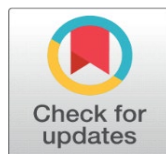


DNA PROFILING IN CRIMINAL INVESTIGATION IN INDIA: RIGHT TO FAIR TRIAL VIS -A-VIS RIGHT TO PRIVACY

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ABSTRACT

The advancement of forensic science has transformed the Indian criminal justice system, with DNA profiling emerging as one of the most powerful tools for ensuring accurate identification of offenders, exoneration of the innocent and effective administration of justice. However, the growing reliance on DNA evidence has raised critical constitutional questions concerning the right to privacy and the right to a fair trial. This paper explores the legal, ethical, and human rights dimensions of DNA profiling in criminal investigations in India, analyzing the tension between individual privacy and the collective pursuit of justice. It examines the statutory developments brought by the Bharatiya Nyaya Sanhita (BNS), 2023, Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, and Bharatiya Sakshya Adhinyam (BSA), 2023, in relation to their counterparts the IPC, CrPC, and the Indian Evidence Act, 1872. Through an analytical study of judicial precedents, human rights frameworks, and legislative intent, this paper argues that while DNA profiling strengthens the right to a fair trial by enhancing evidentiary accuracy, its intrusive nature necessitates robust procedural safeguards to protect individual autonomy and dignity under Article 21 of the Constitution.

Keywords: DNA Profiling, Criminal Investigation, Right to Privacy, Right to Fair Trial, Forensic Science, BNS, BNSS, BSA, Human Rights

1. INTRODUCTION

The Indian criminal justice system has progressively evolved from reliance on testimonial evidence to the adoption of scientific methods of investigation. Among these, DNA profiling stands as the most precise and reliable tool for individual identification. It has transformed criminal inquiries by linking suspects to crimes, identifying disaster victims, and resolving cases of disputed parentage. Yet, this technological advancement presents a constitutional paradox: while it enhances truth and fairness in trials, it simultaneously intrudes upon the deeply personal sphere of privacy.

In a democracy governed by the rule of law, both the right to a fair trial and the right to privacy are fundamental. The former sustains public faith in judicial impartiality, while the latter affirmed in Justice K.S. Puttaswamy (Retd.) v. Union of

India (2017) 10 SCC 1, is central to individual dignity and autonomy. The challenge for Indian jurisprudence lies in harmonizing these rights within the expanding domain of forensic technology.

Despite its scientific objectivity, DNA evidence is not infallible. Errors in collection, interpretation, or unauthorized database access can result in grave injustice and privacy violations. The DNA Technology (Use and Application) Regulation Bill, 2019 sought to address these concerns through databanks and consent mechanisms, yet apprehensions of misuse and surveillance persist. With the advent of the new criminal codes the BNS, BNSS, and BSA, there is renewed scope to reassess the ethical and constitutional boundaries of DNA profiling in India.

This paper examines DNA profiling as a double-edged sword: it reinforces the right to a fair trial through scientific precision, even as it endangers the right to privacy through potential misuse. The analysis engages with constitutional, statutory, and human rights perspectives to explore this delicate balance between justice and individual liberty.

2. CONCEPT OF DNA

Deoxyribonucleic Acid (DNA) constitutes the fundamental hereditary material found in nearly every cell of the human body. Each individual possesses a distinct DNA sequence except in the case of monozygotic twins making it a naturally occurring biometric identifier, often described as a biological fingerprint. DNA profiling, therefore, refers to the scientific process of isolating and analyzing polymorphic regions within the DNA molecule to generate a pattern that is unique to an individual. According to the Encyclopaedia Britannica, DNA profiling involves the isolation and identification of variable elements within the base-pair sequence of DNA. In practical terms, the process entails extracting genetic material from biological specimens such as blood, semen, saliva, hair, or tissue, and comparing it with reference samples to establish identity or biological relationships.

The forensic significance of DNA profiling is anchored in several key scientific attributes, as follows:

- **High specificity:** The DNA profile of an individual is virtually unique, ensuring exceptional accuracy in identification.
- **Durability:** DNA remains stable over extended periods, provided it is properly preserved, allowing its use even in decades-old cases.
- **Minimal sample requirement:** Trace quantities of biological material, often at the picogram level, are sufficient for reliable analysis.
- **Cross-referencing potential:** DNA databases enable the comparison of profiles across cases, facilitating the linking of offenders to multiple crimes or unidentified remains.

Importantly, forensic DNA profiling targets only selected loci non-coding, highly variable regions of the genome rather than sequencing the entire genetic code. This methodological limitation serves a crucial ethical and legal purpose: it minimizes the risk of revealing sensitive genetic information such as disease susceptibility or hereditary traits, thereby safeguarding individual privacy.

3. HISTORICAL EVOLUTION OF DNA PROFILING IN CRIMINAL JUSTICE

The first forensic use of DNA profiling occurred in *R v. Colin Pitchfork* (1988, UK), where genetic evidence conclusively identified the perpetrator of rape and murder. This case marked the beginning of forensic genetics as a legal tool. Subsequent cases like *Andrews v. State of Florida* (1988) and *People v. Castro* (1989) in the U.S. established the admissibility of DNA evidence under reliability standards such as the Frye or Daubert test.

In India, DNA evidence was first introduced in the case of *Kamti Devi v. Poshni Ram* (2001) 5 SCC 311, concerning paternity determination. The Supreme Court recognized DNA testing as scientifically valid but cautioned against its use without procedural safeguards. Later, in *State of Bombay v. Kathi Kalu Oghad* (1961) AIR SC 1808, the Court upheld the constitutionality of compelling accused persons to give fingerprints, signatures, and handwriting samples under Article 20(3), distinguishing physical evidence from testimonial compulsion. This reasoning later extended to biological samples such as blood or saliva.

Since then, the Indian judiciary has gradually recognized DNA profiling as a legitimate investigative tool, provided it adheres to due process and respects the right to privacy. The Malimath Committee Report (2003) and the Law Commission of India (185th Report, 2003) recommended a statutory framework for DNA evidence, culminating in the drafting of the DNA Technology Regulation Bill.

4. DNA PROFILING IN INDIA: LEGISLATIVE AND INSTITUTIONAL FRAMEWORK

Until recently, DNA profiling in India lacked a comprehensive legislative framework. Investigations relied on general provisions of the Indian Evidence Act, 1872, and the Code of Criminal Procedure, 1973 (CrPC), concerning expert opinion (Sections 45, 46) and medical examination of accused persons (Sections 53, 54). With the replacement of colonial-era statutes by the *Bharatiya Nyaya Sanhita* (BNS, 2023), *Bharatiya Nagarik Suraksha Sanhita* (BNSS, 2023), and *Bharatiya Sakshya Adhiniyam* (BSA, 2023), a modernized legal basis for forensic evidence has emerged.

Under the BNSS, Section 349 corresponds to Section 53 of the CrPC, empowering a registered medical practitioner to examine an accused and collect samples (including blood, semen, or swabs) when necessary for investigation. The provision explicitly authorizes the use of modern and scientific techniques, which includes DNA profiling. Section 350 further provides for medical examination of the victim with consent, ensuring procedural fairness.

The BSA, which replaces the Evidence Act, retains the principle that expert opinions (Section 39, analogous to old Section 45) are admissible when based on recognized scientific methodology. It reinforces the probative value of DNA evidence provided chain of custody, authenticity, and reliability is established.

The BNS, replacing the IPC, does not directly regulate DNA profiling but codifies offences relating to tampering with evidence (Section 230) and destruction of electronic or biological evidence, ensuring accountability in handling DNA material.

Together, these codes institutionalize forensic methods as integral to criminal procedure, reflecting the growing judicial recognition of scientific evidence.

5. DNA PROFILING AND THE RIGHT TO A FAIR TRIAL

The right to a fair trial is the cornerstone of criminal jurisprudence. It ensures that every accused person is given a reasonable opportunity to defend themselves before an impartial tribunal. In India, this right is derived from Article 21 of the Constitution, which guarantees the right to life and personal liberty, and is reinforced by Articles 20 and 22, the Universal Declaration of Human Rights (UDHR, 1948) particularly Article 10, and the International Covenant on Civil and Political Rights (ICCPR, 1966) article 14.

The evolution of forensic technology, particularly DNA profiling, strengthens this right by replacing subjective assessments with objective scientific data. The Supreme Court of India has consistently held that a fair trial is not only the right of the accused but also a duty of the State and a societal interest in ensuring that justice is done. In *Zahira Habibullah Sheikh v. State of Gujarat* (2004) 4 SCC 158, the Court emphasized that failure of a fair trial constitutes a failure of the criminal justice system itself.

5.1. DNA PROFILING AS A TOOL FOR ENSURING FAIRNESS

DNA profiling enhances the truth-finding process of the criminal trial. It assists the prosecution in proving guilt beyond reasonable doubt and simultaneously provides a scientific basis for exonerating the innocent. Its importance can be summarized as follows:

- 1) **Accuracy in Identification:** DNA profiling eliminates uncertainties arising from unreliable eyewitness accounts or coerced confessions.
- 2) **Protection against wrongful conviction:** It provides the accused a means to prove innocence through objective evidence.
- 3) **Corroboration and consistency:** It serves as corroborative evidence, strengthening the evidentiary value of the prosecution's case.
- 4) **Efficiency in justice delivery:** It shortens investigative timelines and increases conviction rates where guilt is scientifically proven.

Thus, DNA technology advances the constitutional promise of "procedure established by law" under Article 21, making criminal trials more evidence-based and transparent.

5.2. STATUTORY BACKING FOR FAIR TRIAL THROUGH FORENSIC USE

Under the *Bharatiya Nagarik Suraksha Sanhita* (BNSS), 2023, Sections 349–351 replace Sections 53–54 of the CrPC, 1973, providing explicit legislative recognition of modern scientific methods such as DNA profiling, fingerprinting, and voice spectrography. The use of such techniques, when accompanied by judicial oversight and informed consent (especially for victims), aligns with the constitutional guarantee of fair procedure.

Similarly, under the *Bharatiya Sakshya Adhiniyam* (BSA), 2023, which corresponds to the Indian Evidence Act, 1872, Section 39 (formerly Section 45) confers admissibility to expert evidence, including that based on DNA analysis. The chain of custody, authentication of samples, and laboratory accreditation are recognized as prerequisites for ensuring the reliability of such evidence.

Further, the Bharatiya Nyaya Sanhita (BNS), 2023, under provisions analogous to Sections 201 and 204 of the IPC, penalizes destruction or fabrication of biological or electronic evidence, ensuring that DNA material remains untainted throughout the trial process. These reforms collectively reflect a legislative intent to reinforce scientific integrity in trials while maintaining fairness to both the accused and the victim.

5.3. JUDICIAL ENDORSEMENT OF DNA PROFILING FOR FAIR TRIAL

Indian courts have repeatedly upheld the use of DNA profiling as a legitimate and essential investigative aid. For example:

- In *State of U.P. v. Raj Narain* (2010) 13 SCC 754, the Court accepted DNA results as conclusive proof of identity, provided proper procedure was followed.
- In *Kishan Chand v. State of Haryana* (2013) 2 SCC 502, the Supreme Court acknowledged the decisive role of DNA testing in cases involving sexual assault.
- In *Mukesh & Anr. v. State (NCT of Delhi)* (2017) 6 SCC 1, the Nirbhaya case, DNA evidence played a crucial role in confirming guilt beyond reasonable doubt.

However, courts have simultaneously emphasized procedural safeguards. In *Selvi v. State of Karnataka* (2010) 7 SCC 263, the Supreme Court clarified that while scientific techniques may be employed for investigation, they must not violate the constitutional protection against self-incrimination (Article 20(3)) or personal dignity (Article 21).

6. DNA PROFILING AND THE RIGHT TO PRIVACY

6.1. CONSTITUTIONAL BASIS OF PRIVACY

The right to privacy was declared a fundamental right by the Supreme Court in *Justice K.S. Puttaswamy (Retd.) v. Union of India* (2017) 10 SCC 1, which held that privacy is intrinsic to life and liberty under Article 21. The judgment recognized that informational privacy control over personal data is an essential component of individual autonomy. Any intrusion into this sphere must satisfy the threefold test of legality, necessity, and proportionality.

DNA, as the most intimate biological identifier, directly implicates this right. It contains information not only about a person's identity but also about their genetic traits, ancestry, and potential health risks. Therefore, its collection, storage, and use must be governed by law, limited to legitimate state purposes, and proportionate to the need for investigation.

6.2. PRIVACY CONCERNS IN DNA PROFILING

While DNA profiling aids justice, its misuse poses grave risks to privacy:

- 1) **Unauthorized storage and surveillance:** Absence of a comprehensive data protection regime may lead to indefinite retention of genetic information.
- 2) **Function creep:** DNA data collected for one case might be repurposed for unrelated investigations.

- 3) **Discrimination and stigma:** Disclosure of genetic information could lead to social or occupational discrimination.
- 4) **Lack of consent:** Involuntary collection, especially from accused persons or victims, raises constitutional concerns under Articles 20(3) and 21.

The DNA Technology (Use and Application) Regulation Bill, 2019, though yet to be enacted, attempts to address these concerns by mandating consent, restricting use to specified purposes, and establishing national and regional DNA databanks. Nevertheless, critics argue that the Bill lacks sufficient safeguards against misuse by law enforcement agencies and does not provide adequate oversight mechanisms.

6.3. JUDICIAL SAFEGUARDS FOR PRIVACY PROTECTION

In *Gautam Kundu v. State of West Bengal* (1993) 3 SCC 418, the Court held that courts cannot compel an individual to undergo a blood test without consent unless it is in the interest of justice and necessary for a fair adjudication. Similarly, in *Bhabani Prasad Jena v. Convenor Secretary, Orissa State Commission for Women* (2010) 8 SCC 633, it was reiterated that while DNA tests may serve the ends of justice, they should not be ordered as a matter of routine.

Post-*Puttaswamy*, the balancing of privacy with public interest has become more structured. The Court, in *Modern Dental College v. State of Madhya Pradesh* (2016) 7 SCC 353, articulated the proportionality test, later reaffirmed in *Puttaswamy*, requiring that any restriction on fundamental rights must be (i) sanctioned by law, (ii) necessary for a legitimate state aim, and (iii) proportionate to the purpose sought to be achieved.

Applied to DNA profiling, this means:

- There must be specific statutory authorization (such as under BNSS or the proposed DNA Bill).
- The collection must serve a legitimate investigative purpose.
- The extent of intrusion (sample type, storage period, data access) must be proportionate and subject to judicial scrutiny.

6.4. INTERNATIONAL HUMAN RIGHTS PERSPECTIVE

At the global level, the right to privacy is protected under:

- Article 12, Universal Declaration of Human Rights (UDHR) – prohibits arbitrary interference with privacy.
- Article 17, International Covenant on Civil and Political Rights (ICCPR) – mandates legal safeguards against privacy intrusions.
- Article 8, European Convention on Human Rights (ECHR) – guarantees respect for private life, requiring state interferences to be necessary in a democratic society.

The European Court of Human Rights (ECHR), in *S. and Marper v. United Kingdom* (2008) ECHR 1581, held that indefinite retention of DNA samples of individuals not convicted of crimes violates the right to privacy under Article 8. This case has significant persuasive value for India, as it illustrates that DNA databases must be accompanied by strict retention limits, independent oversight, and remedies for deletion of records.

India, as a signatory to these international instruments, bears a corresponding obligation under Article 51(c) of the Constitution to respect international law principles, particularly those promoting human rights and dignity.

6.5. STATUTORY REFLECTIONS OF PRIVACY UNDER NEW CODES

The BNSS, 2023, while empowering authorities to collect DNA samples, implicitly acknowledges privacy by mandating that examinations be conducted by qualified professionals, preferably of the same gender in cases involving women (Section 350). The BSA, 2023 requires that expert evidence be “relevant, reliable, and necessary,” preventing fishing expeditions into genetic data irrelevant to the case.

However, the absence of an explicit privacy clause within these codes underscores the need for a standalone privacy and data protection law to regulate forensic DNA use. The Digital Personal Data Protection Act, 2023 may fill some gaps but does not specifically address DNA profiling, which involves sensitive biological data requiring heightened safeguards.

7. BALANCING THE RIGHT TO FAIR TRIAL AND THE RIGHT TO PRIVACY

The dialectic between truth-seeking and rights protection is central to modern criminal law. While the right to a fair trial demands full disclosure and use of reliable evidence, the right to privacy restricts the State from intruding into the individual's bodily or informational sphere beyond what is strictly necessary. DNA profiling lies precisely at this intersection.

7.1. CONSTITUTIONAL RECONCILIATION

Indian constitutional jurisprudence has consistently sought to harmonize conflicting rights rather than enforce one at the cost of another. In *Maneka Gandhi v. Union of India* (AIR 1978 SC 597), the Supreme Court interpreted Article 21 broadly, holding that any deprivation of liberty must be just, fair, and reasonable. Thus, both the collection and use of DNA samples must follow procedural fairness to remain constitutionally valid.

The reconciliation of the two rights can be structured on the “proportionality matrix” affirmed in *Puttaswamy*:

Component	Application to DNA Profiling
Legality	The collection must be backed by statutory authority such as Sections 349–351 BNSS.
Legitimate Aim	To identify offenders or exonerate innocents—both integral to justice.
Necessity	DNA should be collected only where less-intrusive methods are inadequate.
Proportionality	Extent of data collection, storage duration, and access must correspond to investigative need.
Procedural Safeguards	Judicial oversight, informed consent, and right to deletion after acquittal.

Thus, privacy and fair trial are not mutually exclusive but mutually reinforcing—scientific accuracy ensures fairness, while privacy safeguards prevent abuse of that science.

7.2. THE EVIDENTIARY BALANCE UNDER THE BSA 2023

The Bharatiya Sakshya Adhiniyam (BSA), 2023 modernizes evidentiary law by emphasizing reliability over mere admissibility. Sections 39–40 permit expert opinion but demand that the methodology be “based on principles generally accepted in the field.” Consequently, DNA results become admissible only when laboratory protocols, chain-of-custody records, and accreditation standards are strictly met.

This evidentiary rigor not only upholds fairness to the accused but also protects privacy by discouraging speculative or extraneous DNA analysis. By contrast, under the old Evidence Act 1872, Section 45 admitted expert opinion but lacked specific guidance on validation of forensic techniques. The BSA’s modernization closes that gap.

7.3. PROCEDURAL SAFEGUARDS UNDER THE BNSS

The Bharatiya Nagarik Suraksha Sanhita (BNSS) incorporates privacy-protective mechanisms through procedural due process:

- Section 349 BNSS (authority for examination of accused) parallels Section 53 CrPC but explicitly mentions “modern scientific techniques,” implicitly including DNA profiling.
- Section 350 BNSS (victim’s examination) requires consent and mandates that the medical officer of the same sex conduct the procedure, embedding dignity safeguards.
- Section 351 BNSS allows magistrate-ordered examination of arrested persons where necessary, ensuring judicial supervision.

These provisions demonstrate an institutional recognition that bodily intrusions demand oversight, thus balancing investigative necessity with privacy.

7.4. HUMAN-RIGHTS ALIGNMENT

At the international plane, India’s obligations under ICCPR Art.17 and Art. 14 mirror this balance. The UN Human Rights Committee, in *Toonen v. Australia* (1994) CCPR/C/50/D/488/1992, recognized informational privacy as integral to dignity. Simultaneously, Article 14(2) of the ICCPR guarantees the presumption of innocence, which DNA evidence may strengthen if accurately applied.

Hence, human-rights law does not prohibit DNA profiling; it mandates contextual restraint and accountability in its use.

8. CASE-LAW ANALYSIS: BALANCING JURISPRUDENCE

8.1. INDIAN JUDICIAL TRENDS

- 1) **State of Bombay v. Kathi Kalu Oghad (AIR 1961 SC 1808):** The Court drew a vital distinction between testimonial compulsion and collection of physical evidence. This reasoning permits compelled DNA sampling without infringing Article 20(3), provided the process remains non-testimonial.

- 2) **Selvi v. State of Karnataka (2010) 7 SCC 263**: While disallowing narco-analysis and polygraph tests as violative of personal liberty, the Court left room for DNA collection, noting that physical evidence differs from coercive psychological tests.
- 3) **Kamti Devi v. Posh Ram (2001) 5 SCC 311**: Recognized DNA testing in paternity disputes but warned that such orders must not be routine and must balance privacy.
- 4) **Bhabani Prasad Jena v. Orissa State Commission for Women (2010) 8 SCC 633**: Reaffirmed that compelling DNA tests affects personal autonomy; courts must apply the eminent necessity principle.
- 5) **Nandlal Wasudeo Badwaik v. Lata Nandlal Badwaik (2014) 2 SCC 576**: Held that when DNA evidence conclusively disproves paternity, truth must prevail over legal presumptions; a manifestation of fair-trial supremacy.
- 6) **Justice K.S. Puttaswamy v. Union of India (2017) 10 SCC 1**: Laid the doctrinal foundation for privacy, mandating that all intrusions—including forensic ones—satisfy legality, necessity, and proportionality.

Collectively, these cases form the constitutional ecosystem within which DNA profiling must operate: scientifically grounded but rights-sensitive.

8.2. COMPARATIVE JURISPRUDENCE

- **S. and Marper v. United Kingdom (2008 ECHR 1581)**: The European Court condemned indefinite retention of DNA profiles of non-convicted persons as violating Article 8 ECHR. This principle advocates for mandatory deletion protocols.
- **Maryland v. King, 569 U.S. 435 (2013)**: The U.S. Supreme Court upheld DNA collection from arrestees charged with serious offenses as a legitimate identification tool, emphasizing proportionality and statutory safeguards.
- **People v. Wesley (83 N.Y.2d 417 [1994])**: Recognized DNA profiling's scientific reliability, conditioning admissibility on laboratory validation and expert testimony.

These precedents confirm that while DNA profiling is globally accepted, jurisdictions demand strict data governance and purpose limitation.

9. CHALLENGES AND SAFEGUARDS FOR IMPLEMENTATION

Despite legislative and judicial endorsement, practical and ethical challenges persist.

9.1. LACK OF COMPREHENSIVE LEGISLATION

The pending DNA Technology (Use and Application) Regulation Bill, 2019 remains the primary attempt to codify standards for DNA databanks, consent, and usage. Its delay leaves a regulatory vacuum, forcing reliance on general criminal-procedure provisions. Without statutory retention limits, chain-of-custody protocols, or independent oversight, risks of misuse remain.

9.2. DATA PROTECTION AND SURVEILLANCE RISKS

DNA data constitute sensitive personal data under the Digital Personal Data Protection Act 2023, yet the Act provides only generic safeguards. There is no dedicated authority to monitor forensic data practices. The potential for mass surveillance, especially through inter-agency data sharing, threatens privacy and may chill constitutional freedoms.

9.3. LABORATORY CAPACITY AND QUALITY ASSURANCE

India currently has limited accredited DNA laboratories, and many investigations suffer from sample contamination and backlog. The National Forensic Science University (NFSU) and state forensic labs require uniform standards accredited by NABL/ISO 17025. Without such quality control, even accurate science may produce unreliable legal outcomes—undermining fair trial.

9.4. CONSENT AND GENDER SENSITIVITY

The absence of explicit consent requirements in existing codes, especially for victims of sexual assault, remains concerning. Although Section 350 BNSS mandates same-sex medical examination, consent procedures must be codified in alignment with Section 164A CrPC/BNSS, ensuring informed participation and dignity of survivors.

9.5. JUDICIAL OVERSIGHT AND REMEDIES

Judicial warrants should ideally precede any compelled DNA extraction, except in exigent circumstances. Post-trial, individuals acquitted or discharged should possess the right to deletion of their DNA profiles. Courts may issue directions under Articles 32 and 226 to enforce this right, analogous to the right to be forgotten doctrine recognized in *Subhranshu Rout v. State of Odisha* (2020 SCC OnLine Ori 878).

9.6. PUBLIC AWARENESS AND ETHICAL TRAINING

Law-enforcement officers, forensic experts, and judiciary require sensitization on privacy norms and ethical handling of genetic data. The creation of a National DNA Ethics Committee under the proposed Bill could institutionalize continuous oversight.

10. CONCLUSION

The trajectory of India's criminal justice reform reveals an increasing reliance on scientific methods to achieve accuracy and impartiality in adjudication. DNA profiling epitomizes this evolution, transforming investigations from testimonial to empirical. It strengthens the right to a fair trial by ensuring that verdicts rest on objective proof rather than conjecture. Yet, its intrusive nature necessitates vigilant protection of the right to privacy, the core of human dignity.

The Bharatiya Nyaya Sanhita, Bharatiya Nagarik Suraksha Sanhita, and Bharatiya Sakshya Adhiniyam 2023 represent a welcome modernization, embedding scientific rationality within legal procedure. However, these codes must operate within the constitutional framework of Puttaswamy, Selvi, and Maneka

Gandhi. Legality must be complemented by transparency, judicial control, and data-protection norms.

Ultimately, DNA profiling should serve not as an instrument of surveillance but as a tool of justice—one that vindicates the innocent, convicts the guilty, and upholds the constitutional promise that liberty shall yield only to due process and reason. The future of Indian criminal jurisprudence depends on how judiciously it wields this double-edged sword.

CONFLICT OF INTERESTS

None.

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None.

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