

INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

Volume 9 | Issue 3

2026

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Regulation of DNA Technology in India: A Critical Analysis of Legislative Gaps and Privacy Concerns

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ABSTRACT

This paper critically examines the need for stringent regulation governing DNA technology in India by analysing the legal vacuum created by the provisions of the DNA Technology Bill, 2019, the reasons behind its non-implementation, and the current fragmented legal framework governing reliance on DNA technology in criminal cases. The study adopts a doctrinal research methodology based on secondary sources such as legislative provisions, commentaries, parliamentary debates, law commission reports, and expert opinions.

*The paper evaluates the effectiveness of the proposed Bill in regulating DNA collection, storage, and use while protecting the fundamental rights under Articles 14, 20(3), and 21 of the Constitution. Through a socio-legal analysis grounded in the principles laid down in *K.S. Puttaswamy v. Union of India*, the study shows that the proposed framework does not meet the constitutional criteria of legality, necessity, and proportionality. It further examines the consequences of the withdrawal of the Bill in 2023 and the dependence on scattered provisions under the Criminal Procedure (Identification) Act, 2022, judicial interpretations, and the Bharatiya Sakshya Adhiniyam framework. By comparing the mechanisms of other countries such as the United States and the United Kingdom, best-practice regulation of DNA storage and use is recommended for India to adopt similar systems as suited to Indian conditions. It concludes that a comprehensive and constitutionally compliant DNA governance structure, which balances privacy and liberty, must be adopted and is an inevitable need for the current regulatory system.*

Keywords: DNA Profiling, DNA Technology Bill 2019, Genetic Privacy, Criminal Justice System, Constitutional Rights, DNA Databases, Forensic Evidence, DNA Governance.

I. INTRODUCTION

The dynamic character of modern society has resulted in significant scientific and technological developments that affect nearly every facet of social and cultural life. DNA technology is one such scientific method that has become a crucial tool in the criminal justice system and has

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earned worldwide recognition. The process of DNA profiling has drastically changed the evolution of forensic science, necessitating quick improvements and upgrading investigative and evidentiary practices.

DNA profiling, also called DNA fingerprinting, is a technique used by forensic scientists to identify individuals or samples based on their unique DNA profiles.¹ Deoxyribonucleic acid, or DNA, can be extracted from human cells through bodily fluids such as blood and saliva, and from hair strands and nail clippings.² As per Locard's exchange principle,³ if a suspect comes into contact with the location of a crime, he often leaves behind traces of his DNA,⁴ which help to identify the criminal. It has thus been used in many murder and rape cases, notably the Nirbhaya gang-rape case⁵ and the Aarushi Talwar murder trial,⁶ among India's important cases. However, the absence of specific regulation has constrained the use of DNA evidence.

A. Legislative Framework Governing DNA Technology in India

Parliament introduced the DNA Technology (Use and Application) Regulation Bill⁷ in 2019, but it failed even before reaching the upper house for approval.⁸ The main purpose of the Bill was to regulate the use and application of DNA technology for identifying victims and offenders⁹ and to establish National and Regional DNA Data Banks and a Regulatory Board to ensure standardised testing of genetic information in India. But the Bill did not adequately contain safeguards regarding the storage of DNA samples or the risk of misuse or unauthorised access to DNA databases by the State, leading to privacy and constitutional concerns.¹⁰

The Bill was later withdrawn in 2023 owing to the overlapping provisions of the Criminal Procedure (Identification) Act, 2022, which rendered it redundant.¹¹ Thus, no uniform comprehensive law presently exists in India to govern DNA technology. This paper analyses

¹ *What Is DNA Profiling?*, INDIAN COUNCIL OF MED. RSCH. & AIIMS, <https://umid-aiims.icmr.org.in/what-is-dna-profiling/> (last visited Mar. 10, 2026).

² *Critique on the DNA Technology Bill, 2019: Preventing Bodily Incursion and Parliamentary Excursion*, NLSIU L. REV., <https://www.nls.ac.in> (Oct. 26, 2023).

³ T. Sowmya, *Touch DNA: An Investigative Tool in Forensic Science*, 8 Int'l J. Current Rsch. 26093 (2016).

⁴ *Id.*

⁵ Shibam Talukdar, *Conclusiveness of DNA Reports in Indian Rape Cases: Procedural Challenges and Judicial Caution*, Indian J. Med. Ethics (Oct. 17, 2025).

⁶ Pragma Jain & Taniya Roy, *Critical Analysis of the Aarushi Talwar Murder Case*, ILSJCCL.

⁷ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019 (India).

⁸ *DNA Technology Bill: Features, Debate, and Why It Was Withdrawn*, INDIAN EXPRESS, <https://indianexpress.com> (July 24, 2023).

⁹ Akshay Jain, *A Critical Analysis of DNA Technology (Use and Application) Regulation Bill, 2019*, 6(1) Int'l J.L. Mgmt. & Human. 467.

¹⁰ Tersia Oosthuizen, Loene M. Howes & Rob White, *Forensic DNA Analysis and Legislative Provisions: Balancing Rights in a Time of Scientific Advancement*, 48 Alternative L.J. 178 (2023).

¹¹ *DNA Technology Bill Withdrawn from Lok Sabha*, TIMES OF INDIA, <https://timesofindia.indiatimes.com/india/dna-technology-bill-withdrawn-from-lok-sabha/articleshow/102091755.cms> (July 25, 2023).

the effectiveness of the Bill in regulating DNA evidence, the detailed reasons behind its lapse, the privacy and constitutional concerns, and the need for an effective law on the subject.

B. Need and Relevance of the Study

Currently, DNA evidence is not governed by any particular provision or law, but is interpreted indirectly by reference to the provisions of the Code of Criminal Procedure. Sections 53, 54, and 53A of the CrPC permit an accused to undergo medical examination, which is construed to include DNA testing.¹² Similarly, it is admissible as evidence under the expert-opinion provision of Section 45 of the Indian Evidence Act.¹³ However, there is no specific legal framework explicitly governing it.

With the increasing rate of serious criminal offences such as rape, murder, and other heinous crimes,¹⁴ the role of DNA technology has become an inevitable step in determining culpability and identifying criminals. Analysing the legal and regulatory framework governing the collection, storage, and use of DNA to ensure that no fundamental rights are violated, and enacting a single comprehensive and specific legislation, has become an imperative task. Such a framework would provide stringent safeguards, defined procedures, and strong control mechanisms as followed in other countries, guaranteeing both the protection of individual rights and the efficient administration of criminal justice.¹⁵

C. Research Question

How does the DNA Technology (Use and Application) Regulation Bill, 2019 safeguard privacy and constitutional concerns, and to what extent does the absence of a comprehensive single framework governing DNA technology affect individual rights?

D. Research Objectives

The research objectives are: to critically analyse the regulatory framework under the DNA Technology (Use and Application) Regulation Bill, 2019; to assess the effectiveness of the proposed Bill in safeguarding privacy rights and constitutional protections; to examine the reasons behind the non-implementation and withdrawal of the Bill; to analyse the current legal and regulatory framework governing DNA profiling in India; to evaluate the necessity of a

¹² Simran Chaudhary, *Mandatory Medical Examination of Persons Accused of Rape Under Section 53A of the CrPC*, IJLLR (May 25, 2023).

¹³ The Indian Evidence Act, 1872, No. 1 of 1872, § 45 (India).

¹⁴ NCRB, *Crime in India 2023* (recording over 62.4 lakh cognizable crimes in 2023, compared with 58,24,946 in 2022), <https://www.mha.gov.in/MHA1/Par2017/pdfs/par2025-pdfs/LS02122025/452.pdf>.

¹⁵ Saira Gori & Sannidhi Buch, *DNA Profiling and Its Efficacy in Indian Criminal Justice System: An Analytical Study of the DNA Technology (Use and Application) Regulation Bill, 2019*, 12 GNLU J.L. Dev. & Pol'y 66 (2022).

single comprehensive law regulating DNA technology in India; and to propose reforms and recommendations for strengthening DNA databases and the governance framework in India.

E. Research Methodology

This research adopts a purely doctrinal research methodology¹⁶ based on the analysis of legal materials and secondary sources. Through a detailed examination of legislative frameworks, constitutional provisions, parliamentary discussions, and court decisions pertaining to privacy and individual liberty under Article 21 of the Constitution, the study investigates the provisions of the DNA Technology (Use and Application) Regulation Bill, 2019.¹⁷ Scholarly articles, Law Commission reports, and academic commentaries are further used to evaluate the effectiveness of the proposed Bill in protecting constitutional rights and privacy.

Additionally, opinions and interview responses from forensic experts, a District Magistrate, and a forensic-laboratory expert have been incorporated to enhance the credibility and practical relevance of the research. These insights provide ground-level perspectives in analysing the impact of the current legal framework on the privacy and ethical dimensions of DNA technology.¹⁸ Further, through doctrinal interpretation and a comparative study of the laws of other countries such as the United Kingdom and the United States, the study analyses the necessity for a single comprehensive law and suggests changes to improve the governance of DNA technology in India.

F. Literature Review

1. Forensic DNA Profiling in India: An Emerging Human Rights Hazard

This article, authored by Achin Jana and Kavita Singh, analyses the growing relevance of forensic technology and DNA profiling in India while highlighting serious human rights concerns.¹⁹ The authors contend that DNA contains extremely sensitive information, personal and familial, far beyond mere identification data, raising the risks of misuse, discrimination, and breach of privacy. The article engages with the concept of genetic exceptionalism, which holds that genetic data is substantially different from medical data, making greater legal protection a necessity. Key human-rights issues such as the right against self-incrimination,²⁰

¹⁶ P. ISHWARA BHAT, DOCTRINAL LEGAL RESEARCH AS A MEANS OF SYNTHESIZING FACTS, THOUGHTS, AND LEGAL PRINCIPLES, IN *IDEA AND METHODS OF LEGAL RESEARCH* (Oxford Univ. Press 2020).

¹⁷ *Supra* note 7.

¹⁸ K. Barlow-Stewart & L. Burnett, *Ethical Considerations in the Use of DNA for the Diagnosis of Diseases*, 27 *Clinical Biochem. Rev.* 53 (2006).

¹⁹ Achin Jana & Kavita Singh, *Forensic DNA Profiling in India: An Emerging Human Rights Hazard*, 50 *Indian J. Criminology* 22 (2022).

²⁰ INDIA CONST. art. 20(3).

the right to privacy, genetic discrimination in employment, and the confidentiality of genetic data²¹ are discussed. It concludes that the DNA technology regulation Bill would violate human dignity if robust safeguards are not implemented.

The research gaps are as follows. Although the concerns of discrimination are recognised, there is no analysis specifically of how DNA profiling promotes class, ethnic, caste, or socio-economic discrimination within the Indian criminal justice system. There is very little academic research on the threats to confidentiality, consent, and the secondary use of genetic data posed by the expanding but still uncontrolled role of private laboratories and direct-to-consumer genetic testing. There is also insufficient data on the impact of DNA testing on children's rights, validity, and societal stigma; research examining DNA paternity disputes from the perspective of international commitments and child-rights jurisprudence under the Convention on the Rights of the Child, rather than purely evidentiary factors, is absent.²²

2. The DNA Technology (Use and Application) Regulation Bill, 2019 and Its Effectiveness in Upholding the Principles of Privacy

This article, authored by Udhaya Karthika and Tanisha Verma, critically examines the Bill on DNA technology through the lens of the right to privacy as recognised in the K.S. Puttaswamy judgment.²³ It argues that any imbalance in the intersection of privacy, criminal law, and emerging technologies risks constitutional violations.²⁴ The authors highlight that although the 2019 Bill attempts to regulate DNA use by establishing DNA laboratories, data banks, and a regulatory board, they identify serious legal and ethical irregularities, such as consent requirements, a lack of clarity on the retention and deletion of DNA profiles, uncertainty about the scope of databases, and the Board's discretionary powers, which violate the data-protection framework.²⁵ It concludes that, while DNA technology is now inevitable in the technological era of criminal justice, the regulation must be strengthened by clear statutory safeguards, restricted use of data, and conformity to constitutional provisions.

The research gaps are as follows. The article does not evaluate the Bill against the four-fold proportionality test established in K.S. Puttaswamy, on which the authors mainly rely; there is a lack of doctrinal analysis assessing whether DNA collection and storage under the Bill meet constitutional safeguards. Very little empirical research is presented on India's forensic

²¹ *Legal Perspectives on Genetic Data Ownership and Consent*, 5.4 JCLJ 383 (2025).

²² Convention on the Rights of the Child, Nov. 20, 1989, 1577 U.N.T.S. 3.

²³ *The DNA Technology (Use and Application) Regulation Bill, 2019 and Its Effectiveness in Upholding the Principles of Privacy*, 1.1 VSLR 114 (2019).

²⁴ *K.S. Puttaswamy v. Union of India*, (2017) 10 SCC 1 (India).

²⁵ INDIA CONST. art. 21.

infrastructure and the risk of contamination or misuse, despite these being crucial to the legitimacy of DNA evidence.

3. DNA Database: Palliating the Road of Criminal Justice

This article, written by Aditya Gupta, examines the necessity, feasibility, and constitutional ramifications of creating a DNA database to strengthen the criminal justice system.²⁶ The author analyses the issue through the evolution of the right to privacy and the way compulsory DNA profiling intersects with Article 20(3) and Article 21. The Criminal Procedure (Identification) Act, 2022,²⁷ is critically examined by specifying legislative gaps such as excessive discretion, prolonged data retention of up to 75 years,²⁸ and insufficient protection for acquitted persons and non-suspects. The provisions of the Indian Evidence Act on the evidentiary value of DNA profiling are discussed, confirming judicial acceptance of DNA evidence while warning against over-reliance without procedural safeguards.

The article compares India's database to the United States' CODIS,²⁹ the Combined DNA Index System, where clear rules about the storage and use of DNA are followed and safeguards such as laboratory quality checks and limits on stored personal information are in place. However, the author critiques even this model by emphasising that it can lead to racial profiling, familial searching, and potential misuse. The author concludes that, while a DNA database can modernise the criminal justice system, its implementation must be proportionate, warning against treating suspects as habitual offenders and stressing the need to avoid genetic discrimination. The research gaps are that there is no analysis of how the United States protections on monitoring, accreditation, and expungement can be adapted to the Indian legal and constitutional context, and that the familial searches emphasised in the paper are not adequately explored as to whether they should be permitted, restricted, or banned.

II. FINDINGS FROM EXPERT INTERVIEWS

This study uses information from secondary interviews with experts in criminal investigation and forensic science, including law-enforcement officers and forensic scientists, to support the doctrinal interpretation of legislative and judicial sources. The perspectives offer useful insights into the implementation, regulatory challenges, and ethical implications of DNA profiling in India.

²⁶ Aditya Gupta, *DNA Database: Palliating the Road of Criminal Justice*, 5 Int'l J.L. Mgmt. & Human. 1615 (2022).

²⁷ Criminal Procedure (Identification) Act, 2022, No. 11 of 2022 (India).

²⁸ Criminal Procedure (Identification) Act, 2022, No. 11 of 2022, § 4 (India).

²⁹ Jay Miller, *Combined DNA Index System (CODIS)*, 44 U.S. Att'ys Bull. 154 (1996).

A. Use of Genetic DNA Profiling in Criminal Investigations from an Ethical Perspective

A forensic scientist from the Kerala Police Academy³⁰ emphasised that DNA profiling is extremely important in a nation like India owing to its large population. A DNA database should exist, since it is used to identify unclaimed bodies as well as offenders and to eliminate those who are not involved. In fact, the apex court has itself often questioned why no such database exists in cases involving unidentified deceased persons.³¹ Although there are concerns about the fraudulent use of DNA profiles, those likely to be affected would be the criminals, and adopting uniform international norms for the gathering, storage, and access of DNA profiles can fairly readily address this issue.³² It is reasonable to argue that the advantages exceed the disadvantages.

B. Genetic Privacy and the Limits of DNA Databases: Insights from Sir Alec Jeffreys

Sir Alec Jeffreys was one of the first to discover inherited variation in human DNA and to invent DNA fingerprinting, showing how it can be used to resolve issues of identity and kinship and thereby founding the field of forensic DNA.³³ In an interview, he highlights the significance of upholding stringent restrictions on the extent of DNA databases.³⁴ He emphasises that, although he supports retaining the DNA profiles of convicted persons for justifiable law-enforcement purposes, such retention must be strictly limited to identification markers that disclose the least personal information. He also warns against the advancement of forensic techniques such as genome sequencing, noting that they give rise to serious ownership and privacy concerns.³⁵ He contends that a person's genome is extremely private information that should not be freely accessed or controlled by the government or any other organisation.

The interview also highlights the continuous conflict between the State's goal of preventing crime and the individual's right to genetic privacy, indicating that the debate about the boundaries of DNA control is continuously evolving. According to the expert opinions, the main issue in India is not whether DNA profiling should be permitted, but how it should be

³⁰ Joe Smith & Mogambal Singh, *Forensic DNA Profiling: Legal and Ethical Considerations*, 30 J. Sci. Rsch. & Reps. 141 (2024).

³¹ *Id.*

³² Kunal Gupta, *DNA Technology Regulation Bill, 2019: A Detailed Analysis*, 1 J. Legal Rsch. & Juridical Sci. 476 (2020).

³³ Alec J. Jeffreys, *The Man Behind the DNA Fingerprints: An Interview with Professor Sir Alec Jeffreys*, 4 Investigative Genetics 21 (2013).

³⁴ *Id.*

³⁵ Priyanka Prasanth, *DNA-Based Technology (Use and Regulation) Bill, 2019: Privacy v. Speedy Justice*, 18 Supremo Amicus 664 (2020).

governed.³⁶ The results validate the claim that DNA databases are useful for operations, that their limited tailoring is essential to their validity, and that comprehensive legal protections are essential. These findings strengthen the central contention of this paper, that there is a need for a structured, comprehensive, and constitutionally binding legal framework for DNA technology in India.

III. CRITICAL ANALYSIS

This section critically analyses the provisions of the DNA Technology (Use and Application) Regulation Bill, 2019, examining the important provisions in detail. The main objectives of the Bill were to enable the identification of victims, to develop stringent regulation of DNA profiles, and to establish National and Regional DNA Data Banks in India to store DNA profiles. However, the objectives of codifying the Bill were not completed, leading to its withdrawal in 2023. The following analysis shows the anomalies in the various drafted sections of the Bill.

A. Lack of Clear Criteria for DNA Sample Collection

The Bill made particular provision for how DNA should be selected, by two categories: person-specific and region-specific.³⁷ The latter is named the crime-scene index, in which DNA samples found “on or within the body of a person associated with the commission of an offence”³⁸ would be recorded. There is no specific mention or explanation of who is deemed to be “associated” with the crime, nor any definition of the persons whose DNA may be collected, making the provision prone to misuse. It would allow the government to take DNA samples of innocent persons without their knowledge, and of persons who came into contact with a crime scene, such as passers-by, without having committed any crime.³⁹

Once collected, the DNA remains with the government and authorities even if it was unnecessary, or even where the collected sample is of the wrong person.⁴⁰ It also allows the collection of DNA from “within” a person's body, which is a very high standard for obtaining consent for physical intervention within an individual's body.⁴¹ The provision does not mandate recording any reasons for collecting DNA from within the body, leaving it devoid of sufficient procedural protection.

³⁶ Siddharth Saxena, *Evidentiary Value of DNA & Critical Analysis of the DNA Technology (Use and Application) Regulation Bill*, 5 Int'l J.L. Mgmt. & Human. 167 (2022).

³⁷ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 2(1)(iv) (India).

³⁸ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 2(1)(iv)(d) (India).

³⁹ Ishita Soni, *Critique on the DNA Technology Bill, 2019*, NLSIU L. REV. (Oct. 26, 2023).

⁴⁰ Saira Gori & Sannidhi Buch, *supra* note 19.

⁴¹ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 2(1)(iv)(b) (India).

B. Excessive Powers Assigned to the DNA Regulatory Board

The court's ruling in *In re Delhi Laws Act*⁴² established the concept of limited delegated legislation, holding that the legislature cannot assign its essential legislative jurisdiction to a subordinate body. Only administrative, procedural, or incidental matters may be delegated; essential legislative functions, such as formulating policy or establishing basic legal principles, cannot be.⁴³

However, the Bill gives extensive powers to the DNA Regulatory Board to create regulations on matters such as advising the government, supervising DNA laboratories, and defining the duties of the Director of the DNA Data Bank.⁴⁴ It can also develop policies relating to the overall operation of DNA laboratories, including personnel, security, and infrastructure. Additionally, the Chairperson or any other member may sub-delegate these powers, leading to excessive delegated legislation.⁴⁵

C. Regulatory Gap in the Civil DNA Database

The Bill created individual databases for criminal matters, such as for suspects, undertrials, offenders, and missing persons, for every category.⁴⁶ DNA collection is therefore organised and well-regulated in criminal cases. Meanwhile, the Bill also allows the use of DNA in civil cases, mainly for paternity and maternity matters, divorce, and immigration disputes. But no database is established for civil cases, leading to a risk of misuse and an absence of accountability. Especially in civil cases such as paternity, DNA laboratories must be required to store DNA data properly and lawfully.

The existing problem in the Bill was that criminal DNA is strictly handled by law while civil DNA is treated negligently, leading to weak legal compliance and posing a risk to privacy.⁴⁷ Thus, either separate databases for civil cases and a DNA index must be created to maintain uniformity, or the law must restrict DNA use to criminal matters and bar its use in civil cases.

D. Lack of a Consent Mechanism

Section 21 of the Bill mandates the consent of an accused whose DNA is obtained, but the same is not applied to a person punished with the death penalty or imprisonment of more than seven

⁴² *In re Delhi Laws Act*, 1912, AIR 1951 SC 332 (India).

⁴³ *Roger Mathew v. South Indian Bank Ltd.*, 2018 SCC OnLine SC 539 (India).

⁴⁴ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 51 (India).

⁴⁵ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 10(1) (India).

⁴⁶ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 27(1) (India).

⁴⁷ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 34(e) (India).

years.⁴⁸ This unreasonable classification,⁴⁹ without any objective or rational basis⁵⁰ for not applying the consent mandate to an accused punished with the death penalty or more than seven years' imprisonment, violates Article 14 of the Constitution by departing from the principle of equality.⁵¹

The objective of the Bill, to ensure the appropriate use of DNA technology in the criminal justice system, is not fulfilled, as not every category of accused is treated fairly and equally under proper procedure.⁵² It violates the presumption of innocence, as DNA is taken without consent and the accused are treated as though already guilty.⁵³ Secondly, the DNA, being personal evidence from the body, is taken non-voluntarily, leading the accused to provide evidence of their own guilt and thereby violating the principle against self-incrimination.⁵⁴ Thirdly, DNA involves very sensitive personal information, and the storage of such data violates privacy and human dignity.⁵⁵

Thus, the Bill is procedurally weak, and strong safeguard mechanisms must be put in place. The absence of particular criteria for DNA collection, the unreasonable classification of persons associated with a crime, and the forced collection from certain categories of accused create a grey area that needs proper regulation. Any attempt to re-enact the Bill must move beyond a crime-centric to an accused-centric model that is constitutionally compliant. Further reforms must therefore be made to revive this Bill or to pass any new Bill referring to it. The reforms are suggested in the recommendations section.

IV. SOCIO-LEGAL ANALYSIS

DNA profiling is a very useful investigative tool, but it poses significant threats to privacy and does not abide by constitutional safeguards. The 2019 Bill did not effectively address the privacy and constitutional concerns and thus failed to be enforced. This is critically analysed through the three-core test laid down in the K.S. Puttaswamy judgment, namely legality, necessity, and proportionality, together with the necessity of a new comprehensive law that addresses all the concerns.

⁴⁸ The DNA Technology (Use and Application) Regulation Bill, 2019, Bill No. 128 of 2019, cl. 21 (India).

⁴⁹ *E.P. Royappa v. State of T.N.*, (1974) 4 SCC 3 (India).

⁵⁰ *S. Seshachalam v. Bar Council of T.N.*, (2014) 16 SCC 72 (India).

⁵¹ INDIA CONST. art. 14.

⁵² *Legality of the DNA Technology (Use and Application) Regulation Bill, 2019 and Right to Privacy*, NLUI L. REV., <https://www.nlujodhpur.ac.in> (May 18, 2023).

⁵³ CHARLES HUGHES, LAW OF INSTRUCTIONS TO JURIES IN CIVIL AND CRIMINAL ACTIONS AND APPROVED FORMS (1905).

⁵⁴ INDIA CONST. art. 20(3).

⁵⁵ *Maneka Gandhi v. Union of India*, (1978) 1 SCC 248 (India).

A. Failure to Protect the Right to Privacy

The right to privacy and the DNA Bill are so inextricably interconnected that they cannot be disregarded.⁵⁶ Privacy forms an integral part of “personal liberty” under Article 21 and cannot be violated without a “procedure established by law” that is fair, just, and reasonable.⁵⁷ The 2017 judgment in *K.S. Puttaswamy v. Union of India*⁵⁸ brought a major shift and protected citizens from invasive interference by both State and non-State actors.⁵⁹ The DNA Bill, 2019 does not satisfy the core test established in *K.S. Puttaswamy* of legality, necessity, and proportionality, thereby acting arbitrarily.

Failure of Legality.

As per the requirements of the legality test, the law cannot be vague⁶⁰ and must prescribe clear standards as to what is allowed and forbidden; the restrictions imposed must be clear, reasonable, and accessible.⁶¹ As analysed above, the lack of clarity as to whose DNA samples may be collected, that is, the unreasonable explanation of persons associated with a crime, and the collection of DNA for civil matters such as paternity, lead to the arbitrary and discriminatory application of the law, violating the rule of law.⁶² The Bill also fails the legality test on the ground of violating Article 20(3) of the Constitution.⁶³ It is often argued that DNA profiling does not lead to self-incrimination, as it is qualified as a “physical and biological fact” similar to fingerprinting.⁶⁴ However, DNA profiling can be used to track habitual and behavioural characteristics, which can be categorised as “knowledge possessed by the accused”⁶⁵ and not just a physical fact. Tracking such information therefore engages the right against self-incrimination and violates Article 20(3).

Failure of Necessity and Proportionality.

The necessity test requires that any law be enacted for a pressing social need and not extend beyond its intended purpose.⁶⁶ It must fulfil a legitimate State interest, and the provisions should

⁵⁶ *The DNA Technology (Use and Application) Regulation Bill, 2019 and Its Effectiveness in Upholding the Principles of Privacy*, *supra* note 27.

⁵⁷ *Maneka Gandhi v. Union of India*, *supra* note 59.

⁵⁸ *K.S. Puttaswamy v. Union of India*, *supra* note 2.

⁵⁹ *Id.*

⁶⁰ *Shreya Singhal v. Union of India*, (2015) 5 SCC 1 (India).

⁶¹ *Csepedi-Trishe Consortium v. Tamil Nadu Generation & Distribution Corp.*, 2015 SCC OnLine Mad 13845 (India).

⁶² *Bar Council of India v. Board of Mgmt., Dayanand Coll. of Law*, (2007) 2 SCC 202 (India).

⁶³ INDIA CONST. art. 20(3).

⁶⁴ *Legality of the DNA Technology (Use and Application) Regulation Bill, 2019 and Right to Privacy*, NLUJ L. REV., <https://www.nlujodhpur.ac.in> (May 18, 2020).

⁶⁵ *Mohd. Usman v. State of Maharashtra*, (1981) 2 SCC 443 (India).

⁶⁶ *Election Comm'n of India v. Subramaniam Swamy*, (1996) 4 SCC 104 (India).

be carefully aligned to achieve the aim of the legislation. However, the DNA Bill mandates the establishment of a permanent National Data Bank, raising concerns of proportionality. The State did not intend a permanent database for everyone, including witnesses and others linked with a crime. The least-restrictive version would meet the requirement of storing DNA only of persons convicted of serious crimes, and not of suspects or other persons mentioned in the Bill.

The principle of proportionality requires that the provisions have a rational connection with the purpose behind the law. They must be the least-restrictive alternative, and the State must justify that the Bill is the least-restrictive means of meeting its objective, as clarified in the Aadhaar judgment.⁶⁷ However, the Bill fails this requirement, as there are equally effective methods such as erasing the samples of all suspects, including their family members, after trial, and restricting non-consensual DNA collection to very specific instances, which have proved fruitful in countries such as the United States and the United Kingdom. Moreover, there is some evidence that DNA profiling may not even be an accurate way of identifying individuals, as it can be affected by blood transfusion or the presence of multiple genomes in the body; in such cases, the collection of DNA samples would be neither effective nor the least-restrictive method available.

Therefore, the combination of legislative inconsistencies, constitutional violations, and practical constraints contributed to the non-implementation and eventual withdrawal of the DNA Technology (Use and Application) Regulation Bill, 2019. The enactment of the Criminal Procedure (Identification) Act, 2022 introduced overlapping provisions relating to the collection and storage of biological data, rendering the Bill functionally redundant. Furthermore, the Bill was heavily criticised for failing to sufficiently protect the right to privacy as established in *K.S. Puttaswamy v. Union of India*, especially because it lacked explicit provisions on consent, data retention, and DNA-profile erasure. Parliament therefore chose to withdraw the Bill rather than undertake its revision.

B. Necessity of a Single Comprehensive Law Regulating DNA Technology in India

DNA technology in India is presently governed by scattered provisions of the CrPC,⁶⁸ the Indian Evidence Act, and mainly the Criminal Procedure (Identification) Act, 2022,⁶⁹ which replaced the earlier Identification of Prisoners Act, 1920. The 87th Law Commission Report⁷⁰ suggested several amendments to align that Act with modern advancements in forensic science and

⁶⁷ *Supra* note 58.

⁶⁸ The Code of Criminal Procedure (Amendment) Act, 2005, No. 25 of 2005 (India).

⁶⁹ Criminal Procedure (Identification) Act, 2022, No. 11 of 2022 (India).

⁷⁰ LAW COMM'N OF INDIA, REPORT NO. 87, IDENTIFICATION OF PRISONERS ACT, 1920 (1980).

technology, alongside the recommendations of the Expert Committee on Reforms of the Criminal Justice System headed by Dr. Justice Malimath.⁷¹

Paternity tests are governed by Section 112 of the Indian Evidence Act, now Section 116 of the Bharatiya Sakshya Adhiniyam,⁷² along with varying judicial interpretations such as the *Aparna Ajinkya Firodia* case,⁷³ causing confusion regarding the procedure to be adopted for such tests. Having a single regulatory framework that fully governs the effectiveness of these examinations is therefore the only solution.

The words “DNA profiling” and “fingerprinting” are not specifically used in the Criminal Procedure (Identification) Act; instead, the broader heading of “biological samples” is used,⁷⁴ which is not even defined in the Act, leaving scope for ambiguity and wide interpretation, resulting in inconsistent application and raising concerns about misuse and the collection of data even on conviction for petty offences. Additionally, Section 4(1) of the Act⁷⁵ assigns the National Crime Records Bureau as the central organisation responsible for gathering, storing, and maintaining the samples. But the NCRB was set up to serve as a repository of data on crime and criminals and currently lacks a wing that can gather measurements, including biological samples. This function could be served by the Central and State Forensic Laboratories, but these are very limited in number, and no provisions recognise such laboratories or ensure quality-control systems.⁷⁶

Further, the Act allows the collection and retention of DNA, including from preventive detainees, for up to 75 years,⁷⁷ raising privacy concerns, especially in minor offences, and conflicting with the decision in *Selvi v. State of Karnataka*.⁷⁸ By retaining the provisions of the Identification of Prisoners Act, 1920,⁷⁹ and criminalising refusal under Section 186 of the Indian Penal Code,⁸⁰ the Act creates a contradiction in which even persons who are not found guilty are held accountable for non-cooperation with public servants such as police officers.

⁷¹ COMM. ON REFORMS OF THE CRIMINAL JUSTICE SYSTEM, REPORT (2003) (Malimath Committee).

⁷² The Indian Evidence Act, 1872, No. 1 of 1872, § 112 (India).

⁷³ *Aparna Ajinkya Firodia v. Ajinkya Arun Firodia*, Civil Appeal No. 9691 of 2022 (India Feb. 20, 2023).

⁷⁴ Criminal Procedure (Identification) Act, 2022, No. 11 of 2022, § 2(1)(b) (India).

⁷⁵ Criminal Procedure (Identification) Act, 2022, No. 11 of 2022, § 4(1) (India).

⁷⁶ *Faulty Foundations: A Socio-Legal Critique of the Regulation of Forensic Science Laboratories in India*, NLUJ L. REV., 7.2, at 191 (2021).

⁷⁷ Criminal Procedure (Identification) Act, 2022, No. 11 of 2022, § 4(2) (India).

⁷⁸ *Selvi v. State of Karnataka*, (2010) 7 SCC 263 (India).

⁷⁹ Identification of Prisoners Act, 1920, No. 33 of 1920 (India).

⁸⁰ The Indian Penal Code, 1860, No. 45 of 1860, § 186 (India).

V. RECOMMENDATIONS

The recommendations are divided into short-term and long-term measures. The short-term suggestions focus on the Criminal Procedure (Identification) Act, the current legislation governing DNA technology, so as to avoid inconsistency and protect constitutional concerns. The long-term recommendations are directed towards a single comprehensive law, adopting suggestions similar to those in the United Kingdom, the United States, and other countries.

A. Short-Term Recommendations

The Criminal Procedure (Identification) Act, 2022 should introduce explicit terms such as “DNA profiling” and “DNA samples” in place of “biological samples” in order to avoid the misuse of DNA data and to ensure that all provisions are incorporated with respect to profiling.⁸¹ DNA profiling should also be introduced for purposes such as identifying unknown and deceased persons and resolving paternity disputes in civil matters, in addition to criminal investigations; thus, instead of fragmented provisions, everything should be brought together in a single law.⁸² A separate DNA Regulatory Board should be established, as proposed in the DNA Technology Bill, 2019, to enhance the efficiency of DNA profiling, rather than placing these functions with the nodal agency, the NCRB. Finally, although Short Tandem Repeats are used for DNA profiling in India, similar to the CODIS system of the United States,⁸³ there are no safeguards to ensure that the entire DNA sequence is not analysed, which could reveal sensitive details such as physical traits and genetic diseases, harming individual privacy.

These measures should be included immediately so that the current constraints of the legislation are remedied and the privacy of the individual, including constitutional concerns, is not unduly affected. Yet even with these suggestions, this law would remain insufficient to govern DNA technology, which requires careful consideration of the protection of privacy, the rule against self-incrimination, and other discriminatory rules. Ultimately, a comprehensive law detailing the recommendations below, with strong protection for privacy, must be passed, similar to the DNA Technology Bill.

B. Long-Term Recommendations

The following recommendations should be incorporated if new legislation on DNA governance is passed. Mandatory safeguards similar to the United Kingdom's Protection of Freedoms Act

⁸¹ R. Williams & P. Johnson, *Inclusiveness, Effectiveness and Intrusiveness: Issues in the Developing Uses of DNA Profiling in Support of Criminal Investigations*, 33 J.L. Med. & Ethics 545 (2005).

⁸² Siddharth Shekhar, *An Analysis of the Criminal Procedure (Identification) Act, 2022*, 3 Indian J. Integrated Rsch. L. 1 (2023).

⁸³ *Supra* note 29.

2012⁸⁴ should be adopted, under which DNA samples are deleted from the database after the investigation ends, rather than requiring the individual to apply for removal. A stronger consent framework should be instituted, under which DNA analysis without proper consent is criminalised;⁸⁵ in particular, non-intimate samples should be collected only with explicit consent, and individuals should be informed of the reasons for taking such samples. The collection of DNA should be limited to convicted persons, and the data of acquitted or innocent persons avoided, in line with the European Court of Human Rights and Article 8 of the European Convention.⁸⁶ The law should require a Magistrate to hear the individual it deems to be “involved” before issuing a reasoned order, and the court should draw an adverse inference against those who refuse to provide a medical examination for DNA extraction, instead of ordering them to undergo the test. Finally, the use of DNA in civil cases should be either eliminated or appropriately regulated by law using an organised framework similar to the CODIS system in the United States and the NDNAD system in the United Kingdom,⁸⁷ to ensure effective oversight and accountability, so that Parliament fully regulates it rather than maintaining a half-regulated system.

VI. CONCLUSION

The analysis in this paper makes one thing evident: the problem is the absence of a coherent legal framework governing the use of DNA technology, not the absence of its application.⁸⁸ DNA profiling has already been incorporated into the criminal justice system through various judicial interpretations and scattered legislative provisions. But this silent inclusion, without a structured framework, has created a paradox: a powerful investigative instrument in a fragile legal system.

The failure and withdrawal of the DNA Technology Bill, 2019 is not merely a legislative lapse but indicates a broader institutional reluctance to balance technological innovation with constitutional enforcement. The Bill's structural defects, such as vagueness and excessive delegation, demonstrated that codification without adherence to constitutional principles is not only ineffective but also dangerous, violating individuals' fundamental rights. Its withdrawal

⁸⁴ Protection of Freedoms Act 2012, c. 9, §§ 1–3 (U.K.).

⁸⁵ *Challenges and Concerns in Admission of DNA Evidence in India*, SCC ONLINE BLOG, <https://www.sconline.com/blog> (Apr. 6, 2022).

⁸⁶ European Convention on Human Rights art. 8, Nov. 4, 1950, 213 U.N.T.S. 221.

⁸⁷ *National DNA Database (NDNAD)*, GOV.UK, <https://www.gov.uk/government/collections/national-dna-database> (U.K.).

⁸⁸ Tanu Priya & Mansi Pathak, *DNA Technology in Justice Delivery System: Exploring the Need for a Robust Legislative Framework in India*, SSRN (Dec. 21, 2025).

therefore emphasises that a comprehensive law with flaws is far worse than a fragmented regulation.

The necessity of a comprehensive law arises mainly from three reasons: technological inevitability, as DNA profiling is no longer optional in contemporary investigations;⁸⁹ constitutional evolution, since, privacy having been acknowledged as a fundamental right, every infringement on an individual's bodily or informational liberty requires rigorous legal justification; and institutional expansion, as legislation such as the Criminal Procedure (Identification) Act, 2022 has already broadened the scope of biological data, making regulation urgent rather than speculative.

Therefore, the enactment of a comprehensive DNA law is important not only for modernising criminal justice but also to prevent the normalisation of genetic surveillance in the absence of accountability.⁹⁰ The use of DNA technology will remain constitutionally ambiguous until the legislation explicitly specifies who can be subjected to DNA collection, under what conditions, for how long, and with what protections. The future of DNA governance thus depends not on efficiency and utility, but on the foundational principles of legality, proportionality, and human dignity.

⁸⁹ Lalji Singh, *DNA Profiling and Its Applications*, 60 *Current Sci.* 580 (1991).

⁹⁰ VALSAMIS MITSILEGAS & NIOVI VAVOULA, *THE NORMALIZATION OF SURVEILLANCE OF MOVEMENT IN AN ERA OF REINFORCING PRIVACY STANDARDS*, IN *HANDBOOK ON MIGRATION AND SECURITY* 232 (Edward Elgar Publ'g 2017).

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