Identification) Act, 2022 (CPIA), enacted in India, has significantly broadened the scope of data collection from individuals involved in criminal matters, including provisions for DNA Testing.³⁸ It expanded the definition of term 'Measurements' by including:

- Finger-impressions, palm-print impressions, foot-print impressions
- Photographs
- Iris and retina scans
- Physical and biological samples and their analysis (this is where DNA falls)
- Behavioral attributes, including signatures and handwriting
- Any other examination specified in the Bharatiya Nagarik Suraksha Sanhita, 2023 (BNSS), which replaced the Code of Criminal Procedure, 1973 (CrPC).³⁹

Generally, individuals can be compelled to provide all 'measurements' except biological samples. However, biological samples can be compelled if the person is arrested for an offence against a woman or a child that carries a minimum punishment of seven years imprisonment, storage and management of data, destruction of records and resistance to Collection. Resistance or refusal to allow the taking of measurements is considered an offence under section 221 of BNSS. This is a significant expansion from the previous Identification of Prisoners Act, 1920, which was limited to fingerprints, footprints, and photographs.⁴⁰ However, since DNA profiles contain vast personal information and the long retention period (75 years) of DNA profiles in the central database raises significant concerns about privacy and data protection. In essence, the Criminal Procedure (Identification) Act, 2022, marks a significant shift in India's approach to forensic identification, particularly embracing DNA testing as a crucial tool for law

³⁷ *Supra* Note 21 at 246.

³⁸ Apprehending the Criminal Procedure Identification Act 2020 available at <https://sociallawstoday.com/apprehending-the-criminal-procedure-identification-act-2020/> (last visited on 30 May, 2025).

³⁹ *Supra* Note 32.

⁴⁰ Ankit Kumar and Aman Singh, "Identify the problem: Issues with the Criminal Identification Act 2022, with special reference to right to be forgotten, and ai surveillance technologies" 12(1) *International Journal of Law* 172 (2026).

enforcement. However, its implementation and potential implications for fundamental rights, especially privacy continue to be areas of close scrutiny.⁴¹

CONCLUSION

The expanding role of DNA testing within the Indian legal framework marks a pivotal development, offering unparalleled advantages for justice but simultaneously posing complex ethical and legal challenges. The Criminal Procedure (Identification) Act, 2022, by broadening the scope of data collection, undeniably strengthens investigative powers. However, this legislative expansion raises significant constitutional concerns, particularly in relation to the right to privacy under Article 21 and the protection against self-incrimination under Article 20(3). Consequently, the future success of DNA testing in India's legal system is contingent upon the development of a comprehensive and robust supplementary legal framework. This essential framework must proactively address data protection in this era of AI and technology, mandate rigorous protocols for sample collection and storage, establish precise guidelines for admissibility and evidentiary weight, and ensure independent supervision of DNA databases. Such a meticulously crafted and balanced approach is imperative to fully realize the transformative potential of DNA technology while concurrently upholding the fundamental rights and freedoms of Indian citizens.

⁴¹ DNA Databases and the Right to Privacy: Analysing the Criminal Procedure (Identification) Act 2022 and CODIS, available at [https://jilsblognujs.wordpress.com/2023/08/21/dna-databases-and-the-right-to-privacy-analy sing-the-criminal-procedure-identification-act-2022-and-codis/](https://jilsblognujs.wordpress.com/2023/08/21/dna-databases-and-the-right-to-privacy-analy-sing-the-criminal-procedure-identification-act-2022-and-codis/) (last visited on May 24, 2026).