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# A LEGAL OVERVIEW OF NATIONAL FORENSIC DNA DATABASE GOVERNANCE FOR CRIME SOLVING IN NIGERIA, UK AND USA

**Augustine I. Orabueze, PhD**[1]

***Abstract***
*The introduction and use of forensic DNA evidence in crime investigation within modern-day criminal justice systems across the world has revolutionised and significantly enhanced the accuracy of investigative outcomes. Nevertheless, forensic DNA evidence cannot be effectively utilised in solving crimes in the absence of a national forensic DNA database. This study aimed to provide a legal overview of national forensic DNA database governance for crime solving and control in Nigeria, the United Kingdom, and the United States of America, with a view to ascertaining the existence, level of development, and effectiveness of such frameworks in the countries under review. The findings revealed that both the United Kingdom and the United States have developed robust national forensic DNA databases, supported by comprehensive legal frameworks; further strengthened through case laws and legislative developments. In contrast, Nigeria lacks both a national forensic DNA database and specific legislation governing forensic DNA database management. It was also found that the United Kingdom and the United States have extensively utilised their forensic DNA databases in solving and preventing crimes, including the resolution of cold cases. By contrast, Nigeria continues to rely heavily on limited traditional investigative methods, such as suspect interrogation, eyewitness testimony, and confessions. The study therefore recommends that the Nigerian government should, as a matter of urgency, adopt best practices from the United Kingdom and the United States by establishing a national forensic DNA database and developing specific legislation to regulate its governance, in line with international standards. The establishment of a national forensic DNA database, alongside a clear regulatory framework, will enhance the effective utilisation of forensic DNA evidence in solving and preventing the growing incidence of crime in Nigeria.*

**Key words:** Forensic DNA database, Forensic DNA database Governance, DNA profiling, crime solving, regulatory frameworks.

## 1.0 Introduction

In modern day criminal justice systems, forensic DNA database constitute a key investigative resource. Scholars have noted that with the development of DNA technology, forensic genetics has become a significant resource for criminal investigation and evidence-gathering activities for court proceedings in judicial systems around the world.[2] Since the inception of forensic genetics in the 1980's till date there have been both regional and international calls for the establishment of forensic DNA database on nations of the world.[3] Many countries of the world have today established forensic DNA databases for solving crimes and for general law enforcement. The United Kingdom was the first to establish a national DNA database (NDNAD) in 1995 closely followed by the United States of America Combined DNA Index System (CODIS). Since then, many countries around the world have established and are operating DNA databases.[4] At present, China, followed by the United States and the United Kingdom operate the largest forensic DNA databases.[5]

[1] Lecturer, Department of Public Law, Faculty of Law, Nnamdi Azikiwe University Awka, Anambra State, Nigeria. Email: izuorabueze@gmail.com or ai.orabueze@unizik.edu.ng

[2] R Hindmarsh & B Prainsack, *Genetic Suspects: Global Governance of Forensic DNA Profiling and Databasing (*Cambridge, UK: Cambridge University Press; 2010) p. 343.

[3] European Union Council. Council Resolution of 09 June 1997 on the Exchange of DNA Analysis Results, ENFSI DNA Forensic Guidelines and Supporting Documents <https://enfsi.Eu/wp-content/uploads/2023/10/enfsi-guideline-for-dna-database-management-review-and-recommendations.Pdf> accessed on 26th March 2026 and the Organization of Scientific Area Committees (OSAC): 2020-N-0007 Best Practice Recommendations for the Management and Use of Quality Assurance DNA Elimination Databases in Forensic DNA Analysis.

[4] D Uberoi *et al*., 'The Advent of Forensic DNA Databases: It's Time to Agree on Some International Governance Principles!' (2024) 72 *Forensic Science International: Genetics*, pp1-4 at p1.

[5] *Ibid*. see also Government of UK. National DNA Database statistics, (2023)<https://www.gov.uk/government/statistics/national-dna-database-statistics> accessed on 31st March 2026.

As at 2017, it was reported that around 69 countries have functional national forensic DNA database and at least 34 additional countries are positioned for expansion and establishment.[6]One of the largest DNA databases in the world is the NDIS of the United States of America, which contains more than 26 million profiles as of November 2025,[7] followed by National DNA Database of the United Kingdom which had 8 million profiles as of 2023.[8]

DNA database has been described as a computer database containing records of DNA profiles that are usually from two different sources of DNA profiles: crime scene DNA samples and individuals' DNA samples.[9] The different sources of DNA profiles were further clarified to generally contain two types of profiles: 1) reference profiles from convicted offenders and/or arrestee profiles; these profiles are from known sources; and 2) forensic profiles which derive from crime scenes and are characteristically from unknown sources.[10]DNA databases contain reference DNA profiles of suspects, defendants, convicted, and victims and DNA profiles of traces obtained from biological samples (blood, saliva, sperm, bones, soft tissue, etc.) found at the crime scene, whereas in some countries, they also contain DNA profiles of other individuals who might be of interest during a criminal investigation.[11]A deoxyribonucleic acid (DNA) database was further described as systematically organized digital repositories of DNA profiles used primarily for human identification and forensic investigations.[12]

Over the years, forensic DNA database has become a veritable identification tool for solving crimes and exonerating the innocent. Scholars have noted that national forensic DNA databases are valuable investigative resources that have the potential to improve the efficacy of criminal investigations and clear the names of wrongly accused individuals.[13]Many countries of the world today have established national forensic DNA databases which they use in identifying and nailing perpetrators of crimes. The INTERPOL DNA Monitoring Expert Group in its 2015 report[14]summarily outlined the purpose of DNA database to include following:

i. Increasing the capacity to solve and prevent crime.
ii. The ability to evaluate a DNA profile against a large data set of other DNA profiles can have several advantages for law enforcement in: Combating serious crime, e.g. homicides, sexual assaults, assaults;
iii. Combating volume crime, e.g. burglaries, vehicle theft;
iv. Identifying potential perpetrators of crime as well as connecting crime scenes as part of a series;
v. Eliminating individuals from an enquiry and exonerating the wrongly convicted;
vi. Combating specific transnational crime, e.g. people smuggling, terrorism, drug trafficking; among others.[15]

Forensic DNA database governance is concerned with the legal frameworks and the operational and ethical standards for the collection, storage, usage, retention and removal of DNA profile or samples from

[6] Z Jakovski *et al*, 'The Power of Forensic DNA Data Bases in Solving Crime Cases' (2017) Volume 6, *Forensic Science International: Genetics Supplement Series*, e560-e562. <https://www.researchgate.net/publication/319934621_The_power_of_forensic_DNA_data_bases_in_solving_crime_cases> accessed on 25th March, 2026.

[7] CODIS-NDIS Statistics < https://le.fbi.gov/science-and-lab/biometrics-and-fingerprints/codis/codis-ndis-statistics> accessed on 26th March 2026.

[8] UK National DNA Database statistics, (n 5).

[9] Z Jakovski*et al.*, (n 6) at p. e275.

[10] J Ge *et al*., 'Future directions of forensic DNA databases' (2014) 55 (2) *Croatian Medical Journal*, 163-166. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4009716/> accessed on 26th March 2026.

[11] H Machado & R Granja *eds*., 'DNA Databases and Big Data' in H Machado & R Granja *Forensic Genetics in the Governance of Crime,* Singapore: Palgrave Macmillan; 2020. DOI: 10.1007/978-981-15-2429-5, pp 57-70<https://www.researchgate.net/publication/338873130_DNA_Databases_and_Big_Data> accessed on 31st March 2026.

[12] S Malaki, 'DNA Databases in Forensic Science: Advances, Applications, and Ethical Challenges' (2025) Vol. 3 Issue 5 *Innovation and Integrative Research Center Journal,* 185-198 at p185.

[13] D Uberoi *et al*., (n 4) pp1-4 at p3.

[14] INTERPOL DNA Monitoring Expert Group, 'Best Practice Principles: Recommendations for the Establishment of a National DNA Database' published on 1 January 2015 and referenced: 2014/617/OS/PFD/IDDN/SH/alr, 1-4 at p. 2. <https://www.interpol.int/en/content/download/4876/file/MEG_Recommendation_Establishing_DNA_Database.pdf> accessed on 9th April 2026.

[15] *Ibid.*

forensic database. The present study will carry out a legal overview of national forensic DNA database governance for crime solving in Nigeria, UK and USA to draw lessons from the legal overview.

**2.0 A Legal Overview of National Forensic DNA Database Governance for Crime Solving in Nigeria**

Since the discovery of DNA technology, both the Nigerian law enforcement institutions and the courts have relied on forensic DNA evidence for criminal investigations and in solving crimes. Nigerian courts accept forensic DNA evidence whether as a fact or expert opinion in criminal trials by virtue of section 68 of the Nigerian Evidence Act as opinion evidence.[16] In *Kunle Shonbubi v People of Lagos State*[17] the Court of Appeal allowed a DNA report produced by joint Nigerian and UK experts, affirming that the DNA report is admissible when presented by the qualified officers who supervised the analysis.

Forensic DNA evidence has today become increasingly vital in crime investigations and prosecution in Nigeria. DNA analysis is important in crime detection and prosecution but without a comprehensive regulatory framework and functional DNA database, the full potential of DNA analysis cannot be realized.[18]Regrettably, Nigeria till date does not have a national forensic DNA database[19] or any specific legislation providing regulatory framework for the establishment of forensic DNA database and its governance.[20]The various Bills seeking to establish a national forensic DNA databases in Nigeria have all become failed legislative attempts and hurdles in the National Assembly. In 2015 was the Senate Bills: SB: 78 Deoxyribonucleic Acid (DNA) Bill 2015 sponsored by Senator Theodore A. Orji.[21] In 2019 was another Deoxyribonucleic Acid Identification Bill, HB 175) aimed to collect DNA samples for criminal investigations.[22] In 2024 was also **Deoxyribonucleic Acid (DNA) Identification (Establishment) Bill, 2024 (HB.1750):** sponsored by Hon. Abubakar Yahaya Kusada.[23]

A new initiative, the Nigeria's planned 2025–2030 strategic plan includes DNA profiling within its National Counter-Terrorism Centre to combat banditry and terrorism.[24] There have also been state level initiatives towards establishment of a state-level DNA and Forensic centres in Nigeria. In 2017, **Lagos State DNA & Forensic Centre (LSD&FC) was established by the Lagos State government and this centre became** the Nigeria's first state-owned, ISO 17025:2017 accredited DNA laboratory.[25]In September, 2022, the Lagos State House of Assembly passed a Bill for the establishment of the State Deoxyribo-Nucleic Acid (DNA)

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[16] Section 68 (1) & (2) Evidence Act 2011. See also Omisore& Anor *v*Aregbesola&Ors, (2015) LPELR-24803(SC) (2015).

[17] (2015) LPELR-24807 (CA).

[18] OM Osinibi1 & TA Adewumi, 'The Imperative of a Regulatory Framework for the Establishment of a National Crime DNA Database in Nigeria' (2023) Volume 3 Issue 1*UCC Law Journal,* 182 -210 at p189.

[19]*Ibid*.

[20] NC Emmanuel & NS Chukwunonso, 'Forensic Evidence in Nigeria's Criminal Justice System: Legal Challenges, Institutional Deficiencies and the Imperative for Policy Reform' (2025) Vol. 1, Issue 1 *International Journal of Crimnal Justice System Reform (IJCJR),* 01– 25 at p7., see also OM Osinibi1 & TA Adewumi, (n 17)at p 201.

[21] SU Nwawuba& CBN Akpata, 'Awareness Level on the Role of Forensic DNA Database in Criminal Investigation in Nigeria: A Case Study of Benin City' (2020) 4 *Journal of Forensic Science and Research*, pp007-014. <https://www.forensicscijournal.com/journals/jfsr/jfsr-aid1019.php#:~:text=3.,Forensic%20DNA%20database%20in%20Nigeria.> accessed on 23rd March, 2026. See also Placbillstract. SB 78: Deoxyribonucleic Acid (DNA) Bill 2015. <http://placbillstrack.org/8th/view.php?getid=1405> accessed on 1st April 2026.

[22] Bill Tracker: National Assembly, Federal Republic of Nigeria. <https://nass.gov.ng/documents/bill/10543#:~:text=Deoxyribonucleic%20Acid%20(DNA)%20Identification%20Bill,Document%20not%20available%20yet> accessed on 1st April 2026.

[23] National Assembly of Nigeria: <https://nass.gov.ng/documents/download/11147> accessed on 1st April 2026.

[24] J Opanuga, 'Nigeria to use DNA in Identifying Terror Suspects' (January 24, 2026) *News Central Tv,*<https://newscentraltv.com/nigeria-to-use-dna-in-identifying-terror-suspects/> accessed on 1st April, 2026. The plan is contained in the 2025-2030 Strategic Plan of the National Counter-Terrorism Centre. According to the document, the database is to be housed within the office of the National Security Adviser and will serve as a central repository for information on known and suspected terrorists. See also National Counter-Terrorism Centre (NCTC) Strategic Plan 2025-2030. <https://nctc.gov.ng/wp-content/uploads/2025/11/Strategic-plan-2025-2030.pdf> accessed 1st April, 2026.

25 A Akinwunmi, 'Lagos Commissions First State Owned DNA Forensic Centre In West Africa' (September 27, 2017) <https://akinwunmiambode.com/lagos-commissions-first-state-owned-dna-forensic-centre-in-west-africa/> accessed on 1st April, 2026.

and Forensic centre to support criminal investigations, law enforcement, and preservation of evidence for the judicial system and for other connected purposes.[26]

Discussions above revealed that no national Forensic DNA database exist in Nigeria. That there is also no specific national legislation for the legal control of collection, storage, retention and use of DNA profiles in criminal justice system in Nigeria. These lacks indeed limit the Nigeria's ability to effectively utilize Forensic DNA in crime solving and prevention.

### 3.0 Legal Overview of National Forensic DNA Database Governance for Crime Solving in UK

The United Kingdom was the first to establish a national DNA database (NDNAD) in 1995[27] following the recommendation of the Royal Commission on Criminal Justice.[28]The NDNAD is operated by the Forensic Science Service (FSS) a government owned company that provides forensic services to the police departments in UK.[29] Prior to the establishment of the UK NDNAD) in 1995, there was no specific legislation regulating the collection, storage, use and retention Forensic DNA samples, reliance governance; reliance was on Police and the Criminal Evidence Act (PACE) of 1984 and that the 1994 Criminal Justice and Police Order Act(CJPOA).[30] The 1984 Police and Criminal Evidence Act (PACE), permits the DNA samples of suspects of 'serious arrestable offence' to be collected and stored.[31] The 1994 Criminal Justice and Police Order Act (CJPOA) expanded the scope of data that police could collect for the NDNAD to include intimate samples (e.g., blood or other similar samples from which police can collect DNA) and also expanded the scope of suspects from whom police could take samples to include those charged with any 'recordable offense'[32]

Formerly, the UK PACE required that an individual's profile would not be kept in the database unless the arrest resulted in a conviction.[33] However, the law was expanded in 2001 to permit indefinite retention of samples from individuals who were arrested, even if the arrest did not ultimately result in a conviction in order to aid in identification of criminals without prior criminal records.[34] In 2003 subsequent amendment was made to the PACE, and the amendment allows police to collect a sample from anyone arrested for a recordable offense, regardless of whether or not they are charged.[35] The PACE permits the police to arrest anyone who is, or whom they reasonably suspect to be, committing an arrestable offence, and anyone who have committed or who can reasonably be suspected of having committed an arrestable offence.[36]

Moreover, in addition to UK's regulatory frameworks' dictates on collection, storage, use and retention of individual's forensic DNA samples in the National database discussed above; the UK also employs her database in broader ways such as the practice of familial searching.[37]Familial searching was described as a technology that detects genetic relatedness, the term generally used to refer to searches conducted in criminal DNA databases to identify criminal suspects through their connection with relatives.[38]

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[26]NC Emmanuel & NS Chukwunonso, (n 20) at p14.

[27]S Malaki, (n 12) at p192; I Obleščuk*et al.,* 'Forensic DNA Database Management' in D Primorac (ed.), *Forensic Science and Molecular Anthropology - Topics Selected from 12th ISABS Conference on Forensic and Anthropological Genetics,* IntechOpen, 2024. <https://doi.org/10.5772/intechopen.114919> accessed o 1st April, 2026; D Uberoi *et al*., (n 4) at p1; OM Osinibi1 & TA Adewumi, (n 18) at p201; ES Deray, 'The Double-Helix Double-Edged Sword: Comparing DNA Retention Policies of the United States and the United Kingdom' (2011) Volume 44 *Vanderbilt Law Review*, 745-775 at p. 750.

[28] The Royal Commission on Criminal Justice which was established in 1991 in response to concerns about public confidence in the criminal justice system recommended the establishment of the DNA database in 1993.

[29] D Carling, 'Less Privacy Please, We're British: Investigating Crime with DNA in the U.K. and the U.S.' (2008) Volume 31 Number 1 *UC Law SF International Law Review*, 487-508 at p.492.

[30] OM Osinibi1 & TA Adewumi, (n 18) at p201; ES Deray, (n 27) at p. 751; D Carling, (*ibid*).

[31] ES Deray, (n 27). Note that the **PACE** only allowed police to collect fingerprints samples.

[32]*Ibid.*

[33]Police and Criminal Evidence Act, s64;

[34] Criminal Justice and Police Act, 2001, c. **16, s 82** (Eng.); ES Deray, (n 30).

[35] Criminal Justice and Police Act, United Kingdom, 2003.

[36]*Ibid*, ss 24-33.

[37]D Carling, (n 29) at p.496.

[38]R Granja & H Machado, 'Ethical Controversies of Familial Searching: The Views of Stakeholders in the United Kingdom and in Poland' (2019) Volume 44, Issue 6*Science , Technolgy & Human Values*, 1068–1092 at p 1068. <https://journals.sagepub.com/doi/full/10.1177/0162243919828219> accessed on 3rd April 2026. See also The Global Justice Information Sharing Initiative (Global), 'An Introduction to Familial DNA Searching for State, Local, and Tribal Justice Agencies: Issues for Considerations' (2010) <https://bja.ojp.gov/sites/g/files/xyckuh186/files/media/document/an_introduction_to_familial_dna_searching

Familial searching practice has been significant in solving cold cases giving investigators a place to start, or allowing them to focus on a particular suspect, saving time and resources. The British started using familial searching in 2002 and have been using same in solving criminal cases. A classical illustration of the use of familial searching in crime solving in UK was witnessed in Craig Harman's case[39] where facts of the was that in March of 2003, someone threw a brick off a bridge that ran over a road which went through a car windshield, causing the driver one *Michael Little* to suffer a fatal heart attack. There were no witnesses, but the offender left a little of his own blood on the brick. There was no match in NDNAD, but police checked for partial matches and found a close relative, who led them to Harman. When confronted, he confessed, and is now serving a six years sentence for manslaughter.[40]

The establishment of DNA database and its use in criminal justice system in the UK from its inception was not bereft of ethical concerns over privacy rights and human rights concerns. Key among the ethical concerns revolves around the UK indefinite forensic DNA retention policies after a suspect has been exonerated. As early as 1992, The Council of Europe had offered recommendations against indefinite retention of individual's DNA samples and data in criminal justice system thus:

> '**…** on the use of analysis of [DNA] within the framework of the criminal justice system, noted that since the primary aim of the collection of samples and the carrying out of DNA analysis on such samples is the identification of offenders and the exoneration of suspected persons, the data should be deleted once persons have been cleared of suspicion.'[41]

It has been noted that all information on individuals contained in a DNA is personal data and that the obligation of all persons involved in collecting, processing and using personal data is to protect the private life and other human rights as well as fundamental freedoms.[42] Notwithstanding the above recommendations, the United Kingdom in practice and through her Criminal Justice and Police Act, 2001, (Eng.) expressly permit the systematic and indefinite retention of DNA samples and profiles of individuals who were acquitted or against whom charges had been dropped.[43]

In addressing the ethical concerns relating to the UK's indefinite forensic DNA retention policies, the European Court of Human Rights in 2008 unanimously held in the case of *S. & Marper v United Kingdom*[44] that retaining DNA samples from two individuals who were arrested but not convicted constituted a violation of their privacy rights; that the retention of both cellular samples and DNA profiles discloses an interference with the applicants' right to respect for their private lives, within the meaning of Article 8, s.1 of the Convention [for the Protection of Human Rights and Fundamental Freedoms] and finally that England's indefinite retention policy violated Article 8 of the Convention because it interfered with the Applicants' 'right to respect for private life' more than was necessary.[45]

In response to the European Court of Human Rights decision in *Marper's case,* United Kingdom Home Office after public responses, the Home Office proposed retaining individuals' DNA samples for no

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1.pdf#:~:text=The%20U.K.'s%20National%20DNA%20Database,of%20familial%20DNA%20searching%20also> accessed on 3rd April, 2026. The paper was developed to provide state, local, and tribal (SLT) justice agencies that are performing or considering performing familial DNA searching with an overview of the science of familial DNA searching and its use in criminal investigations.

[39]Maguire *et al*., 'Familial Searching: A Specialist Forensic DNA Profiling Service Utilising the National DNA Database to Identify Unknown Offenders via Their Relatives— The UK Experience' (2014) Vol 8, No. 1 *Forensics Science International: Genetics* 1-9.; BBC News Monday, 19 April, 2004, 'Killer Caught by Relative's DNA',<http://news.bbc.co.uk/2/hi/uk_news/england/3640199.stm> accessed on 3rd April 2026.

[40]*Ibid.*

[41]Explanatory Memorandum to Recommendation No. R (92) 1 of the Committee of Minsters to Member States on the Use of Analysis of Deoxyribonucleic Acid (DNA) Within the Framework of the Criminal Justice System, 49 (Feb. 10, 1992).<https://wcd.coe.int/wcd/ViewDoc.jsp?id=611937&Site=CM> accessed on 1st April 2026.

[42]I Obleščuk*et al.,* Forensic DNA Database Management' in D Primorac (ed.), *Forensic Science and Molecular Anthropology - Topics Selected from 12th ISABS Conference on Forensic and Anthropological Genetics,* IntechOpen, 2024. <https://doi.org/10.5772/intechopen.114919> accessed on 1st April, 2026

[43] Criminal Justice and Police Act, 2001, c. **16, s 82** (Eng.)

[44][2008] ECHR 1581.

[45]*Ibid.*

longer than six months.[46]Furthermore, in 2012 the UK parliament enacted the Protection of Freedoms Act[47] which generally provides that DNA samples taken from individuals shall be destroyed if it appears that the arrest was unlawful or carried out due to mistaken identity.[48]For some years the United Kingdom's NDNAD was the largest DNA database; however, at present, China, followed by the United States and the United Kingdom operate the largest forensic DNA databases.[49]

**4.0 Legal Overview of National Forensic DNA Database Governance for Crime Solving in USA**

The use of DND evidence in the USA became prominent in the 1980's with some high profile cases decided within the period using DNA evidence. Among the earlier high profile cases resolved using DNA evidence in the United States of America include the *1987 Tommie Lee Andrews rape case*, where Andrews was ultimately convicted of rape after the DNA from his blood sample matched the DNA in the semen recovered from the victim.[50] Another was the conviction of Timothy Wilson Spencer, widely known as the 'Southside Strangler, for series of murders of Susan Hellams, Diane Cho, Debbie Davis, and Susan Tucker in Virginia between between1983 and 1987; the use of DNA evidence led to the conviction of Spencer the serial killer for murder of the four women.[51] In 1992 the United States Court of Appeals for the Second Circuit in the case of United *States v Jakobetz*[52] affirmed DNA profiling as admissible and valid, recognising its credibility and pertinency. In this case, Randolph Jakobetz, a truck driver, was convicted of rape after his blood sample matched the DNA taken from semen found in the victim shortly after the crime convicted and.[53]

As the reliance on the use of DNA evidence in solving crime increased, the DNA Identification Act 1994 and the Violent crime Control and Law Enforcement Act 1994 heralded the establishment of the Combined DNA Index System (CODIS) by the Federal Bureau of Investigation (FBI).[54]The FBI developed the DNA comparison software called CODIS (Combined DNA Identification System), which they license to the States in America as CODIS operates as a three-tiered hierarchy: the National DNA Index System (NDIS), the State DNA Index System (SDIS), and the Local DNA Index System (LDIS).[55]All 50states now have their own DNA legislation, and each one maintains a state database in accordance with their state laws, which often vary.[56] Each state uses CODIS to upload DNA profiles both to their own state database and the national database.[57] The FBI is responsible for adding federal offenders to the database, in accordance with federal law.[58]CODIS includes DNA profiles collected from crime scene evidence, convicted offenders, felony arrestees, missing persons, and unidentified human remains which the federal, state, and local law enforcement agencies

[46]UK Home Office Public Consultation 7 May - 7 August 2009 on Keeping the Right People on the DNA Database: Science and Public Protection: Summary of Responses, <http://www.parliament.uk/deposits/depositedpapers/2009/DEP2009-2788.pdf>accessed on 1st April 2026.

[47] Protection of Freedoms Act, United Kingdom (2012).

[48]*Ibid*, section 1.

[49] *Ibid*. See also Government of UK. National DNA Database statistics. (2023)<https://www.gov.uk/government/statistics/national-dna-database-statistics> accessed on 31st March 2026.

[50]Andrews *v* State, 533 So. 2d 841 (Fla. Dist. Ct. App. 1988)**. The conviction was also affirmed on Appeal in 1988.**

[51]Timothy Wilson Spencer *v* Commonwealth of Virginia cases; See New York Times, First Conviction based on DNA use is <https://www.nytimes.com/1989/09/24/us/first-conviction-based-on-dna-use-is-upheld.html> accessed on 3rd April, 2026.

[52]955 F.2d 786 (2d Cir. 1992).

[53]Sorenson Forensics, 'DNA Evidence in Courtrooms' (2022) <https://sorensonforensics.com/dna-evidence-in-court-rooms/> accessed on 3rd April 2026.

[54] OM Osinibi1 & TA Adewumi, (n 18) at p201; D Carling, (n29) at p.491; S Malaki, (n 11) at p191 & 192.

[55]Federal Bureau of Investigation, 'Privacy Impact Assessment for the [Combined National Deoxyribonucleic Acid (DNA) Index System (CODIS)]' (2023) *May 2022 DOJ PIA Template*https://www.fbi.gov/file-repository/pia-combined-national-deoxyribonucleic-acid-dna-index-system-codis-031423.pdf accessed on 3rd April 2026.

[56] ES Deray, (n 27) at p. 757.

**[57]** Y Pryor *et al*., 'National and state-level datasets of United States forensic DNA databases 2001–2025' (2026) <https://arxiv.org/html/2511.11953#:~:text=Background%20&%20Summary,and%20February%202024%20%5B7%5D%20.> accessed on 3rd April 2026.

[58]D Carling, (n 29) at p.491.

in US uses to link DNA Evidence from crime scenes to profiles of individuals previously convicted of felonies or arrestees or suspects.[59]

To further enhance the effective utilization of Forensic DNA evidence due to the increase reliance on DNA evidence in crime solving in the US, the DNA Analysis Backlog Elimination Act of 2000 was enacted to provide grants for effective DNA processing[60] and to allow federal law enforcement officials to collect DNA samples from federal offenders convicted of qualifying offences.[61] The scope of this Act was expanded by the United States Congress in 2012 when the Katie Sepich Enhanced DNA Collection Act was passed into law.[62] The Enhancement Act grants the Attorney General the power to provide grants for the purpose of assisting States with the costs associated with the implementation of DNA arrestee collection processes.[63] The grant program was to tackle backlogs in processing of DNA evidence and to ensure timely processing. In 2001, additional qualifying offenses were added under section 503 of the USA PATRIOT Act. DNA collection was further expanded pursuant to section 203(b) of the Justice for All Act of 2004 which allowed for collection of samples from all convicted felons.[64]

In 2025 federal officers were granted authorization to instantly take DNA sample from any arrestee or detained non-citizen and upload same to the FBI's Combined DNA Index System (CODIS) database.[65] It will also be pertinent to note that CODIS allows federal, state and local law enforcement officers and institutions to exchange and compare DNA profiles electronically for ease of identifications of criminals.

More so, due to privacy rights concerns in the practice of collection, processing, storing, usage and retention of forensic DNA samples in US National DNA databases, the US Fourth Amendment to the US Constitution was made to protect individuals' rights to privacy from unreasonable intrusions. The amendment protects individuals from unreasonable searches and seizures by the government, use of excessive force during arrests and investigatory stops; demanded warrant and application of reasonable standards for search and seizure.[66]The implications of the Fourth Amendment to legislations or regulations regulating the collection and storage of forensic DNA samples of individuals in DNA databases was examined by the US Supreme Court in *Maryland v King.*[67] The Supreme Court examined the extent to which the Fourth Amendment limits law enforcement's collection and analysis of arrestee DNA in the case. The Defendant was arrested in 2009 by the police for alleged assault and the police collected his DNA with a cheek swab as part of a routine booking procedure authorized under Maryland state law. The Defendant's DNA record was uploaded to a state database and it matched a DNA sample collected in an unsolved 2003 rape case. In the course of his trial for the rape case, the Defendant in his bid to stop the use of his DNA record argued that the Maryland's DNA collection law violated the Fourth Amendment. The Supreme Court disagreed with him and held that DNA collection from arrestees as constitutional. The Court held that 'taking and analyzing a cheek swab of the arrestee's DNA' is analogous to routine booking procedures used for identification, such as fingerprinting or 'matching an arrestee's face to a wanted poster of a previously unidentified suspect.'[68]

Moreover, in 2019 the US Department of Justice (DOJ) issued the Interim Forensic Genetic Genealogical DNA Analysis and Searching ('FGGS') Policy, which allows investigative agency to use of FGGS on DNA samples of 'putative perpetrators' only for unsolved homicides or sex crimes, or for other violent

[59] State of Michigan, 'Combined DNA Index System (CODIS) Section: CODIS Information and Resources'(2026) <https://www.michigan.gov/msp/divisions/bid/codis> accessed on 3rd April 2026.

[60]DNA Analysis Backlog Elimination Act of 2000, sections 1-3.

[61] *Ibid*.

[62] The Act became Public Law 112–253 112th Congress.

[63]*Ibid*, section 3 (a).

[64] Justice for All Act of 2004, Pub. L. No. 108-405, s 203(b), 118 Stat. 2260, 2270 (2004); *see also* DNA Sample Collection from Federal Offenders under the Justice for All Act of 2004, 70 Fed. Reg. 4763 (proposed Jan. 31, 2005) (to be codified at 28 C.F.R. pt. 28) (providing the Department of Justice's implementation of the Act's authority under an interim final rule).

[65] Violence Against Women and Department of Justice Reauthorization Act of 2005, or the DNA Fingerprint Act of 2005. Once the DNA sample is collected, it is stored in local databases, and DNA profiles are entered into CODIS.

[66]Constitution Annotated *Analysis and Interpretation of the US Constitution:* Fourth Amendment. <https://constitution.congress.gov/constitution/amendment-4/#:~:text=The%20right%20of%20the%20people,or%20things%20to%20be%20seized.> accessed on 3rd April 2026.

[67]*Maryland v King (2013) 569 U.S. 435.*

[68]PG Berris, 'Advances in DNA Analysis: Fourth Amendment Implications' (2025) Congressional Research Service (CRS), 1-6 at p. 2. <https://www.congress.gov/crs-product/LSB11339> accessed on 3rd April 2026.

crimes if they 'present a substantial and ongoing threat to public safety or national security after exhausted reasonable investigative leads, including searching CODIS.[69] Forensic genetic genealogical DNA analysis and searching (FGGS) involves DNA analysis combined with traditional genealogy research to generate investigative leads for unsolved violent crimes.[70] From the Policy FGGS,' means

> ...the forensic genetic genealogical DNA analysis of a forensic or reference sample of biological material by a vendor laboratory to develop an FGG profile and the subsequent search of that profile in a publicly-available open data personal genomics database or a direct-to-consumer genetic genealogy service.[71]

Finally, great attention was drawn to practice of FGGS in 2018 when it was used by law enforcement to identify a suspect in a series of unsolved crimes attributed to the person commonly referred to as the Golden State Killer through search and comparison of DNA samples recovered from victims and crime scenes to other DNA profiles searchable in a free genealogical database called GEDmatch.[72]

**5.0 International Guidelines for the Establishment and Governance of National Forensic DNA Databases**

The international guidelines for the establishment and governance of national forensic DNA databases proffer the best practices guidelines for the establishment and governance of national forensic DNA databases.The key international guidelines for the establishment and governance of national forensic DNA databases could be deduced from the INTERPOL DNA Monitoring Expert Group recommendations published in 2015, [73] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016[74] and Forensic Genetics Policy Initiative report of 2017. [75] The key international guidelines for the establishment and governance of national forensic DNA databases are summed up as follows:

(a) That all activities associated with the establishment and use of a DNA database should have a solid foundation in legislation and policy that will govern the collection and use of DNA profiles in the database and also provide guidance on the legal definitions of terminology (e.g., crime scene, suspect, serious offender), procedures for collection of samples, the retention/destruction requirements for a DNA profile, and the security of information in the database. These laws and policy the Report indicated may require the creation of new legislation or amendments to existing legislation.

(b) That for building and maintaining an effective national DNA database quality management should be applied to the entire process, including sample collection, analysis of DNA profiles, and chain of custody.

(c) That a national DNA database should possess the capability of international DNA profile sharing such as is available through INTERPOL.

(d) That there are several ethical issues related to forensic DNA databases. That though DNA database have the potential to assist law enforcement more effectively to prevent and combat crime, and to enhance a community's protection from crime, the relevant legislation should explicitly balance DNA database uses against an individual's right to privacy and other associated human rights, and the presumption of innocence.

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[69] United States Department of Justice Interim Policy Forensic Genetic Genealogical DNA Analysis And Searching 2019, <https://www.justice.gov/olp/page/file/1204386/download> accessed on 3rd April 2026. See also PG Berris, 'Advances in DNA Analysis: Fourth Amendment Implications' (2025) Congressional Research Service (CRS), 1-6. <https://www.congress.gov/crs-product/LSB11339> accessed on 3rd April 2026.

[70] PG Berris, (n 68).

[71] See (n 69).

[72] PG Berris, (n 68).

[73] INTERPOL DNA Monitoring Expert Group, 'Best Practice Principles: Recommendations for the Establishment of a National DNA Database' published on 1 January 2015 and referenced: 2014/617/OS/PFD/IDDN/SH/alr, 1-4 <https://www.interpol.int/en/content/download/4876/file/MEG Recommendation Establishing DNA Database.pdf> accessed on 9th April 2026.

[74] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the Protection of Natural Persons with Regard to the Processing of Personal Data and on the Free Movement of Such Data, and Repealing Directive 95/46/EC (General Data Protection Regulation).

[75] Forensic Genetics Policy Initiative Report of September 2017 on, 'Establishing Best Practice for Forensic DNA Databases' <http://dnapolicyinitiative.org/report/> accessed on 9th April 2026.

(e) That all DNA profiles of individuals contained in a DNA database is personal data and must be protected in accordance with the national legislation governing personal data protection and other global regulations governing data protection.[76]

## 6.0 Findings, Conclusion and Recommendations

The legal overview conducted in this study shows that both the United Kingdom and the United States have, since the 1990s, developed national forensic DNA databases alongside comprehensive regulatory frameworks governing the collection and use of forensic DNA profiles. These frameworks regulate the processes of collection, processing, storage, usage, and retention of forensic DNA samples within their respective national DNA databases. Both countries have further strengthened their regulatory systems through case laws and continuous legislative development, thereby enhancing operational standards and addressing ethical concerns associated with the use of individuals' DNA samples in criminal investigations and prosecution. While the United Kingdom operates a more centralised system, the United States adopts a decentralised model. In the United States, the Federal Bureau of Investigation developed the Combined DNA Identification System (CODIS), which functions as a three-tiered structure comprising the National DNA Index System (NDIS), the State DNA Index System (SDIS), and the Local DNA Index System (LDIS).

Nigeria, to date, does not have a national forensic DNA database or any specific legislation serving as a regulatory framework for its establishment and governance. Regrettably, various legislative bills proposed in 2015, 2019, and 2024 for the establishment of such a database did not succeed. Although Nigeria's proposed 2025–2030 strategic plan includes DNA profiling within its counter-terrorism framework to address banditry and terrorism, the absence of a national DNA database and regulatory structure remains a major obstacle to effective crime detection and prevention. Nigerian security agencies continue to rely heavily on traditional investigative methods, such as suspect interrogation, eyewitness testimony, and confessions.

It is therefore concluded that both the United Kingdom and the United States have robust forensic DNA databases—namely, the National DNA Database (NDNAD) and CODIS supported by comprehensive regulatory frameworks for their governance, whereas Nigeria has none. These systems have been extensively utilised in solving and preventing crimes, including complex and cold cases. In contrast, Nigeria continues to depend largely on limited traditional investigative methods.

The study therefore recommends that the Nigerian government should adopt best practices from the United Kingdom and the United States by establishing a national forensic DNA database and enacting specific legislation to regulate its governance in line with international standards. The establishment of such a database, alongside a clear regulatory framework, will significantly enhance the effective use of forensic DNA evidence in solving and preventing the rising incidence of crime in Nigeria.

[76] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016, (n 73).