REPORT NO.
340

PARLIAMENT OF INDIA
RAJYA SABHA

DEPARTMENT-RELATED PARLIAMENTARY STANDING COMMITTEE ON SCIENCE AND TECHNOLOGY, ENVIRONMENT, FORESTS AND CLIMATE CHANGE

THREE HUNDRED FORTIETH REPORT

The DNA Technology (Use And Application) Regulation Bill, 2019

(Presented to the Rajya Sabha on 3rd February, 2021)
(Laid on the Table of Lok Sabha on 3rd February, 2021)

Rajya Sabha Secretariat, New Delhi
February, 2021/Magha, 1942 (Saka)

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C O N T E N T S

COMPOSITION OF THE COMMITTEE
(2019-20)
(Constituted on 13th September, 2019)

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3. Shri Binoy Viswam
4. Shri R.S. Bharathi
5. Shrimati Vandana Chavan
6. Shri Hishey Lachungpa
7. Shri Bhaskar Rao Nekkanti
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17. Shri Anantkumar Hegde
18. Shrimati Jyotsna Charandas Mahant
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Shri T. N. Pandey, Director
Shri S. Rangarajan, Additional Director
Shri Rajiv Saxena, Under Secretary
Shri Harish Kumar, Committee Officer
Shri Ankit Chansoria, Assistant Committee Officer

#Nominated w.e.f. 22nd July, 2020 in lieu of Shri Parimal Nathwani who ceased to be a Member of the Committee on expiry of his term in Rajya Sabha w.e.f. 9th April, 2020.

COMPOSITION OF THE COMMITTEE
(2020-21)
(Constituted w.e.f. 13th September, 2020)

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SECRETARIAT

Shri Pradeep Chaturvedi, Joint Secretary
Shri T. N. Pandey, Director
Shri Rakesh Anand, Additional Director
Shri Rajiv Saxena, Under Secretary
Shri Harish Kumar, Committee Officer
Shri Ankit Chansoria, Assistant Committee Officer

@ Nominated w.e.f. 23rd December, 2020, in lieu of Shri Ravi Prakash Verma who ceased to be a member of the Committee on expiry of his term in Rajya Sabha *on* 25th November, 2020.

INTRODUCTION

I, the Chairman of the Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change, having been authorised by the Committee to present the Report on its behalf, do hereby present this Three Hundred Fortieth Report on "The DNA Technology (Use And Application) Regulation Bill, 2019".

2. In pursuance of Rule 270 of the Rules of Procedure and Conduct of Business in the Council of States relating to the Department-related Parliamentary Standing Committees, the Hon'ble Chairman, Rajya Sabha, in consultation with the Speaker, Lok Sabha, referred "The DNA Technology (Use And Application) Regulation Bill, 2019" as introduced in Lok Sabha and pending therein, to the Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change on the 15th October, 2019, for examination and report within a period of three months. On the request of the Chairman of the Committee, Hon'ble Chairman, Rajya Sabha granted extension of time upto the end of the first week of the Winter Session, 2020 for presentation of Report. Since the Winter Session, 2020 was not convened, the Committee is presenting this Report in the Budget Session 2021 of Parliament.

3. The Committee issued a Press Advertisement seeking the comments/views of the experts/public at large on the Bill in order to have a threadbare examination of the Bill after wider consultation with the stakeholders. In response thereto, a number of memoranda from different individuals/organistations were received.

4. In its meeting held on 31st October, 2019, the Committee heard the views of the Secretary and other officers of the Department of Biotechnology on the Bill. In its subsequent meetings held on the 27th and 28th November 2019 and 16th January 2020, the Committee heard the views of non-official/official expert witnesses on the Bill.

5. The Committee wishes to express its thanks to the Secretary and other officers of Department of Biotechnology and the representatives of Ministry of Law and Justice for placing before the Committee the material and information desired in connection with the examination of the Bill. The Committee also acknowledges the contribution of all those who deposed before the Committee and also those who gave their valuable suggestions on the provisions of the Bill to the Committee through their written submissions.

6. The Committee also considered the Bill in its meetings held on 24th August, 3rd and 10th September, 2020 and 11th January, 2021. The Committee considered and adopted the draft Report in its meeting held on 1st February, 2021.

(JAIRAM RAMESH)
Chairman,
Department-related Parliamentary Standing Committee on
Science and Technology, Environment, Forests and Climate Change,
Rajya Sabha

NEW DELHI;
1st February, 2021
Magha 12, 1942 (Saka)

ACRONYMS

CBI	Central Bureau of Investigation
CDFD	Centre for DNA Fingerprinting and Diagnostics
DBT	Department of Biotechnology
DNA	Deoxyribonucleic acid
D-PAC	DNA Profiling Advisory Committee
GFSU	Gujarat Forensic Sciences University
GoM	Group of Ministers
IISER	Indian Institute of Science Education and Research
LCI	Law Commission of India
MHA	Ministry of Home Affairs
NALSAR	National Academy of Legal Studies and Research
NCRB	National Crime Records Bureau
NGOs	Non-Governmental Organisations
NIA	National Investigation Agency
S&T	Science and Technology

REPORT

1. The Chairman, Rajya Sabha, in consultation with the Hon'ble Speaker, Lok Sabha, referred[1] "The DNA Technology (Use and Application) Regulation Bill, 2019" (Annexure-I) as introduced in Lok Sabha on 8th July, 2019 and pending therein, to the Department-related Parliamentary Standing Committee on Science and Technology, Environment, Forests and Climate Change for examination and report.

2. Background to the DNA Technology (Use and Application) Bill, 2019

2.1. The Department of Biotechnology (DBT) submitted in its note to the Committee that:

a. DNA testing is currently being done on an extremely limited scale in India, with approximately 30-40 DNA Experts in 15-18 laboratories undertaking less than 3000 cases per year, which represent 2-3% of the total need. However, the standards of the laboratories are not monitored or regulated.

b. DNA fingerprinting is already practised in our country and the evidence has been used in many criminal court cases with success. Thus, the procedures for crime scene collection, sample storage, chain of custody, contamination, data analysis etc. are quite routine and what the Bill will do is ensure that they become standards for accreditation, which is currently not statutory.

c. As per the National Crime Records Bureau (NCRB) reports, there are 40,000 unidentified bodies per year that need identification. NCRB also reported that nearly 100,000 children go missing every year across the country. So, there is an urgent need to provide a framework for empowering the justice delivery system.

2.2. The DBT submitted the following outline to the Committee on the genesis of the Bill:

a. Use of DNA technology in justice delivery system emerged as one of the recommendations during a seminar held in Hyderabad in September 2003 on "Impact of new biology on justice delivery system". Judges and senior lawyers from across the country attended this conference, which was organised by the Centre for DNA Fingerprinting and Diagnostics (CDFD), Hyderabad and National Academy of Legal Studies and Research (NALSAR), Hyderabad.

[1] Rajya Sabha Parliamentary Bulletin Part II No. 59167, dated 17th October, 2019

b. Accordingly, in November 2003, the proposal was submitted by DBT to the Union Cabinet for constitution of DNA Profiling Advisory Committee (D-PAC), and the Cabinet approved the same in its meeting held in December 2003;

c. In June 2004, the DNA Profiling Advisory Committee (D-PAC) constituted 3 sub-groups i.e. legal issues, quality control & quality assurance of DNA evidence & infrastructure, and ethical & social issues;

d. In September 2005, a draft DNA Profiling Bill was formulated by the DBT based on the recommendations of D-PAC and the proposal sent to the Ministry of Law & Justice in July 2006;

e. During 2006-07, suggestions made by Ministry of Law & Justice were incorporated. The Bill was revised and circulated to the Ministries and Departments concerned;

f. From 2008 to 2010, comments received were discussed with the Ministries/Departments. Some other Ministries were also consulted based on the suggestions made by the Directorate of Forensic Science, Ministry of Home Affairs (MHA);

g. In August 2012, a revised draft Bill and Cabinet Note were submitted to the Minister of State for Science & Technology. He suggested to discuss privacy related issues in the draft Bill;

h. In December 2012, an Expert Committee was constituted to discuss privacy issues;

i. From January 2013 to November 2014, 4 meetings of the Expert Committee were held and the draft Cabinet Note and the Bill were revised accordingly. This was re-circulated to other Ministries/Departments concerned for comments in November 2014;

j. The comments received from Ministries were incorporated in the Bill and the revised draft Cabinet Note and the Bill was again submitted to the Ministry of Law & Justice in January 2015. The re-drafted Bill was approved by the

Hon'ble Minister of Law & Justice in June 2015. In July 2015, DBT submitted the revised Cabinet Note and the Bill was submitted to the Cabinet for consideration for introduction in the Parliament. In August 2015, the draft Bill and the Cabinet Note were placed on the DBT website and linked with social media for public consultations, and also from the Chiefs of Central & State Forensic Science Laboratories.

k. In November 2015, a committee was constituted by DBT to discuss the comments/feedback received from central and state Forensic Science Laboratories and also from the general public. Based on the recommendations of the committee, the draft Bill was further revised and submitted to Ministry of Law & Justice for concurrence;

l. In January 2016, the revised Bill was submitted to the Cabinet for consideration. Then the Bill was discussed by a Group of Ministers (GoM) in February 2016;

m. In April 2016, as per the suggestions of the GoM, the Bill was re-submitted to the Cabinet with minor modifications;

n. In September 2016, the Chairman, Law Commission of India (LCI) was consulted. The Law Commission of India re-drafted the Bill and placed the 271st Report on its website in July 2017. The revised approved Bill was submitted to Cabinet Secretariat with the approval of Minister (S&T) in August 2017;

o. The Bill was discussed again by a Group of Ministers in February 2018, and it was suggested to compare the provisions of data protection and privacy of this Bill with the provision of "Digital Data Protection and Policy" in the Aadhaar Act, 2016.

p. Accordingly, the Bill was submitted to Ministry of Law & Justice and based on their comments, Chapter VI of the Bill was modified in accordance with the provisions relating to security and confidentiality of information under Section 28 of Chapter VI of Aadhaar Act, 2016. In June 2018, the revised Bill was submitted to Cabinet;

q. The Cabinet approved the Cabinet Note and the Bill in its meeting held in July 2018.

r. The Bill was introduced in the Lok Sabha by the Hon'ble Minister for S&T on 9th August 2018 and passed in the Lok Sabha on 8th January 2019. Due to the dissolution of Lok Sabha, the Bill soon lapsed.

s. After the reconstitution of the government following the Lok Sabha elections of 2019, the Cabinet approved the Cabinet Note and the Bill in its meeting held on 24th June 2019. Then, the Hon'ble Minister for S&T introduced the Bill in the Lok Sabha on 8th July 2019.

t. On 15th October 2019, the Bill was referred to the Department-related Parliamentary Standing Committee on Science & Technology, Environment, Forests and Climate Change by the Hon'ble Chairman, Rajya Sabha in consultation with the Speaker, Lok Sabha.

3. Highlights of the Bill

3.1. From the background note on the Bill submitted to the Committee by the DBT, the following can be outlined as the main purposes of the Bill:

a. Enable identification of missing children and of unidentified deceased individuals including disaster victims;

b. Apprehend repeat offenders for heinous crimes (rape, murder, etc.);

c. Develop stringent standards, quality assurance system to grant approval and accreditation to the laboratories undertaking DNA profiling;

d. Regulate the use of DNA Profiles for lawful purposes in establishing identity in criminal and civil proceedings.

3.2. From the background note on the Bill submitted to the Committee by the DBT, the following can be summarised as **highlights of the Bill:**

3.2.1. The Bill aims to establish the identity of certain category of persons including the victims, offenders, suspects, under trials, missing persons and unknown deceased persons.

3.2.2. This Bill seeks to:

a. To address concerns related to quality, accuracy, security of data and other related matters that may arise in use of DNA technology, the Bill aims to establish a DNA Regulatory Board. This Board will:

i. advise the Central Government and the State Governments on all issues relating to establishing of DNA laboratories and DNA Data Banks and laying down guidelines, standards and procedures for establishment and functioning of such laboratories and Data Banks;

ii. grant accreditation to laboratories for undertaking DNA testing, analysing, etc., and to suspend or revoke such accreditation;

b. Undertake accreditation of DNA laboratories undertaking DNA testing, analysing, etc.;

c. Establish a National DNA Data Bank and Regional DNA Data Banks, which shall store and maintain the DNA profiles in accordance with the provisions relating to the use and access to information, its retention and expunction.

3.2.3. According to the DBT, the following is the application/impact of DNA Identification in various Ministries/ Departments:

- Ministry of Home Affairs: Forensics crime investigations
- Ministry of Defence: Body identification
- Disaster Management Authority: Unidentified bodies
- Ministry of External Affairs: Immigration issues
- Ministry of Women & Child Welfare: Child trafficking and missing/abandoned children investigations
- Investigation agencies (CBI, NIA): Investigations of issues of importance to public safety and national security
- Ministry of Commerce: Certification and identification of produce

3.2.4. The DBT claims that the proposed Bill takes into account all the important matters related to privacy, confidentiality, data protection, *viz.*

a. Profiles from all living individuals shall be stored only after obtaining informed consent (with the exception of profiles from offenders and suspects).

b. The DNA profiles to be stored are not for an entire population but for specified categories of individuals such as convicts and suspects of major crimes, relatives of missing persons (so that their DNA profiles can be compared with profiles of unidentified deceased individuals).

c. The information to be stored in the DNA Data Bank of the proposed Bill does not reveal any of the traits (race, caste, facial features, or any other characteristics) of an individual.

d. There are provisions in the Bill to remove the DNA profiles once the case has been resolved. Chapter V of this Bill has provisions for retention and removal of records. The Chapter VI of this Bill deals with protection of information.

e. The Bill contains stringent safeguards including penal provisions to ensure that the DNA Data Bank information is accessed and used for defined purposes, and only so with appropriate authorisation.

3.2.5. According to the DBT, nearly 60 countries have enacted similar legislation.

- USA: DNA Identification Act (1994)
- UK: Criminal Justice and Public Order Act (1994) and Criminal Justice and Police Act (2001);
- Canada: DNA Identification Act (1998);
- Similar legislation has been enacted in other countries including Norway, Finland, Belgium, Denmark, Australia, New Zealand, and Bangladesh.
- It is to be noted that scientists from Bangladesh were trained in India and formulated this legislation in their country on return

4. Expert Testimony

4.1. The Committee held a preliminary discussion on the Bill and heard the views of the Secretary, DBT on 31st October 2019, along with the Director, Centre for DNA Fingerprinting and Diagnostics.

4.2. In light of the importance of the Bill, the Committee directed the Secretariat to issue an advertisement, in national dailies and other regional newspapers on 12th November 2019

inviting memoranda from the public, experts, organisations, and various stakeholders on the Bill. In response the Committee received a number of memoranda. The list of persons who submitted memoranda is at Annexure-II (Statement I).

4.3. The Committee met again on the 27th and 28th November 2019, to hear in-person the views on the Bill of the following non-official expert witnesses, in the order of their deposition, who appeared before the Committee.

1. Dr. Shambhavi Naik, Fellow, Takshashila Institution, Bengaluru
2. Shri Apar Gupta, Executive Director, Internet Freedom Foundation, New Delhi
3. Shri Arghya Sengupta, Founder, Vidhi Centre for Legal Policy
4. Dr. M.R. Madhavan, President, PRS India, New Delhi
5. Dr. Mandira Kala, Head of Research, PRS India, New Delhi
6. Shri Murali Neelakantan, Advocate and Principal at Amicus, Mumbai
7. Ms. Shreya Rastogi, Associate Researcher, National Law University, Delhi
8. Ms. Smitha Krishna Prasad, Associate Director, Centre for Communication Governance, National Law University, Delhi.
9. Ms. Pallavi Bedi, Fellow, Centre for Internet and Society, New Delhi.
10. Shri Amber Sinha, Fellow, Centre for Internet and Society, New Delhi.

4.4. The Committee met once more on 16th January 2020, to review the responses from the DBT on the memoranda received, and to hear the views of the following expert and official witnesses in the order of their deposition:

1. Dr. J.M. Vyas, Director General, Gujarat Forensic Sciences University (GFSU), Gujarat
2. Prof. Seyed E. Hasnain, Vice Chancellor, Jamia Hamdard University, New Delhi
3. Dr. J. Gowrishankar, Director, Indian Institute of Science Education and Research (IISER), Mohali
4. Dr. Debashis Mitra, Director, Centre for DNA Fingerprinting & Diagnostics (CDFD), Hyderabad
5. Shri R.S. Verma, Additional Secretary, Department of Legal Affairs

4.5. The entire list of Expert Witnesses who appeared before the Committee is provided in Annexure-II (Statement II). The Chairman also sought the views of some distinguished jurists and police administrators on the Bill. These views are in Annexure-III. **The Committee would like the Government to pay very careful attention to the views of those who have raised some very important issues on the Bill and address them in Parliament and outside.**

5. GENERAL OBSERVATIONS OF THE COMMITTEE

5.1. The Committee is conscious of the fact that this Bill is very technical, complex and sensitive. A number of Members have expressed concern about the use of DNA technology—or more accurately its misuse—to target different segments of our society based on factors like religion, caste or political views. These fears are not entirely unfounded have to be recognized and addressed by the Government and by Parliament as well. It does not, however, negate the need for such legislation especially when DNA technology is already in use. In fact, its use in recent months has exposed a false encounter in which innocents were killed contradicting initial claims made that they were militants. The Committee is of the strong opinion that an enabling ecosystem must be created soon to ensure that DNA profiling is done in a manner that is fully consistent with the letter and spirit of various Supreme Court judgments and with of the Constitution of India.

5.2. According to an expert witness who appeared before the Committee, the following are the key ingredients of a good judicial ecosystem, as witnessed from the experience of other countries which use DNA technology. **The Committee is in strong agreement with these views that are enumerated below:**

a) Independent and impartial checks and balances at every stage of the process: Each of the police, prosecution and judicial service is independent, which means that there is a clear qualitative check at every stage so that only those cases, where there is a good chance of conviction is taken forward – to arrest, chargesheet and then to trial. There is a real risk of the police department and the prosecution being personally and financially liable for failed prosecutions.

b) Rule of Law and procedural fairness: Illegally obtained evidence is inadmissible in court and the doctrine of "fruit of a poisonous tree" is an effective safeguard against erosion of fundamental rights. This ensures that there is strict adherence to all procedural safeguards.

c) Rights against self-incrimination have been widely accepted as a "natural right" and find a prominent place in the constitution. This ensures that no person is forced to provide evidence that may incriminate him/her in any crime. There are no exceptions to this rule and all courts have accepted this as an inviolable guarantee.

d) It is the duty of the prosecution to present all evidence, not just evidence of guilt so that the judge can be sure that there are sufficient grounds to charge the accused of a crime. The accused also has access to independent investigators who can gather evidence about the incident and present it to the court. Since they are licensed in many countries, the evidence that they present to court will be given as much weight as that of the police.

e) There is a well-developed system of independent labs and experts who can be brought to court to challenge the government expert.

f) A well-trained judicial system exists that has had many years of experience with expert witnesses and academic and scientific research to be able to deal with complex issues arising from "scientific evidence".

5.3. There has been very little research and academic work in the country on the use of scientific evidence in courts. As a result, courts have routinely accepted evidence that is not based on thorough scientific rigour**. The Committee, therefore, underlines with utmost importance that it is essential the Bill enables the creation of an ecosystem that benefits from scientific evidence like DNA, therefore allowing the legal system to become experienced in the use and appreciation of DNA evidence. This will enable the legal system to understand the technology's limitations, identify when it is appropriate to use DNA technology to solve crimes appropriate and over time, substantially minimize all possible errors. Widespread and extensive training is of paramount importance.**

5.4. The Committee feels strongly and unanimously that if a statutory Board is to be set up—which is indeed the purpose of this Bill—then it should not only be professional but also be independent and not comprise almost wholly of serving government officials. This is a glaring shortcoming of the Bill that the Committee has sought to rectify keeping the larger public interest in mind. **Even so, some Members have expressed their fears that this Bill when it becomes a law could be used to target certain sections of our society. The Government must assuage these fears both in Parliament and outside.**

6. Clause-by-Clause Recommendations

The Committee held detailed deliberations on views/suggestion of experts, NGOs and various ministries and departments on the provisions of the Bill and took up clause-by-clause consideration of the Bill. After taking into account the suggestions received on various clauses, the comments/recommendations of the Committee are as follows in seriatim:

6.1 **Long Title**

Many Members of the Committee are in favour of retaining the Long Title as is. However, some Members believe that in order to ensure the prevention of misuse of the provisions of the Bill and avoid targeting of certain categories of people, the application of the Bill must be limited to the terms 'victims' 'offenders', 'missing persons' and 'unknown deceased persons' and not cover 'suspects' and 'undertrials' as well as provided for presently in the Long Title. The Committee has taken on board these concerns that must be addressed by the Government in a suitable manner.

6.1.1 **Nevertheless, in keeping with the majority view expressed in the Committee, it recommends retaining the Long Title as it stands.**

6.2 Short Title and Clause 1 (1)

The scope of the Bill is to regulate the use and application of DNA technology in the justice delivery system. Therefore, the Committee recommends specifying this in the Short Title as follows:

> **"This Act may be called The DNA (Use and Application in Justice Delivery System) Regulation Bill, 2021"**

6.3 Clause 1 (2) to Clause 1 (3)

The Committee adopts the Clauses without modification.

6.4 Clause 2 (1)(i) to (iii)

The Committee adopts the Clauses without modification.

6.5 Clause 2 (1)(iv)

6.5.1 **The Committee takes note of the fact that "Crime Scene Index" means an index of DNA profiles and is totally different from what is usually understood by the**

term 'crime scene'. It has been informed of the definition of "Crime Scene Index" in laws of other countries like Australia and Canada.

6.5.2 **The risk with a national databank of crime scene DNA profiles is that it will likely include virtually everyone since DNA is left at the "crime scene" before and after the crime by several persons who may have nothing to do with the crime being investigated. There is also DNA to be present of those who were nowhere near "crime scene" but bodily material like hair may have been transported to the crime scene inadvertently by a variety of ways. Many of these DNA profiles will then find their way into the "crime scene index" without the knowledge of these persons.**

6.5.3 **It has been suggested to the Committee that crime scene DNA profiles can be used in the investigation and trial but (i) should not be put in a databank; and (ii) destroyed once the case concludes with acquittal. If there is a conviction, only the DNA profile of the convict could be included in the databank.**

6.5.4 **This is a fundamental issue on which it has not been possible to arrive at a consensus. Some Members feel that the "crime scene index" is unnecessary and is not a required feature to solve crimes. Some other Members favour the retention of this Clause.**

6.5.5 **<u>On balance, while recommending the retention of this Clause as it stands, the Committee hopes that the Government will address the concerns raised by the critics of the very idea of a "crime scene index" in the revised version of the Bill and when it is re-introduced in Parliament.</u>**

6.6 Clause 2 (1)(v)

The Committee is of the opinion that a National DNA Data Bank alone will suffice, and Regional DNA Data Banks are not required. Since it does not provide any additional benefits, but on the contrary creates more vulnerability to the accuracy, integrity and security of the entire system. <u>Therefore, the Committee recommends that the words, "or a Regional DNA Data Bank" be deleted.</u>

6.7 Clause 2(1)(vi)

6.7.1 **Change reference of "DNA Data Bank" to "the National DNA Data Bank". Therefore, the Committee recommends that the words, "DNA Data Bank" may be replaced by the words "The National DNA Data Bank". The Clause may be amended as under: -**

6.7.2 **"National DNA Data Bank" means the National DNA Data Bank established under sub-section (1) of section 25 and that follows systems of storage that at all times conform to internationally-acceptable and used standards.**

6.8 Clause 2 (1)(vii)

The National DNA Data Bank will store information related to DNA profiles alone, and not all forms of DNA testing. Rather than define testing later as the Bill has done, the Committee feels it is prudent to avoid the use of the term "testing" altogether so that there is no scope for misunderstanding and misinterpreting that could create fear and worry. <u>The Committee therefore recommends that the word "testing" may be replaced by the word "profiling".</u>

6.9 Clause 2 (1)(viii)

The Committee recommends the deletion of the definition in the Clause in its entirety and replacing it with the following definition, which is both scientifically sound and relevant to the purpose of the amended Bill. The Clause may be amended as under: -

> **""DNA profile" with its grammatical variations and cognate expressions, means a phenotype neutral DNA pattern that establishes only the genetic identity of offenders, missing persons or unknown deceased persons, and not the characteristics of an individual such as physical appearance, behaviour or health status;"**

6.10 Clause 2 (1)(ix)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.11 Clause 2 (1)(x)

This clause is subsumed under Clause 2 (1)(viii) in the amended Bill. Therefore, the Committee recommends the deletion of the Clause in its entirety.

6.12 Clause 2 (1)(xi) to (xii)

The Committee adopts the Clauses without modification.

6.13 Clause 2 (1)(xiii)

Reference to "Indian Medical Council Act, 1956" will need to be updated given that the National Medical Commission Act, 2019 is in place. The Committee therefore recommends the words "who possesses any medical qualification as defined in clause (h) of section 2 of the Indian Medical Council Act, 1956 and whose name has been entered in a State Medical Register under that Act" be replaced by "whose name has been entered in a State Register or National Register under the National Medical Commission Bill, 2019 Act". The Clause may be amended as under: -

> **""medical practitioner" means a medical practitioner whose name has been entered in a State Register or National Register under the National Medical Commission Bill, 2019 Act;"**

6.14 Clause 2 (1)(xiv) to (xv)

The Committee adopts the Clauses without modification.

6.15 Clause 2 (1)(xvi)

The Committee recommends the modification of Clause 2 (1)(xvi)(c) with the addition of the words "with the written consent of such persons". The amended Clause will read as under: -

> **"(c) the bodily substances of relatives of the missing persons taken with the written consent of such relatives;"**

6.16 Clause 2 (1)(xvii)

The Committee adopts the Clause without modification.

6.17 Clause 2 (1)(xviii)

The Committee feels the offender must be defined in the amended Bill before defining the offender's index in light of the removal of the Schedule. <u>The Committee recommends addition of sub-section Clause 2 (1)(xviii) with the following words,"Offender means any person convicted of an offence and punished with imprisonment of 7 years or more". Further, the Committee recommends modifying the words "in a DNA Data Bank" to "in the National DNA Data Bank" in the existing Clause defining the offender's index.</u>

6.18 Clause 2 (1)(xix) to (xxiv)

The Committee adopts the Clauses without modification.

6.19 Clause 2 (1)(xxv)

The observations made by the Committee on the 'Long Title' apply to this Clause as well. Some members (including the Chairman) are of the view that the 'suspects' index and 'undertrials' index is unnecessary for the purpose of solving crimes, and it can be misused for targeting certain categories of people. They would like this Clause to be deleted. <u>However, in keeping with other views expressed, the Committee is not recommending deletion of this Clause.</u>

6.20 Clause 2 (1)(xxvi)

The Committee recommends that the words "maintained in a DNA Data Bank" be modified to "maintained in the National DNA Data Bank".

6.21 Clause 2 (1)(xxvii)

The Committee adopts the Clause without modification.

6.22 Clause 2(2)

The Committee adopts the Clause without modification.

6.23 Clause 3 (1) to Clause 3 (4)

The Committee adopts the Clauses without modification.

6.24 Clause 4 (a)

The Committee holds a strong view that the Regulatory Board as a statutory body should be independent and professional. There is no precedent for a serving Secretary to the Government of India also being the Chairperson of an

independent regulatory board under the administrative jurisdiction of the Department/Ministry concerned. The Committee recommends that the words "the Secretary to the Government of India in the Department of Biotechnology" be modified under: -

> **"(a) a person of eminence in the field of biological sciences or genetics having experience of not less than twenty-five years in the field, who shall be the Chairperson of the Board.**

6.25 Clause 4 (b)

The Committee recommends the deletion of this Clause.

6.26 Clause 4 (c)

The Committee adopts this Clause without modification.

6.27 Clause 4 (d)

The Committee recommends deletion of this Clause and its substitution by the following:

> **" (d) A retired Director of the Central Bureau of Investigation.**

6.28 Clause 4 (e)

The Committee recommends deletion of this Clause.

6.29 Clause 4 (f)

The Committee adopts the Clause without modification.

6.30 Clause 4 (h)

The Committee adopts the Clause without modification.

6.31 Clause 4 (i)

The Committee recommends the deletion of the Clause in its entirety and replacement by the following:

> **(i) a legal expert to be nominated by the Central Government in consultation with the Chief Justice of India.**

6.32 Clause 4 (j)

The Committee recommends the deletion of the Clause in its entirety.

6.33 Clause 4 (k)

The Committee recommends the deletion of the Clause and its substitution by the following:

(k) **one expert from amongst persons of eminence in the field of information sciences to be nominated by the Government of India.**

6.34 Clause 4 (l)

The Committee adopts the Clause with the following modification:

(l) an officer, not below the rank of Joint Secretary to the Government of India or equivalent, with knowledge and experience in biological sciences and genetics, to be nominated by the Central Government, ex officio, who shall be the Member-Secretary.

6.35 Clause 5 (1) to Clause 5(3)

The Committee recommends deletion of these three Clauses.

6.36 Clause 5 (4)

The Committee adopts the Clause without modification.

6.37 Clause 6 (1) to 6 (5)

The Committee adopts the Clauses without modification.

6.38 Clause 7

The Committee adopts the Clause without modification.

6.39 Clause 8 (1)(a) to 8 (1)(e)

The Committee adopts the Clauses without modification.

6.40 Clause 8 (2) to 8 (3)

The Committee adopts the Clauses without modification.

6.41 Clause 9 (a) to 9 (c)

The Committee adopts the Clauses without modification.

6.42 Clause 10 (1) to 10 (2)

The Committee adopts the Clauses without modification.

6.43 Clause 11 (1) to 11 (2)

The Committee adopts the Clauses without modification.

6.44 Clause 12 (a)

6.44.1 **The Committee recommends the deletion of the Clause in its entirety and its replacement by the following:**

> **"12 (a) advice the Central Government and the State Governments on issues relating to establishment and functioning of DNA laboratories and the National DNA Data Bank, their planning, organisational structure, size, number, location, manpower, infrastructure, monitoring of their performance and activities, upgradation of DNA laboratories and making recommendations on funds required for such purposes;"**

6.44.2 **In addition, the Committee recommends that a new sub-section Clause 12 (b) be introduced as under: -**

> **"(b) issue guidelines, standards and procedures for the establishment and functioning of the DNA Labs and the National DNA Data Bank;".**

6.44.3 **Consequently, the remaining sub- clauses are renumbered in ascending order.**

6.45 Clause 12 (b)

The Committee adopts the Clause without modification.

6.46 Clause 12 (c)

The Committee recommends that the words "DNA Data Banks" be modified to "the National DNA Data Bank".

6.47 Clause 12 (d)

The Committee adopts the Clause without modification.

6.48 Clause 12 (e)

The Committee recommends that the words "DNA Data Banks" be modified to "the National DNA Data Bank".

6.49 Clause 12 (f)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.50 Clause 12 (g)

The Committee adopts the Clause without modification.

6.51 Clause 12 (h)

The Committee adopts the Clause without modification.

6.52 Clause 12 (i)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.53 Clause 12 (i)(i) to 12 (i)(ii)

The Committee adopts the Clauses without modification.

6.54 Clause 12 (i)(iii)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.55 Clause 12 (i)(iv)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.56 Clause 12 (j)

The Committee adopts the Clause without modification.

6.57 Clause 12 (k)(i) to 12 (k)(iii)

The Committee adopts the Clauses without modification.

6.58 Clause 12 (k)(iv)

The Committee recommends modification of this Clause to read as follows:

> **"(iv) timely removal and destruction of DNA profiles and information that (a) is obsolete, expunged, or inaccurate; or (b) after the purpose for which DNA information has been collected has been served; and"**

6.59 Clause 12 (k)(v)

The Committee adopts the Clause without modification.

6.60 Clause 12 (l) to (m)

The Committee adopts the Clauses without modification.

6.61 Clause 12 (n)

The Committee recommends that the words "DNA testing" be replaced by "DNA profiling".

6.62 Clause 12 (o)

The Committee adopts clause without modification.

6.63 Clause 12 (p) to (q)

The Committee adopts the Clauses without modification

6.64 Clause 13 (1)

6.64.1 **The Committee holds a strong view that the Bill must limit its scope to regulation of DNA profiling for the purpose stated in the long and short titles of the amended Bill. It should not seek to regulate all other DNA testing. <u>The Committee, therefore, recommends that the words in the Clause "analysing or any other procedure to generate data and perform analysis relating thereto" be deleted.</u>**

6.64.2 **The Committee also recommends the modification of the word, "testing" to "profiling" in the same Clause.**

6.64.3 **The Committee further recommends that the word "testing" in the first Proviso to the Clause be replaced by the word "profiling".**

6.65 Clause 13 (2) to (4)

The Committee adopts the Clauses without modification.

6.66 Clause 14 (1)

The Committee adopts the Clause without modification.

6.67 Clause 14 (2)

The Committee recommends the addition of the following words ", from the date of approval of the accreditation". The amended Clause will read as under: -

> **"The accreditation or renewal of accreditation under this section shall be valid for a period of two years, from the date of approval of the accreditation."**

6.68 Clause 15 (1)(a)

The Committee recommends the deletion of the Clause in its entirety, since there may be a need to build capacity in labs, even if they may have not undertaken DNA profiling during the period when they have been authorised.

6.69 Clause 15 (1)(b) to (e)

The Committee adopts the Clauses without modification.

6.70 Clause 15 (2) to (3)

The Committee adopts the Clauses without modification.

6.71 Clause 15 (4)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.72 Clause 16

The Committee adopts the Clause without modification.

6.73 Clause 17 (1)

The Committee recommends that the words "DNA testing" be modified to "DNA profiling".

6.74 Clause 17 (1)(a)

The Committee recommends that the word "testing" may be replaced by the word "profiling".

6.75 Clause 17 (1)(b) to (c)

The Committee adopts the Clauses without modification.

6.76 Clause 17 (1)(d)

The Committee feels that this provision should prevent DNA labs from creating their own databases, and the National DNA Data Bank should be the sole repository of DNA profiles. **The Committee therefore recommends that the words "DNA data" be modified to "DNA profiles". The Committee further recommends the deletion of the words "and maintained" and "and the Regional DNA Data Bank". Further, the Committee recommends addition of new sub-section Clause 17 (1)(e), "(e) remove DNA profile after sharing it with the National DNA Data Bank".**

6.77 Clause 17 (2)

The Committee is of the view that only the DNA profile that will be in the National DNA Data Bank, and that the testing will be in accordance with regulations. **The Committee, therefore, recommends that the words "DNA testing" be modified to "DNA profiling".**

6.78 Clause 18

The Committee adopts the Clause without modification.

6.79 Clause 19

The Committee recommends that the words "incharge" be modified to "person incharge".

6.80 Clause 19 (a)

The Committee recommends that the words "testing" be modified to "profiling".

6.81 Clause 19 (b) to (c)

The Committee adopts the Clauses without modification.

6.82 Clause 20 (1)(a) to (d)

The Committee adopts the Clauses without modification.

6.83 Clause 20 (1)(e)

The Committee is of the opinion that there is no need for labs to maintain indices, since there is an additional risk with multiplicity of indices and databases. The Committee recommends the deletion of the Clause in its entirety.

6.84 Clause 20 (1)(f) to (i)

The Committee adopts the Clauses without modification.

6.85 Clause 20 (1)(j)

The Committee is of the opinion that the Bill need not specify costs. This can easily be contained in a notification issued from time to time. The Committee therefore recommends the deletion of the words "not exceeding twenty-five thousand rupees" and replaced by the words "which may be notified from time to time". The Committee further recommends that the word "testing" may be replaced by the word "profiling".

6.86 Clause 20 (2)

The Committee recommends that the words "DNA Data Bank" be modified to "National DNA Data Bank".

6.87 Clause 20 (2)(a)

The Committee recommends that the words "or remaining material" is modified to "and remaining material,".

6.88 Clause 20 (2)(b)

The Committee recommends that the words "or remaining material" is modified to "and remaining material,".

6.89 Clause 20 (3)(a) to (c)

The Committee adopts the Clauses without modification.

6.90 Clause 21 (1)

The Committee adopts the Clause without modification.

6.91 Clause 21 (2)

The Committee adopts the Clause without modification.

6.92 Clause 21 (3)

After a careful consideration of different points of view expressed by some Members, the Committee recommends the following modification:

"The Magistrate, if satisfied that there is reasonable cause to believe that the bodily substance may confirm or disprove whether the person so arrested was involved in committing the offence, order for taking of bodily substance from such person after giving the such person a hearing and thereafter passing a reasoned order."

6.93 Clause 22 (1)

The Committee recommends that the words "Subject to sub-section (2)" be deleted, and the words "DNA testing be replaced by the words "DNA profiling".

6.94 Clause 22 (1)(a) to (c)

The Committee adopts the Clauses without modification.

6.95 Clause 22 (2)

After a careful consideration of different views expressed by some members, the Committee recommends the modification of this clause as follows:

"If the person giving the voluntary consent is below the age of eighteen years and the consent of the parent or guardian of such person is refused or cannot be obtained, the person investigating the case may make an appropriate application to the Magistrate having jurisdiction, for obtaining such bodily substances and the Magistrate, if satisfied that there is reasonable cause from taking the bodily substances from such person, order for taking of bodily substances from that person and after giving a hearing to the parent or guardian and thereafter passing a reasoned order."

6.96 Clause 23 (1)

The Committee recommends that the words "DNA testing" be modified to "DNA profiling".

6.97 Clause 23 (1)(a)

The Committee recommends that the word "or" be added to the end of the Clause. The Clause may be amended as under:-

"(a) bodily substances; or"

6.98 Clause 23 (1)(b)

The Committee recommends that the word "or" be added to the end of the Clause. The Clause may be amended as under:- "(b) scene of occurrence or scene of crime; or"

6.99 Clause 23 (1)(c)

The Committee recommends the word "or" is deleted from the Clause.

6.100 Clause 23 (1)(d)

The Committee recommends the deletion of the Clause in its entirety.

6.101 Clause 23 (2)(a)

The Committee adopts the Clause without modification.

6.102 Clause 23 (2)(b)

After a careful consideration of different views expressed by some members, the Committee recommends the following modification to the Proviso:

> **"Provided that before collecting bodily substances for DNA testing of a victim or a person reasonably suspected of being a victim who is alive, or a relative of a missing person, or a minor or a disabled person, written consent of such victim or such relative or the parent or guardian of such minor or disabled person shall be obtained and in case of refusal, the person investigating the case may make an application to the Magistrate having jurisdiction, for obtaining such bodily substances and the Magistrate, if satisfied that there is reasonable cause for taking the bodily substances from such person, order for taking of bodily substances from that person after hearing the person concerned and thereafter passing a reasoned order."**

6.103 Clause 23 (3)(a)

The Committee adopts the Clause without modification.

6.104 Clause 23 (3)(b)(i) to (v)

The Committee adopts the Clauses without modification.

6.105 Clause 23 (3)(b)(vi)

There is no current technology to derive DNA profile from photographs and videos, and therefore it is unnecessary. **The Committee, therefore, recommends the deletion of the Clause in its entirety.**

6.106 Clause 23 (3)(c)(i)

There is no current technology to derive DNA profile from these. **The Committee recommends the deletion of the Clause in its entirety.**

6.107 Clause 23 (3)(c)(ii) to (v)

The Committee adopts the Clauses without modification.

6.108 Clause 23 (3)(c)(vi)

There is no current technology to derive DNA profile from these. **The Committee recommends the deletion of the Clause in its entirety.**

6.109 Clause 23 (3)(d)(i) to (vi)

The Committee adopts the Clauses without modification.

6.110 Clause 23 (3)(d)(vii) to (viii)

There is no current technology to derive DNA profile from these. **The Committee recommends the deletion of the Clause in its entirety.**

6.111 Clause 24

The Committee recommends the words "for re-examination" be modified by the words "for re-examination by another accredited DNA laboratory". The Clause may be amended as under:

> **"If the trial court is satisfied with the plea of the accused person that the bodily substances taken from such person or collected from the place of occurrence of crime had been contaminated, the court may direct the taking of fresh bodily substances for re-examination by another accredited DNA laboratory".**

6.112 Clause 25 (1)

The Committee recommends the words "and such number of Regional DNA Data Banks for every State, or two or more States, as it may deem necessary" be deleted.

6.113 Clause 25 (2)

The Committee recommends the deletion of the Clause in its entirety.

6.114 Clause 25 (3)

The Committee recommends the deletion of the words "receive DNA data from Regional DNA Data Banks and shall" from the Clause.

6.115 Clause 26

The Committee recommends that the words "Every DNA Data Bank" be modified to "The National DNA Data Bank".

6.116 Clause 26 (1)(a)

The Committee's observations on Clause 2 (1) (iv) apply to this Clause as well.

6.117 Clause 26 (1)(b)

6.117.1 **Some members of the Committee are of the view that the fundamental right to privacy of suspects or undertrials will be infringed if their DNA, which may be obtained with written consent as recommended by the Committee, is held in an indexed data bank. Further, it may be misused for targeting certain categories of people, and hence should not be held in any DNA data bank. These concerns and fears have necessarily to be addressed by the Government.**

6.117.2 **<u>However, keeping in view the views expressed by a number of other members, the Committee recommends retention of this Clause.</u>**

6.118 Clause 26 (1)(c) to (e)

The Committee adopts the Clauses without modification.

6.119 Clause 26 (2)

The Committee recommends that the words "every DNA Data Bank" be modified to "the National DNA Data Bank".

6.120 Clause 26 (2)(a)

Here again some Members are of the opinion that the words "suspects index' or 'undertrials index' should be deleted from the Clause. However, keeping in view the opinion expressed by other Members and also the observations made by the Committee on this matter earlier, the Committee recommends retention of this Clause without modification.

6.121 Clause 26 (2)(b)

The observations made by the Committee in regard to Clause 26(2) (a) apply to this Clause as well.

6.122 Clause 26 (3)

The Committee recommends that the words, "include information of data based on DNA testing and records relating thereto" be modified to "contain the DNA profile".

6.123 Clause 27 (1)

The Committee adopts the Clause without modification.

6.124 Clause 27 (2)

The Committee is of the considered view that the Director of the National DNA Data Bank requires expertise in information technology, database management etc. The National DNA Data Bank is not doing any DNA analysis. It is only storing and retrieving data from various indices. Hence an expert in biological sciences is not a necessary condition, as long as they are familiar with the subject. The Committee, therefore, recommends that the words in "biological sciences" be modified with the words "information technology and database management, along with a familiarity with biological sciences".

6.125 Clause 27 (3)

The Committee recommends that the words "Director to the Government of India" be modified to "Joint Secretary to the Government of India". The Clause may be amended as under: -

"The Director of the National DNA Data Bank shall be not below the rank of a Joint Secretary to the Government of India or equivalent, and shall function under the supervision and control of the Board".

6.126 Clause 27 (4)

The Committee adopts the Clause without modification.

6.127 Clause 27 (5)

The Committee is of the considered view that there is no need for Regional Data Banks. <u>The Committee, therefore, recommends the deletion of the Clause in its entirety.</u>

6.128 Clause 28 (1)

The Committee recommends the deletion of the words "and the Regional DNA Data Banks" from the Clause.

6.129 Clause 28 (2)

The Committee recommends the deletion of the words "and the Director of each of the Regional DNA Data Bank" from the Clause.

6.130 Clause 28 (3)

The Committee recommends the words "assist the DNA Data Banks" be modified to "assist the National DNA Data Bank".

6.131 Clause 29 (1)

The Committee recommends that the words "in the DNA Data Bank" be modified to "in the National DNA Data Bank". The Committee further recommends the deletion of the proviso in its entirety since the purpose is addressed in the amended Clause 21.

6.132 Clause 29 (2)

6.132.1 **Here too, some Members have serious reservations on the inclusion of the terms 'suspects index' or 'undertrials index' in the Clause. The Committee has made its observations on these concerns which cannot be wished away.**

6.132.2 **While recommending the adoption of the Clause as it stands, the Committee also recommends the words "offenders' index" be modified to "offenders index or Missing Persons index".**

6.132.3 **The Committee further recommends that the words "shall be communicated only to the authorised persons" be modified to "shall be communicated only to the offender and authorised persons".**

6.132.4 **The Committee also recommends that the words "the DNA Data Bank" be modified to "the National DNA Data Bank".**

6.133 Clause 30 (1)

While reiterating its earlier observations on 'crime scene index', 'suspects index' and 'undertrials index', the Committee recommends the adoption of this Clause.

6.134 Clause 30 (1)(a)

The Committee adopts the Clause without modification.

6.135 Clause 30 (1)(b)

The Committee recommends the addition of the words "share the DNA profile and" and deletion of the word "or". The Clause may be amended as under: -

> **"(b) if there is a match between the profiles, share the DNA profile and any information relating to such matching DNA profile;".**

6.136 Clause 30 (1)(c)

The Committee feels that the usage of "Similar" in the Clause is vague and will violate the privacy of relatives of those people whose profiles are in the data bank. The Committee recommends the deletion of the Clause in its entirety.

6.137 Clause 30 (2)

The Committee adopts the Clause without modification.

6.138 Clause 30 (3)

The Committee recommends a modification in the opening sentence of the Clause;

"(3) The Central Government may, in accordance with the regulations notified by the Board and in prior consultation with it,

6.139 Clause 31 (1)

The Committee recommends the deletion of the Clause in its entirety. The Committee recommends the addition of a new sub-section Clause 31 (1) as under: -

"The National Data Bank shall promptly remove the DNA profile entered as an offender within 30 days from the day that the court finds such person not guilty."

6.140 Clause 31 (2)

The Committee recommends the deletion of the Clause in its entirety. The Committee recommends the addition of a new sub-section Clause 31 (2) as under: -

"The National DNA Data Bank shall, on receiving a written request from authorised persons or relatives, of the identification of an unknown deceased person, but whose DNA profile is entered in the unknown deceased persons' index of the National DNA Data Bank, for removal of his DNA profile therefrom, remove the DNA profile of such person from the National DNA Data Bank under intimation to the person concerned, in such manner as may be specified by regulations".

6.141 Clause 31 (3)

The Committee recommends the deletion of the words "neither an offender", "nor a suspect or an undertrial", and "crime scene index or" from the Clause. The Committee also recommends the replacement of the words "DNA Data Bank" with the words "National DNA Data Bank" wherever applicable in the Clause. The Clause may be amended as under: -

"The National DNA Data Bank shall, on receiving a written request of a person whose DNA profile is entered in the missing persons' index of the National DNA Data Bank, for removal of his DNA profile therefrom, remove the DNA profile of such person from the National DNA Data

Bank, under intimation to the person concerned, in such manner as may be specified by regulations:"

6.142 Clause 31 (4)

The Committee recommends the modification of the proviso in the Clause as under: -

"Subject to this section, the procedure for entry, retention and removal of any DNA profile in, or from, the DNA Data Bank shall be such as may be specified by regulations."

6.143 Clause 32 (1)

The Committee recommends the deletion of the words "or the Regional DNA Data Bank" from the Clause.

6.144 Clause 32 (2) to (3)

The Committee adopts the Clauses without modification.

6.145 Clause 32 (4)

The Committee recommends the deletion of the words "or the Regional DNA Data Bank" from the Clause. The Committee further recommends the words "any information relating to DNA profiles, DNA samples" be modified to "any information relating to the National DNA Databank, DNA profiles, DNA samples".

6.146 Clause 33

The Committee recommends the words "facilitating identification of the person and not for any other purpose" be modified to "facilitating identification of the offender, missing person or unknown deceased person, as appropriate, and not for any other purpose". The Committee further recommends that the words "DNA Data Bank" be modified to "the National DNA Data Bank".

6.147 Clause 34

The Committee recommends that the words "a DNA Data Bank" be modified to "the National DNA Data Bank".

6.148 Clause 34 (a) to (d)

The Committee adopts the Clauses without modification. Further, the Committee recommends the addition of a new sub-section Clause 34 (e) with the words "facilitating the identification of missing persons and unidentified deceased persons".

6.149 Clause 34 (e)

The Committee adopts the Clause without modification.

6.150 Clause 34 (f)

The Committee recommends the deletion of the Clause in its entirety as it is too wide and overrides all the legislative limitations and protections that have been proposed.

6.151 Clause 35

The Committee recommends the deletion of the words "and the Regional DNA Data Banks" from the Clause.

6.152 Clause 35 (a) to (b)

The Committee adopts the Clauses without modification.

6.153 Clause 36

The Committee recommends the words "for the purpose of criminal investigation" in line 15 be modified to "for the purpose of that criminal investigation". The Committee further recommends the words "and the result showing either a match or a failure to match" be added to line 20 following the words "being included in the index". The Committee also recommends that the words "DNA Data Bank" be modified to "The National DNA Data Bank" in all such places in the Clause. The amended Clause may be as under: -

> **"A person who is authorised to access an index of the National DNA Data Bank, including information of DNA identification records or DNA profile in that index, may also access that index for the purposes of carrying out one time keyboard search on information obtained from any DNA sample collected for the purpose of that criminal investigation,**

except for a DNA sample voluntarily submitted solely for elimination purposes.

Explanation.— For the purposes of this section, "one time keyboard search" means a search under which information obtained from a DNA sample is compared with the information in the index of the National DNA Data Bank, without resulting in the information obtained from the DNA sample being included in the index."

6.154 Clause 37

The Committee adopts the Clause without modification.

6.155 Clause 37 (a) to (b)

The Committee adopts the Clauses without modification.

6.156 Clause 38 (1)

The Committee recommends that the words "DNA Data Bank" be modified to "the National DNA Data Bank".

6.157 Clause 38 (2)

The Committee recommends the words "in the DNA Data Banks" be modified to "in the National DNA Data Bank".

6.158 Clause 38 (3)

The Committee adopts the Clause without modification.

6.159 Clause 39 to 44

The Committee adopts the Clauses without modification.

6.160 Clause 45

The Committee is of the considered view that even negligent or reckless behaviour can cause irreparable damage to the information stored, and every person who has access to DNA profile, acknowledged as sensitive personal data, should be strictly liable. **The Committee, therefore, recommends the word "wilfully" be deleted. Further, the Committee recommends that the words "DNA Data Bank" be modified with the words "the National DNA Data Bank".**

6.161 Clause 46

The Committee recommends the word "wilfully" be deleted. Further, the Committee recommends that the words "DNA Data Bank" be modified with the words "the National DNA Data Bank"

6.162 Clause 47

The Committee recommends the word "wilfully" be deleted.

6.163 Clause 48

The Committee recommends that the words "DNA Data Bank" be modified with the words "the National DNA Data Bank".

6.164 Clause 49

The Committee recommends the words "knowingly and intentionally" be deleted. The Committee further recommends that the word "testing" be replaced by the word "profiling".

6.165 Clause 50 to 51

The Committee adopts the Clauses in its entirety without modification.

6.166 Clause 52

The Committee recommends the deletion of the words "and Regional DNA Data Banks" from the Clause.

6.167 Clause 53

The Committee recommends the deletion of the words "or the Regional DNA Data Banks" from the Clause.

6.168 Clause 54 to 55

The Committee adopts the Clauses in its entirety without modification.

6.169 Clause 56

The Committee is of the view that the Schedule should be amended only after Parliamentary scrutiny and debate. **The Committee, therefore, recommends the deletion of the Clause in its entirety.**

6.170 Clause 57

The Committee adopts the Clause without modification.

6.171 Clause 58 (1)

The Committee adopts the Clause without modification.

6.172 Clause 58 (2)(a) to (b)

The Committee adopts the Clauses without modification.

6.173 Clause 58 (2)(c)

The Committee recommends that the words "DNA testing" be modified to "DNA profiling".

6.174 Clause 58 (2)(d) to (f)

The Committee adopts the Clauses without modification.

6.175 Clause 58 (2)(g)

The Committee recommends the deletion of the words "and the Director of each of the Regional DNA Data Bank" from the Clause.

6.176 Clause 58 (2)(h) to (k)

The Committee adopts the Clauses without modification.

6.177 Clause 59 (1)

The Committee adopts the Clause without modification.

6.178 Clause 59 (2)(a) to (i)

The Committee adopts the Clauses without modification.

6.179 Clause 59 (2)(j)

The Committee recommends the deletion of the Clause in its entirety in the amended Bill.

6.180 Clause 59 (2)(k)

The Committee adopts the Clause without modification.

6.181 Clause 59 (2)(l)

The Committee recommends the deletion of the words "DNA data from Regional Data Banks" in the Clause. The amended Clause reads as under: -

"(l) the format in which the National DNA Data Bank shall receive and store the DNA profiles under sub-section (3) of section 25;"

6.182 Clause 59 (2)(m) to (n)

The Committee adopts the Clauses without modification.

6.183 Clause 59 (2)(0)

The amended Clause reads as under: -

"(o) the procedure to be followed by the National DNA Data Bank on receipt of a DNA profile, the person to whom the result of matching shall be communicated and the manner of communication under sub-section (1) of section 29;"

6.184 Clause 59 (2)(p) to (s)

6.184.1 **The Committee feels these Clauses are vague. There are only two scenarios for the DNA profile and data to be expunged i.e. when the missing person is traced, or the dead person is identified. It remains unclear how the missing persons index will work.**

6.184.2 **The Committee recommends the deletion of the Clause in its entirety. The Committee further recommends the addition of a sub-section Clause 59 (2)(p) as under:**

"(p) the manner of intimation to a person who has requested removal of their profile from the missing person's index under sub-section (3) of section 31."

6.185 Clause 59 (2)(t)

The Committee adopts the Clause without modification.

6.186 Clause 59 (2)(u)

The Committee adopts this Clause without modification.

6.187 Clause 59 (2)(v)

The Committee adopts the Clause without modification.

6.188 Clause 60 to 61

The Committee adopts the Clauses in its entirety without modification.

6.189 **Schedule**

The Committee observes that the Schedule sets out the various uses for DNA evidence and should be amended by legislation and proper scrutiny by Parliament.

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01.02.2021

Mr. Jairam Ramesh
Chairperson, Parliamentary Standing Committee on Science & Technology, Environment, Forests and Climate Change
New Delhi

SUBJECT: **Revised Dissent Note for the Committee's Report on DNA Technology (Use and Application) Regulation Bill, 2019**

Hon'ble Chairperson,

Appended below is my revised dissent note for the Committee's report on DNA Technology (Use and Application) Regulation Bill, 2019. I would also like to point out that, in my letter dated 11.01.2021, the line "indexing the DNA profiles of non-convicts, especially **convicts** and suspects" must be read as "indexing the DNA profiles of non-convicts, especially **undertrials** and suspects". The drafting error is regretted. I have retained the original copy of the letter hereinbelow.
Furthermore, I would like to place certain issues on record.

1. As recorded in the Memorandum submitted by me to this Committee, my objections are rooted in the evolving best practices on protecting individual privacy and ensuring data security. Any statute that proposes to establish a regulatory mechanism must clearly define the limits within which such regulation is carried out. In this case, the draft statute proposes to regulate, *inter alia*, the manner in which DNA is collected, accessed, indexed and recorded in a database. Therefore, the proposed law must necessarily set standards in light of existing constitutional jurisprudence on right to privacy. It is essential that functioning of the regulatory body is governed by definite statutory safeguards. In other words, if a statute seeks to empower the executive, it must necessarily define the limits of such power.

2. My concern with respect to caste profiling is not limited to current practices adopted by CDFD alone but potential misuse in the future as well. As pointed out in the Memorandum in paragraph 3.3, the concern is to ensure that data collected under this statute is maintained in silos that are not linked to other databases

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containing identifiable information or information that may be used for targeted discrimination of specific groups.

3. With respect to the Supreme Court's judgements on right to privacy, I would like to respectfully point out that it is the role of the Committee to undertake comprehensive scrutiny that better informs parliamentary debate and discussion. An individual's right to privacy cannot be contingent on future experience, especially when it concerns something as sensitive as DNA. Since the nature of data being collected is so intrinsically connected to individual identity, it would be more appropriate to adopt a stricter position that may be relaxed in future when more evidence of its possible effects is available. However, to adopt a "wait and watch approach" over something this significant is not a defensible position.

4. With respect to the Protection of Data Protection Bill, I would like to reiterate my position. An overarching data protection statute is necessary to govern data collection and management in *all* instances. In the absence of a clear framework governing individual right to privacy, public and private entities are guided by narrow standards, leaving much scope for discretion. While specialised bodies are necessary to oversee and regulate niche sectors, overarching regulators are necessary in order to ensure that 'grey areas' in regulation are not exploited. Furthermore, specialised bodies may not be guided by a statutory mandate to protect individuals' privacy in public interest. Neither would they be required to establish effective rights-enforcements and grievance redressal mechanisms. Therefore, when specialised entities notify regulations that contradict broader privacy protections, the general regulator may be empowered to step in. This is why it is essential that one is not satisfied with sector-specific regulators who can then whimsically determine the limits of individual privacy.

5. Multiplicity of regulators, and oversight of one statutory body's regulatory practices by an overarching regulator is not without precedent. For example, in the United Kingdom (UK), *"the National DNA Database (NDNAD) Strategy Board, which oversees the UK database, is scrutinised by the NDNAD Ethics Board, the Biometrics Commissioner, the Forensic Regulator, and the Information*

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Commissioners Office (ICO)"[4]. All of these entities discharge different roles. Unfortunately, some of these roles have been rolled into a single entity under the present Bill, while others (such as that of ICO) do not exist in India currently. The ICO in the UK enforces privacy protections, and provides for an independent redressal system for individuals aggrieved by violations of their privacy. Currently, no parallel to ICO exists in India. In the absence of general rights-enforcement and grievance redressal legislation, individuals will be left in a precarious position. Therefore, I reiterate that this Bill be kept in abeyance till an overarching legislative framework protecting privacy rights is enacted.

6. It is unfair to dismiss the potential fear of misuse by merely stating that such fear exists with respect to almost every law. Any analysis of international best practices on the specific issue of DNA data and profiling will indicate the seriousness with which it is taken. As mentioned above, the United Kingdom has developed an expansive oversight mechanism specifically because the subject-matter is complex, the potential for misuse is high, and the possible harm is so significant. While the safeguards suggested by the Committee may be a step forward from the government's draft, they are inadequate as far as individual privacy is concerned. Parliamentary committees do not analyse potential legislation in a vacuum, they are entrusted with analysing how a law may impact citizens' rights in the broader context. At the risk of repetition, I urge the Committee to consider the ramifications of allowing the government to create a DNA database in the absence of any overarching statutory protections on privacy and data security.

7. It is not my suggestion that DNA evidence is of no value in criminal trials. However, positive anecdotes cannot be cited to assuage the systemic concerns raised by me and many other privacy experts.

Thanking you for your consideration

Asaduddin Owaisi, MP

[4] "GeneWatch UK comments on: The DNA Technology (Use and Application) Regulation Bill, 2019 (October 2019) http://www.genewatch.org/uploads/f03c6d66a9b354535738483c1c3d49e4/comments-on-india-dna-bill-2019.pdf

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11.01.2021

Mr. Jairam Ramesh
Chairperson, Parliamentary Standing Committee on Science & Technology, Environment, Forests and Climate Change
New Delhi

Hon'ble Chairperson,

I have attached herewith a brief Memorandum responding to the Draft DNA Technology (Use and Application) Regulation Bill, 2019. In this regard, it must be noted that the Draft Report of the Committee circulated on 2nd September 2020 is significantly different from the Draft Report of the Committee that has been finalised. It is most regrettable that, while the finalised Draft Report recognises the potential dangers of indexing the DNA profiles of non-convicts, especially convicts and suspects, it has still retained these objectionable provisions.

In this regard, I would like it to be placed on record that I have raised pointed objections to the scheme and scope of this Bill on at least two occasions, including in the meeting held on 31.10.2019. As the verbatim record of the meeting on 31.10.2019 will point out, the Hon'ble Chairperson was himself under the impression that this Bill is doing nothing more than "setting up a regulatory body". Since then, successive draft reports of the Committee have recognised otherwise, and incorporated some of my recommendations.

In the context of a criminal justice system that disproportionately incarcerates Dalits, Muslims and Adivasis, targeted discrimination will be encoded into the law. It must also be pointed out that I had placed on record the practice of collecting caste identity that is followed the Centre for DNA Fingerprinting and Diagnostics (CDFD). You had kindly

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suggested that I was "misinformed" and was possibly confusing it with the Centre for Cellular & Molecular Biology (CCMB). I have attached herewith, for your perusal, the proforma that is used by CDFD.

It must also be noted that this Bill runs afoul the standards that were set in the *Puttaswamy* and *Subramanian Swamy* judgements of the Supreme Court. In the absence of a statutory framework protecting the right to privacy, this Bill will cause irreversible damage to individuals' right to privacy as well as the criminal justice system.

In light of the above, I request that my objections are recorded within the Draft Report and the Memorandum be appended to the final report in the form of a dissenting note.

Thanking you for your consideration

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MEMORANDUM: THE DNA TECHNOLOGY (USE AND APPLICATION) REGULATION BILL, 2019

1. *Background*

1.1. There is no doubt that the use of DNA technology has improved outcomes in criminal trials and investigations across the world. It is also true that the technology is considered to be more reliable than other techniques of investigation

1.2. However, the proposed Bill, as well as the accompanying statements of the Department of Biotechnology, treats the use of DNA as critical to reducing trial court pendency and possibly improving convictions. However, the global experience is more complex and cannot be simplified. For example, in the United Kingdom, the number of crimes solved by DNA evidence actually fell in 2007[5]. This was despite a large increase in the number of DNA profiles in the system.

1.3. Therefore, it is important that DNA technology is not projected as a panacea to the problems of an inadequate criminal justice system. Furthermore, it must be noted that DNA technology, despite its general reliability, is not infallible[6]. In the context of an overburdened criminal justice system with a severe lack of prosecutorial and investigative capacity, expansive powers to access and match DNA profiles can result in severe risks to rule of law and non-arbitrariness.

1.4. In addition to the above, it must be noted that the Bill's key proposal – that of setting up a national database of DNA profiles – is not accompanied by any stringent statutory safeguards. In a world that increasingly sees personal data as an extension of the person, such an arbitrary legislation would not be acceptable. Besides patently risking a citizen's security and impinging on their privacy; this proposal also puts India's national security at risk.

1.5. The proposed Bill is neither in consonance with the high standard set out in the *Puttuswamy*[7] nor with the *Subramanian Swamy*[8] judgments of the Supreme Court of India. The ambit of the *Puttuswamy* judgment makes it clear that protection of

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[5] "Crimes Solved by DNA evidence fall despite millions being added to database", Christopher Hope, The Telegraph, November 11, 2008. Available at: telegraph.co.uk/news/uknews/law-and-order/3418649/Crimes-solved-by-DNA-evidence-fall-despite-millions-being-added-to-database.html

[6] "Are DNA tests infallible?", G Penacino A Sala, et al, International Congress Series Volume 1239, January 2003, Pages 873-877

[7] Justice K. S. Puttaswamy (Retd.) v Union of India Writ Petition (Civil) No 494 Of 2012 (Supreme Court of India, 24 August 2017)

[8] Subramanian Swamy v Central Bureau of Investigation (2014) 8 SCC 682 [58].

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personal information is a facet of the right to privacy guaranteed in the Constitution of India. However, it is disheartening to note that the Bill pays little heed to the judgment. Besides potentially overriding consent under clause 21, the Bill also delegates the management, sharing and retention of DNA data to the Data Bank and the Board. The most brazen instances of this cavalier attitude are in Sections 31(2) and 34(f).

1.6. As the Hon'ble Supreme Court has clarified in *Subramanian Swamy*, undue and excessive delegation of legislative powers to a statutory authority or agency would make the law susceptible to being struck down. This particular Bill delegates the key function of providing procedural and substantive safeguards to the DNA Regulatory Board. This is reflected in the vast powers the Board has been given in section 59 of the proposed Bill.

1.7. Therefore, it is recommended that urgent steps are taken to incorporate substantive safeguards pertaining to the collection, transfer, contamination and matching of DNA. Furthermore, it must be ensured that the revised draft of the Bill prevents excessive and undue delegation to the powers and functions of the Board, as well as the purposes for which DNA information may be used. The manner in which data is retained, shared and controlled must be a matter that Parliament must be concerned with. Within the framework of the *Puttuswamy* judgment, it is not possible to envisage a situation where use of such critical data is managed and controlled by a mere statutory body.

1.8. It must be noted that the expenses pertaining to the lawful and ethical use of DNA requires widespread training (of prosecutors, investigators and even trial court judges) and construction of infrastructure. By the Ministry's own admissions, we currently do not have the capacity to undertake such a mammoth task. Therefore, the Financial Memorandum citing "20 crores" as the total amount required to operationalize the law deserves serious scrutiny.

1.9. DNA is not only used for the detection of crime. It is a unique identifier of a person, and if not recorded or retained with appropriate safeguards, may allow for the identification of a person, and critical information about them. This not only raises concerns about the privacy of individual citizens, but also national security.

1.10. I have elaborated the reasons for my opposition to this Bill herein.

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2. Absence of a Data Protection Law

2.1. We cannot view this Bill in isolation from other legislative and policy developments. The most important is that the government continues to collect citizens' private data without a private data protection law. A statutory protection for private data is critical because it provides a mechanism for enforcement of rights, grievance redressal and independent oversight. When the data being collected is as sensitive as DNA, it requires additional protections.

2.2. Therefore, I would like to record my recommendation that the Bill not be introduced till such time as the Private Data Protection Bill is enacted. For effective privacy protection, an autonomous and independent remedial process is paramount. This can only be achieved when there is an independent regulator such as the Data Protection Authority as envisaged in the Data Protection Bill. However, even the PDP Bill does not provide for a completely independent regulator. It falls short of the internationally accepted requirements for a regulator to be independent of government in its appointment, functioning, investigation and enforcement. The lack of independence of the regulator in the PDP Bill has been raised by Justice Srikrishna among many other experts.

2.3. Therefore, we should ensure that the Data Protection Authority under the proposed PDP Bill is empowered to review the working of the DNA Data Bank and the operation of the law. The Authority must be empowered to identify lapses, recommend course corrections and audit the working of the DNA Laboratories and the DNA Data Bank. Furthermore, citizens should have the right to statutory remedies in case they find that their DNA data was collected, stored or shared unlawfully. It is not possible to entrust the DNA Data Bank without any independent oversight.

3. *Potential Abuse & Absence of Safeguards*

3.1. The absence of procedural and substantive safeguards makes the proposed legislation suspect. It must be noted that the indefinite retention of DNA profiles of persons without a straightforward process for its removal is a violation of a person's right to privacy. Under section 31 of the Bill, data is effectively retained indefinitely because it is preconditioned on police reports or court orders. Furthermore, removal of a DNA profile of someone who is not an offender or suspect or undertrial from the database, would require an application.

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सत्यमेव जयते

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رکن پارلیمنٹ (لوک سبھا)
صدر، کل ہند مجلس اتحاد المسلمین
آفس : دارالسلام، آغاپورہ، حیدرآباد - ۵۰۰۰۰۱
ٹیلیفونس : ۲۴۸۰۲۴۹۲، ۲۴۸۰۲۶۵۵ - ۰۴۰
فیاکس : ۲۴۸۰۸۰۰۸ - ۰۴۰
رہائش : مکان نمبر ۱۴۹-۶-۳ حیدرگوڑہ، حیدرآباد - ۵۰۰۰۲۹
فون : ۲۳۲۲۲۲۷۸ - ۰۴۰
دہلی : ۳۴ اشوک روڈ، نئی دہلی فون : ۲۳۷۱۲۲۰۸ - ۰۱۱

3.2. The realities of our criminal justice system demonstrate vast disparities in arrests and consequent convictions[9]. The indefinite retention of personal information, conditional on court orders, violates the principle of privacy and control over personal information. Therefore, the database is likely to be lopsided and consist of people who are presumed to be innocent in the eyes of law. In such a case, there is no constitutional justification to include their data in a database or index.

3.3. Stringent safeguards and oversight mechanisms need to be incorporated in the Bill to ensure that such critical information is maintained in silos from other databases containing identifiable information of citizens. For example, the Centre for DNA Fingerprinting and Diagnostics collects the caste identity of suspects[10]. In such a context, the use of DNA profiling for insidious and casteist purposes cannot be taken lightly.

3.4. Stringent safeguards are also necessary to ensure that the implicit biases of the criminal justice system do not impact the integrity of the DNA database. While conviction rates have remained abysmally low, the majority of those arrested as undertrials belonged to just three communities: Dalits, Muslims and Adivasis[11]. Therefore, it is urged that the Committee recommend the deletion of all references to inclusion of DNA data pertaining to non-convicts, including suspects and under trials which is proposed to be held in an indexed data bank.

3.5. It must be noted that inclusion of data from crime scenes, suspects and under trials is bound to result in two separate violations of the right to privacy. Firstly, it may result in the violation of an individual's right to privacy, and secondly it can enable widespread surveillance and targeted discrimination of certain groups. Therefore, it is recommended that all references to indices pertaining to suspects, under trials, victims and relatives be removed from the Bill. Accordingly, amendments must be carried out to the following clauses: Clause 2 (1)(xxv), Clause 26 (1)(b), Clause 26 (2)(a), Clause 26 (2)(b), Clause 29 (2), Clause 30(1) and Clause 31(3).

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[9] "Prison Statistics India 2019, National Crime Records Bureau, Ministry of Home Affairs, Government of India. Available at: https://ncrb.gov.in/sites/default/files/PSI-2019-27-08-2020.pdf
[10] Proforma of the CDFD. Available at: http://sacw.net/IMG/pdf/dna_cdfd_id_form.pdf
[11] "NCRB data: Higher share of Dalits, tribals, Muslims in prison than numbers outside", Deeptiman August 31, 2020, Available at: https://indianexpress.com/article/india/ncrb-data-higher-share-of-dalits-tribals-muslims-in-prison-than-numbers-outside-6575446

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3.6. Furthermore, there is no clarity as to the retention of DNA for purposes other than criminal investigations or prosecutions. Although the law permits its use in other areas – including many civil disputes. Will the DNA collected in such cases also be retained in the DNA Data Bank? If yes, will it be indexed? If yes, under which index? It is recommended that Data Banks for both criminal and civil purposes be separated, and different retention and intimation policies be adopted for both.

3.7. Another safeguard absent from this framework is the component of genetic discrimination. The United States and the United Kingdom both have operating frameworks that prohibit the use of genetic information for employment and healthcare insurance[12]

4. *The Myth of 'Infallible' DNA Evidence*

4.1. Besides an increased attention to the gaps in improper collection of DNA evidence, attention is also being paid to the fact that DNA Evidence is based on interpretations of technically competent and trained personnel. It is not infallible and cannot be treated as definite proof.[13] It is essential that technical aspects of DNA profiling are appreciated and accounted for.

4.2. The necessity of remedial and preventive measures is most felt in case of potential procedural lapses. The improper collection or storage of samples can result in contamination – resulting in a compromised response to a query. Similarly, there have been instances where the DNA matches of the accused were found to be incorrect – sometimes, years after conviction[14]. When the freedom and life of a person is at stake, the answer of the legislation cannot be "as specified by regulations". It is necessary that standards of collection and maintenance are encoded in statute, and not left to the "wisdom" of regulators or administrators.

4.3. Furthermore, the Bill must also incorporate defenses that defendants may claim with respect to DNA evidence. There must be burden of due diligence on the testing

[12] Genetic Information Nondiscrimination Act of 2008 (USA, 2008); Equality Act (United Kingdom, 2010)
[13] "DNA in the dock: how flawed techniques send innocent people to prison", Nicola Davis, The Guardian, October 2, 2017. Available at: https://www.theguardian.com/science/2017/oct/02/dna-in-the-dock-how-flawed-techniques-send-innocent-people-to-prison
[14] "The False Promise of DNA Testing", Matthew Shaer, June 2016 Issue, The Atlantic, theatlantic.com/magazine/archive/2016/06/a-reasonable-doubt/480747/

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agency as well as the DNA databank to ensure the conclusions drawn from the information is not only reliable, but in compliance with highest standards of conduct.

5. ***Conclusion***

5.1. The expansive use of Executive discretion and delegation of legislative power is concerning, not only from the perspective of individual rights but also from the perspective of national security

5.2. By any measure, the number of those arrested in India is gigantic, therefore the size of the DNA Data Bank is perhaps going to be largest consolidated collation of citizens' biological information – the most sensitive of all personal information. Its proper safeguarding and strict security are essential for the nation's safety and security from external attack or internal sabotage. Even a small breach in information could render many Indian citizens vulnerable. However, the financial memorandum as well as the Bill make it clear that no such security measures have been thought through.

5.3. It is hoped that the Department would make revisions to the Bill in light of the issues raised hereinabove.

Centre for DNA Fingerprinting and Diagnostics

CDFD

[An autonomous Centre of the Dept. of Biotechnology, Ministry of Science & Technology, Govt. of India]
Tuljaguda Complex [Opp: M.J.Market], Nampally, Hyderabad – 500 001,
Andhra Pradesh State, India.

Affix recent passport size photograph duly attested

Do not Pin /Staple

IDENTIFICATION FORM No.:

[Fill all the columns & strike out whichever is not applicable]

1) Name : _____

2) Father's/Guardian's/Husband's Name : _____

3) Age : [ ] Years [ ] Months [ ] Days

4) Gender [Tick the appropriate] : Male [ ] Female [ ]

5) Caste & Origin of State: : _____

6) Address [Write legibly] : _____

: _____

: _____ Pin _____

7) Visible Genetic Abnormalities if any : _____

8) Description of Sample (Viz. Blood/ Bloodstains Buccal or Semen stain/ /Hair/Swab] : _____

9) Date of sample collection : _____

10) Case/Crime/FIR/MC/OP/OS No. : _____

11) Hon'ble Court / Police Station [Any other specify] : _____

DECLARATION BY DONOR/ GUARDIAN

I, _____ Son/Daughter/Wife/Guardian of Kum/Master _____ hereby declare that the blood is given with my consent to *CDFD*, for DNA fingerprinting. The blood is mine/is of my child and I/child did not receive a blood transfusion within last three months.
(Explained in vernacular)

_____
(Signature or Thumb impression of Donor/Guardian)

_____ ml blood collected on FTA card in the presence of the following witnesses:

1) Name: _____ Signature: _____

2) Name: _____ Signature: _____

3) Name: _____ Signature: _____

4) Name: _____ Signature: _____

[For *CDFD* use only]

CDFD File No. _____ Sample received on : _____

Sample Code No. _____ Received by : _____

Report No. CDFD/LDFS/20 _____ Examined by : _____

Assisted by : _____

Binoy Viswam
Member of Parliament
(Rajya Sabha)

सत्यमेव जयते

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To
Shri Jairam Ramesh,
Chairperson,
Parliamentary Standing Committee on
Science & Technology, Environment, Forests and Climate Change

Respected Chairperson,

At the outset I would like to congratulate the Standing Committee for their preparation of the report on the DNA Technology (Use and Application) Regulation Bill, 2019, despite these unprecedented times. The Report raises important issues with regard to the bill and provides valuable recommendations that must be incorporated into the final legislation. However, I must register my dissent on the report as this law poses a direct threat to the life and liberty of all if passed in its current form.

While I am in agreement regarding the need for a comprehensive law on the use of DNA technology in our legal system, it is equally important to ensure that the law does not violate the principles of our Constitution. The Right to Privacy as enshrined in Part III of the Constitution and its importance highlighted in the landmark judgement of the Hon'ble Supreme Court in *Justice K.S.Puttaswamy(Retd) vs Union Of India*, cannot be infringed upon, especially in a criminal justice system that disproportionately affects marginalized and vulnerable identities. This bill in its structure and imagination fails to address the lacunae created by the lack of a comprehensive data privacy law in the country. Without adequate statutory safeguards to protect against the opacity of the law on the sort of information being collected and its unrestricted usage for a variety of purposes, this law is susceptible to future misuse and abuse. The inevitable misuse of the law is undeniable and must be taken into consideration and protected against while drafting such a law. The failure to acknowledge and safeguard against this reality skews the balance of the law and makes it a tool for the continued targeting of people based on factors like caste, religion, place of birth or political views, etc.

Despite the committee's best efforts to enhance the proposed law, the impact of this law on marginalized and minority communities such as, Dalits, Adivasis, religious and gender minorities, among others, make it impossible for me to support it. In light of the social, political and economic realities of India especially given the history of oppression faced by particular social groups cannot be ignored while considering such laws. It is time that the Government puts a hiatus on the passing of legislations that continue to encroach upon the right to privacy in the name of reasonable restrictions, till the time comprehensive data protection laws are not passed in the country.

Yours sincerely

Binoy Viswam
Leader of CPI Parliamentary Party &
Secretary, National Council

18th January 2021

Member, Standing Committee on Science and Technology, Environment, Forests and Climate Change
Member, Consultative Committee on Environment, Forest and Climate Change

Jairam Ramesh
Member of Parliament (Rajya Sabha)
Chairman
Parliamentary Standing Committee on Science & Technology, Environment, Forests, and Climate Change

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January 15, 2021

Dear Asad:

I have read your dissent note of January 11, 2021 to the draft report of our committee on the DNA Regulatory Board Bill.

As you are well aware I have tried my utmost to accommodate the concerns of each and every member on the DNA Regulatory Board Bill. In the process, I have had to put aside my own reservations on some provisions of the Bill in the interests of an overall consensus. The Bill, as you well know, has been under discussion for over a decade and half and I am sure you will agree with me that our report must be submitted at the earliest. At present, DNA technology is being used for identification without any proper regulatory system in place.

Quite a few suggestions made by you are reflected in the Committee's recommendations. Even so, you have submitted a dissent note and it is being incorporated into the final report. Let me, however, make a couple of personal observations on your note keeping in mind that the objective of the Bill is not over-arching but limited to the establishment of a regulatory board to regulate the use of DNA technology in consonance with international standards (something that our report has explicitly mentioned) in the justice delivery system and the functioning of a national DNA data bank.

1. I agree entirely with you that the use of DNA identification technology in the justice delivery system is neither a panacea nor is it infallible. The report underscores this point and talks of reforms in the justice delivery ecosystem to make the use of DNA identification technology more effective. The opinion of all experts has been that the use of DNA technology --subject to regulations of course--will be a step forward and will improve the justice delivery system as it stands today.

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2. You are concerned with the independence of the proposed DNA Regulatory Board. In fact, our report changes the provisions in the existing Bill drastically to fulfill the objective of keeping the Board independent and professional.

3. You have expressed concern at the collection of caste information by the Centre of DNA Fingerprinting and Diagnostics, Hyderabad. It is certainly true that till a few years ago such information was being sought but I have been assured that this is no longer the case. I have myself seen the revised form-a copy of which I have shared with you—omits the requirement for collecting caste data completely.

4. You have forcefully argued that the Bill falls foul of Supreme Court judgments on the right to privacy. Opinion on this is, however, divided in the larger legal fraternity. It is true that some distinguished jurists are in agreement with your view and our report incorporates their opinion as well (Annexure III). But there are other jurists who disagree and their view is also included in the report. Ultimately, it is for Parliament to take a position. My considered view is that our report provides for safeguards to ensure privacy is not violated wantonly and egregiously. More safeguards should certainly be considered as we gain further experience with the use of technology.

5. You suggest that the DNA Bill should be introduced after Parliament has passed the Private Data Protection Bill. Frankly I do not see the connection since that Bill deals with as different universe of data. You also suggest that the Data Protection Authority proposed in the Private Data Protection Bill should have oversight over the DNA Regulatory Board. I strongly disagree with this view. The oversight should be as in the case of other regulators. One regulator cannot oversee another.

6. You have pointed out potential abuse and absence of safeguards. Actually, the report has gone out of its way to propose safeguards. So there I think you are a little unfair. But yes, potential abuse is not an imaginary fear—but that is true of any legislation. Does it mean therefore that we should not have legislation? The challenge before us is have a law that will minimize potential for abuse through adequate and explicit safeguards which has been included in the report.

7. I agree with you wholly on the need for massive training on the use of DNA technology and this has already been incorporated in our report.

Finally, you may recall that some months back DNA tests conducted by the Central Forensic Science Laboratory in Chandigarh *confirmed* claims by the families concerned that three youth killed by the Indian Army in Shopian district of J&K on July 18th 2020 on the suspicion that they were militants or terrorists were, actually, from Rajouri. I have to admit that some of my reservations on the Bill have been mitigated considerably by this case.

I thank you sincerely for your most active participation in the deliberations of the Committee.

With warm personal regards,

15/1/2021

Shri Asaduddin Owaisi
Member of Parliament
New Delhi

Response on the Dissent Note of Shri Asaduddin Owaisi, Hon'ble MP, Lok Sabha on the DNA Bill

S. No.	Observations as per the Dissent Note	Response from DBT
1.	DNA technology, despite its general reliability, is not infallible.	Under ideal experimental conditions, the principle/concept of the DNA technology is infallible. For example, the publication (enclosed) shows that in 2000, an additional four loci were added to the multiplex, which was renamed SGM Plus, thereby reducing the match probability to less than 10^{-13}. The match probabilities obtained with STR multiplexes are so low that their reciprocals vastly exceed the entire human population (refer page no.743 of the publication).
2.	Setting up of a national database of DNA profiles is not accompanied by any stringent statutory safeguards.	The Chapter VI *"Protection of Information"* covers security and confidentiality of information; use of DNA profiles, DNA samples and records for facilitating identification of pesons; restriction on access to information in crime scene index; prohibition on access to information in DNA Data Bank. Under Chapter VIII *"Offences ad Penalties"*, details of Penalty for unauthorized disclosure of information in DNA Data Bank; obtaining information from DNA Data Bank without authorisation; using DNA sample or result without authorisation; unlawful access to information in DNA Data Bank; destruction, alteration, contamination or tampering with biological evidence have been covered.
3.	Theproposed Bill is neither in consonancewith the high standardset out in the PuttuSwamynorwiththe *Subramanian Swamy*judgmentsoftheSupremeCourtofIndia. The ambit of the *Puttuswamy*judgment makes it clear that protection of personalinformationis a facet of the right to privacy guaranteed in the Constitutionof India.However, it is disheartening to note that the Bill pays little head to the judgment. Besidespotentially overriding consent under Clause 21, the Bill also delegates the management,sharing and retention of DNA data to the Data Bank	The judgement of the Supreme Court on K. S. Puttaswamy case is on *"Right to Privacy"*. The Bill's provisions do not in any way infringe on privacy of individuals, subject to the legally permissible balance between privacy infringement on the one hand, and law and order maintenance/national security on the other. Thus, no DNA sample or profile will be obtained,without proper informed consent (Clauses 21 and 22), except for individuals in conflict with the law (and even in such cases, with judicial sanction). As per the Clause 31(2), for persons in conflict with the law, the DNA profiles shall be removed as per court

	and the Board. The most brazeninstancesofthiscavalieratitudeareinSections31(2)and34(f).	orders or upon filing of police report under intimation to him as specified by the regulations.
4.	Excessive delegation of legislative powers to a statutory authority or agency would make the law susceptible to being struck down. This particular Bill delegate the key function of providing procedural and substantive safeguards to the DNA Regulatory Board. This is reflected in the vast powers the Board has been given in Section 59 of the proposed Bill.	The general provisions of this Bill have been framed in consultation with the Law Ministry and the Law Commission of India, and all necessary Clauses have been incorporated based on the existing judgements and provisions which exist in other recently enacted laws.
5.	It must be ensured that the revised draft of the Bill prevents excessive and undue delegation to the powers and functions of the Board, as well as the purposes for which DNA information may be used. The manner in which data is retained, shared and controlled must be a matter that parliament must be concerned with. Within the framework of the Puttuswamy judgement, it is not possible to envisage a situation where use of such critical data is managed and controlled by a mere statutory body.	Procedural details will be covered under the Rules and regulations
6.	The Financial Memorandum citing "20 Crores" as the total amount required to operationalize the law deserves serious scrutiny.	The projected cost is for the setting up of Secretariat, infrastructure for Data Banks and Indices. This is only for the buildings and servers. However, the details cost of generating the DNA profiles will be charged to the agencies who forward the sample for analysis.
7.	DNA is not only used for the detection of crime, it is unique identifier of a person, and if not recorded or retained with appropriate safeguards, may allow for the identification of a person, and critical information about them. This is not only raises concerns about the privacy of individual citizens, but also national security.	The proposed Bill addressed the concern of privacy adequately. The Chapter VI *"Protection of Information* covers the same under security and confidentiality of information; use of DNA profiles, DNA samples and records; restriction on access to information in crime scene index; prohibition on access to information in DNA Data Bank. Details of penalty for unauthorized disclosure/obtaining/unlawful access of information in DNA Data Bank; using DNA sample or result without authorisationhave also been covered under Chapter VIII *"Offences and Penalties"*.
8.	Indefinite retention of DNA profiles of persons without a straightforward process for its removal is a violation of a person's right to privacy. Under Section 31 of the Bill, data is	Under Section 31 of the Bill, data is retained only under Crime Scene Index and not for other categories of individuals.

	effectively retained indefinitely because it is preconditioned on police reports or court orders.	
9.	Stringent safeguards and oversight mechanisms need to be incorporated in the Bill to ensure that such critical information is maintained in silos from other databases containing identifiable information of citizens. for example, the Centre for DNA Fingerprinting and Diagnostics collects the caste identity of suspects. In such a context, the use of DNA profiling for insidious and casteist purposes cannot be taken lightly.	Stringent safeguards and oversight mechanisms have been incorporated under Chapter VI as elaborated above. Regarding caste identity, it is informed that the Identification Form displayed earlier at the website of the CDFD, Hyderabad contained the same with the justification that the allele frequencies are collected from ethnic/country/social/caste sample sets. Based on their allele frequencies, population genetic principles are applied to infer how reasonable it is that a random, unrelated individual could have contributed to the DNA profile. "Caste" has been removed from the "Identification Form" and only the "name of the population" or "population name" to be used for the analysis of DNA profiling data in a scientific manner.
10.	It must be noted that inclusion of data from crime scenes, suspects and under trials is bound to result in two separate violations of the right to privacy. Firstly, it may result in the violation of an individual's right to privacy, and secondly it can enable widespread surveillance and targeted discrimination of certain groups. Therefore, it is recommended that all references to indices pertaining to suspects, under trials, victims and relatives be removed from the Bill. Accordingly, amendments must be carried out to the following clauses: Clause 2 (1)(xxv), Clause 26 (1) (b), Clause 26 (2) (a), Clause 26 (2) (b), Clause 29 (2), Clause 30 (1) and Clause 31 (3).	The Bill has the DNA profiles of suspects and undertrials to assist in solving the criminal cases. However, the DNA profiles of a suspect, after the filing of the police report under the statutory provisions or as per the Order of the Court and that of the undertrial, as per the order of the Court, will be removed from the National DNA Data Bank under intimation to the suspect and the undertrial (as per the Clause 31 of this Bill). Further, protection from any misuse is covered in Chapter VIII of the Bill i.e. Penalty & Offences.
11.	Furthermore, there is no clarity as to the retention of DNA for purposes other than criminal investigations or prosecutions. Although the law permits use in other areas - including many civil disputes. Will the DNA collected in such cases also be retained in the DNA Data Bank? If yes, will it be indexed? If yes,	The categories under which the data will be maintained have been covered under Clause 26 (1) of the proposed Bill. As mentioned above also, data will only be retained under Crime Scene Index and not for other categories of individuals.

	under which index? It is recommended that Data Banks for both criminal and civil purposes be separated, and different retention and intimation policies be adopted for both.	
12.	Another safeguard absent from this framework is the component of genetic discrimination. the United States and the United Kingdom both have operating frameworks that prohibit the use of genetic information for employment and healthcare insurance.	Since DNA profiling data under this Bill has no relevance with genetic discrimination, this component is not a part of this Bill. The purpose of the proposed Bill is to regulate use of DNA technology to establish the identity of an individual.
13.	The necessity of remedial and preventive measures is most felt in case of potential procedural lapses. The improper collection or storage of samples can result in contamination - resulting in a compromised response to a query. Similarly, there have been instances where the DNA matches of the accused were found to be incorrect - sometimes years after conviction. when the freedom and life of a person is at stake, the answer of the legislation cannot be "as specified by regulations". It is necessary that standards of collection and maintenance are encoded in statue, and not left to the "wisdom" of regulators or administrators.	The Chapter IV on Obligation of DNA laboratories covers preventive measures to be taken by the DNA laboratories. Every DNA laboratory, which has been granted accreditation for undertaking DNA testing or any other procedure under this Act will follow standards and procedures for quality assurance in the collection, storage, testing and analysis of DNA sample, etc. which are developed by scientific experts. Further, in the Clause 24 of this Chapter, it is mentioned that if the trial court is satisfied with the plea of the accused person that the bodily substances taken from such person or collected from the place of occurrence of crime had been contaminated, the Court may direct the taking of fresh bodily substances for re-examination.

CLARIFICATION RECEIVED FROM DEPARTMENT OF BIOTECHNOLOGY OF REQUIREMENT OF CASTE DATA BY CENTRE FOR DNA FINGERPRINTING AND DIAGNOSTICS, HYDERABAD

For DNA profiling analysis, why is the information on caste of a person required?

If a DNA profile from a suspect does not match the evidence from a crime scene or alleged father in a paternity dispute, then we can reliably conclude that the individual in question did not contribute the biological sample recovered from the crime scene or not a biological father in case of paternity dispute. But the profile from a suspect match with evidence, there is a need to support the results with statistical calculation whether thealleles are from the same individual or is there someone else out there who might just happen to match the evidence. Allele frequencies are collected from ethnic/country/social/caste sample sets. Based on their allele frequencies, population genetic principles are applied to infer how reasonable it is that a random, unrelated individual could have contributed to the DNA profile.

Let us presume that the DNA marker '12' is identified at one of the positions for a given individual. The value of this information in identifying that individual depends upon how many other individuals in the population also possess the same marker '12' at that position, and this is referred to as 'allele frequency'. The more the number of individuals who possess '12' at that position, the less value it would have in uniquely identifying a given person.

Hence for an expert opinion to be provided in a court of law on DNA marker-based individual identification, it is essential that allele frequencies are known for all DNA markers. Since Indian societies are endogamous (that is, marriages most often occur within communities), the allele frequency of the marker '12' can vary from one community to another. Thus, allele frequency tables have been prepared for different castes, and the expert opinion then is based on which caste to which a particular individual belongs.

An analogy may also be drawn here to clinical practice, where an anaesthesiologist in South India would ask and record the caste of any patient who is to be taken up for surgery. The endogamous Arya Vysya community has a higher proportion of individuals with genetic deficiency of pseudocholinesterase, which would render them liable to serious complications and death were the otherwise commonly used anaesthetic succinylcholine to be administered to them.

As per the advice, "caste" has been removed from the "Identification Form" and uploaded in the CDFD website. In place of the "caste" in the Identification Form, only "name of the population" or "population name" to be used for the analysis of DNA profiling data in a scientific manner.

//REVISED//

Centre for DNA Fingerprinting and Diagnostics *CDFD*

[An autonomous Centre of the Dept. of Biotechnology, Ministry of Science & Technology, Govt. of India]
Opp. Metro Rail Pillar No. NUP-9, Inner Ring Road, Uppal, Hyderabad - 500 039
Telangana State, India.

Tel No. 040 -2721 6000 / 2721 6142 / 2721 6143
Fax No. 040-2721 6008

Affix recent passport size photograph duly attested

Do not Pin /Staple

IDENTIFICATION FORM No.:

[Fill all the columns & strike out whichever is not applicable]

1) Name : _____

2) Father's/Guardian's/Husband's Name : _____

3) Age : ____ Years ____ Months ____ Days

4) Gender [Tick the appropriate] : Male ☐ Female ☐

5) Origin of State: _____

6) Address [Write legibly] : _____

: _____

: _____ Pin _____

7) Visible Genetic Abnormalities if any : _____

8) Description of Sample [Viz. Blood/ Bloodstains Buccal or Semen stain/ /Hair/Swab] : _____

9) Date of sample collection : _____

10) Case/Crime/FIR/MC/OP/OS No. : _____

11) Hon'ble Court / Police Station [Any other specify] : _____

DECLARATION BY DONOR/ GUARDIAN

I, _____ Son/Daughter/Wife/Guardian of Kum/Master _____ hereby declare that the blood is given with my consent to *CDFD*, for DNA fingerprinting. The blood is mine/is of my child and I/child did not receive a blood transfusion within last three months.
(Explained in vernacular)

_____
(Signature or Thumb Impression of Donor/Guardian)

____ml blood collected on FTA card/ Blood card in the presence of the following witnesses:

1) Name: _____ Signature: _____

2) Name: _____ Signature: _____

3) Name: _____ Signature: _____

4) Name: _____ Signature: _____

[For *CDFD* use only]

CDFD File No. _____ Sample received on : _____

Sample Code No. _____ Received by : _____

Report No. CDFD/LDFS/20 _____ Examined by : _____

Assisted by : _____

ENCODED EVIDENCE: DNA IN FORENSIC ANALYSIS

Mark A. Jobling and Peter Gill‡*

Abstract | Sherlock Holmes said "it has long been an axiom of mine that the little things are infinitely the most important", but never imagined that such a little thing, the DNA molecule, could become perhaps the most powerful single tool in the multifaceted fight against crime. Twenty years after the development of DNA fingerprinting, forensic DNA analysis is key to the conviction or exoneration of suspects and the identification of victims of crimes, accidents and disasters, driving the development of innovative methods in molecular genetics, statistics and the use of massive intelligence databases.

DNA FINGERPRINTING
Generation of a pattern of bands, by Southern blotting and hybridization with a multilocus probe, which is highly individual-specific.

FORENSIC GENETICS
The application of genetics for the resolution of legal issues.

PATERNITY TESTING
Determining whether or not a particular man is the father of a child, using genetic analysis. This generally uses similar autosomal markers to individual identification work.

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Forensic science (known in some countries as legal medicine) is a specialism that aims to help judges and juries solve legal issues, not only in criminal law but also in civil cases. The field has great breadth, crossing the boundaries between biology, chemistry, physics and mathematics, and including disciplines as varied as botany and ballistics, and the analysis of fingerprints, ear-prints, recorded sound and handwriting. Over the past 20 years, however, one particular biological tool has revolutionized forensic investigations — the analysis of DNA. As all living things contain DNA, and all DNA exhibits variability both among and within species, any biological material associated with a legal case carries in it information about its source.

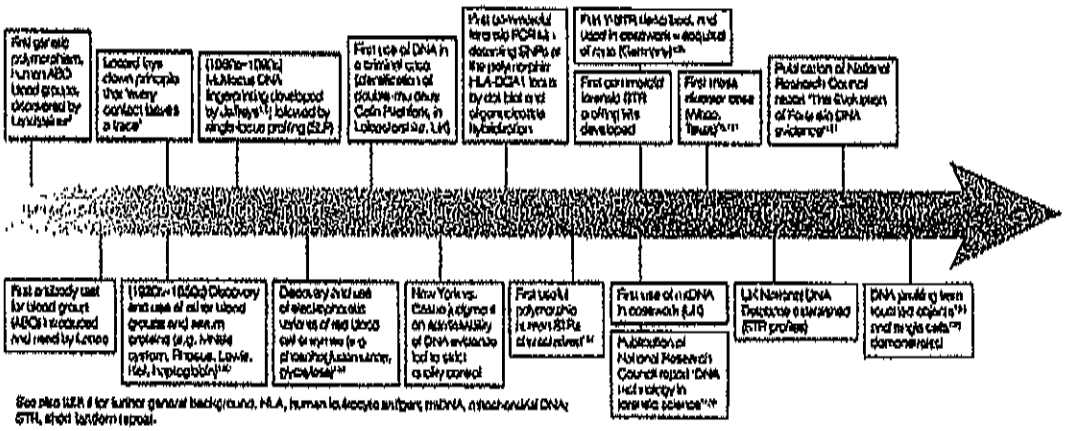
In this review, with the twentieth anniversary approaching of the development of DNA FINGERPRINTING[1,2] — the first molecular genetic forensic technique — we take this opportunity to present an overview of the field. DNA analysis has evolved to become an indispensable and routine part of modern forensic casework, employing extremely sensitive PCR-based techniques to analyse biological material. Suspects can be linked to crime scenes, or one crime scene to another, using DNA evidence from as little as the saliva on a cigarette butt, skin cells on a steering wheel or pet hairs on clothing. Large DNA databases can be rapidly interrogated for matches to DNA profiles found at the scene of a crime, or even partial matches to close relatives of a perpetrator. Undetected 'cold' cases involving sexual assault can be solved decades after investigations were begun by analysing degraded DNA from stored swabs or microscope slides. Victims of mass disasters such as air crashes, where physical identification might be impossible, can be identified unambiguously in days. However, as powerful as DNA analysis is, it is far *from* being the *sine qua non* of forensic casework. DNA evidence must always be considered within the framework of other evidence of many types, and the role of the forensic geneticist is not to make presumptions of guilt or innocence, but to provide unbiased information to judge and jury.

We concentrate here on the analysis of human DNA, including a discussion of recent massive forensic cases following wars and disasters. However, we also describe applications of non-human DNA analysis, in particular the use of animal and plant DNA-typing and the field of 'microbial forensics', which has expanded as a response to the threat of bioterrorism. Finally, we ask what the future holds for FORENSIC GENETICS, including a consideration of new technological developments and ethical issues arising from expanding DNA databases. PATERNITY TESTING (reviewed in REF. 3) forms part of the field of forensic genetics and is of great importance in civil and immigration cases, but owing to space restrictions we cannot discuss it here.

The evolution of forensic genetics

The aim of the forensic geneticist is one of attribution — to identify with as much certainty as possible the origin of a biological sample. The amount of variation that is currently accessible in DNA is extremely informative

Timeline | Developments in forensic genetics



See also WEB 1 for further general background. HLA, human leukocyte antigen; mtDNA, mitochondrial DNA; STR, short tandem repeat.

and the degree of certainty can be correspondingly high. However, it was not always this straightforward.

Early markers. The evolution of forensic genetics has been driven by the analysis of human genetic variation, beginning more than a century ago with Karl Landsteiner's discovery[4] of the human ABO blood group polymorphisms and his early realization that this variation was applicable to solving crimes. The TIMELINE summarizes the important developments that have occurred since that time. It is noteworthy that even a simple genetic system such as ABO can be used to show conclusively that a sample did *not* come from a specific person — to prove an 'exclusion'. However, showing that the sample actually *did* come from another specific person is more difficult and depends on the degree of variation revealed by the typing system. Until the 1980s, serological and protein electrophoretic methods were used to access diversity in blood groups and polymorphic proteins, but the main drawback of these markers was that they tended to rapidly degrade or were compromised by bacterial enzymes. In addition, they showed relatively low variability and informativeness when eight systems were used together to analyse a bloodstain, the probability of two unrelated people sharing a combination (the MATCH PROBABILITY, *Pm*) was ~0.01–0.001, but for other body fluids, such as semen, not all markers were present and so the match probability was greater. Also, contamination of body fluid from one person by that from another (a 'mixed stain'), such as in rape cases, was difficult to resolve because the vaginal cellular component tended to mask the contribution from the sperm.

DNA fingerprinting. The DNA revolution began in 1984 with the discovery, by Alec Jeffreys in Leicester, UK, of hypervariable loci known as 'MINISATELLITES'. These were detected by hybridization of probes to Southern blots of restriction-enzyme-digested genomic DNA. Shared 'core sequences' between different minisatellite loci allowed[32] probes to detect many independent minisatellites simultaneously, yielding the hypervariable multi-band patterns known as DNA fingerprints[33]. Using only a single probe, the match probability was estimated to be $<3 \times 10^{-11}$ and two probes together gave a value of $<5 \times 10^{-19}$ (REF 2) — so low that the only individuals sharing DNA fingerprints are monozygotic twins. At the same time, a method known as DIFFERENTIAL LYSIS was developed[34] that selectively enriched the sperm concentration in vaginal fluid/semen mixtures, thereby avoiding the problem of the victim's DNA (which is in great excess) masking the rapist's. This is the only protocol to have remained unchanged throughout the past 20 years.

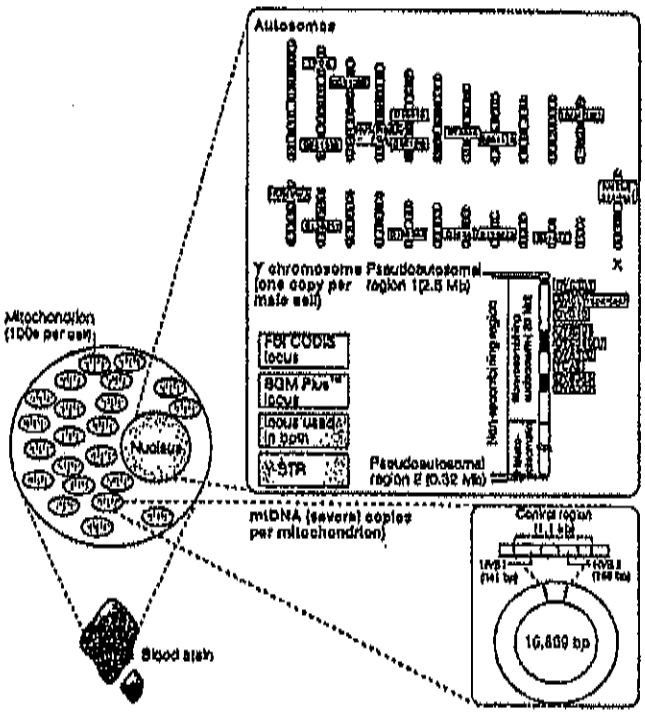
Single-locus probes. Although use of DNA fingerprinting persisted for some years in paternity testing, criminal casework soon concentrated on the use of specific cloned minisatellites — 'single-locus probes' (SLPs) — that each revealed only a single, highly polymorphic, restriction fragment length polymorphism, therefore simplifying interpretation. Typically, four SLPs were used successively to probe a Southern blot, yielding eight hypervariable fragments per individual.

It was with SLPs that the first DNA-based criminal investigation was carried out in this case, culminating in the conviction of Colin Pitchfork for a double rape and homicide in Leicestershire in 1986, encapsulated many of the defining characteristics and virtues of DNA analysis. First, the two killings, spaced three years apart, were shown to have been committed by the same individual, because SLP profiles (and DNA fingerprints) from the crime scenes matched. Second, a suspect who had confessed was excluded because his SLP profile and that found on the victims did not match, demonstrating the power of DNA to exonerate innocent people. Third, the first ever 'mass screen' was organized by the Forensic Science Service, in which all 500 local men not

MATCH PROBABILITY
The chance of two unrelated people sharing a DNA profile.

MINISATELLITES
Loci made up of a number (~10–1,000) of tandemly repeated sequences, each typically 10–100 bp in length. Usually GC-rich and often hypervariable.

DIFFERENTIAL LYSIS
A method to enrich for sperm DNA in a mixture of sperm and epithelial cells by preferentially lysing the latter using detergent and proteinase, so that sperm nuclei can be recovered by centrifugation.



Marker types	Source of variation	Advantages	Disadvantages
STRs	Independent chromosomal assortment; recombination; mutation	Extremely high discrimination power	Very degraded DNA difficult to type
SNPs	Independent chromosomal assortment; recombination; mutation - but low rate	Usable on very degraded DNA	Mostly biallelic, so relatively low discrimination power; mixtures difficult to resolve
STRs	Mutation only	Male-specificity; useful in male-female mixtures	Relatively low discrimination power sharing within patrons; possible population structure problems
SNPs, usually in control region	Mutation only	High copy number, therefore good survival in old/damaged samples	Heteroplasmy; low discrimination power sharing within matrilines; possible population structure problems

Figure 1 | Sources of human genetic variation used in forensic analysis. Further details of the properties of different loci can be found in the text. Heteroplasmy describes the presence of two or more different mitochondrial DNA sequences in the same cell, or individual. FBI CODIS, US Federal Bureau of Investigation Combined DNA Index System; HVS, hypervariable site; Mb, megabase; mtDNA, mitochondrial DNA; SGM, second generation multiplex; STR, short tandem repeat.

ISO17025
A global standard, established by the International Organization for Standardization, for the technical competence of calibration and testing laboratories (see Online links box).

HLA-DQA1 GENE
A polymorphic gene within the MHC class II region on chromosome 6, encoding a human leukocyte antigen cell-surface protein.

SHORT TANDEM REPEAT
A DNA sequence containing a variable number (typically ≤50) of tandemly repeated short (2–6 bp) sequences, such as (GATA)$_n$. Forensic STRs are usually tetrameric/wide repeats, which show little PCR stutter.

eliminated by a preliminary test for conventional protein markers were recruited for DNA testing. Pitchfork showed prescience in realizing the power of DNA analysis: he attempted to evade the screen, but his evasion was detected, and when his profile was shown to match those from the crime scenes, he pleaded guilty to the killings.

Methods in forensic genetics must surmount several hurdles before being applied to casework. First, techniques must be adapted to work on samples that are not pristine and are often limited in quantity. Second, extensive validation is required to demonstrate robustness, to pass the test of admissibility in court[4] (admissibility criteria and legislation differ between countries and even among states in the United States). Finally, quality management systems must be implemented once processes are introduced into casework: external accreditation of forensic laboratories to internationally recognized standards (such as ISO17025) is a prerequisite. Because of these constraints, adoption of new technical developments can sometimes be slow. For example, SLP technology was still widely in use long after methods based on the polymerase chain reaction (PCR) were developed in 1988.

PCR-based methods. DNA amplification by PCR provided an enormous increase in sensitivity, allowing minute amounts of degraded DNA to be analysed, and now forms the basis of all forensic DNA typing. Early PCR-based systems targeted a small number of SNPs in the HLA-DQA1 GENE[7]. Although these systems were useful when the SLP technology failed, discriminating power was low and mixtures were difficult to interpret. Consequently, there was a period when both PCR and SLP tests were done in parallel. It was the discovery of SHORT TANDEM REPEAT (STR)s, discussed in the next section, together with the introduction of automated sequencing technology, that led to the current powerful systems for individual identification. Subsequently, the use of STRs supplanted both the early PCR and SLP tests worldwide once their advantages of high discriminating power, sensitivity and ability to resolve simple mixtures were realized. In addition, the time needed to carry out an analysis was greatly reduced. Reduction of costs resulting from partial automation paved the way for the creation of national STR DNA databases.

Table 1 | International coordinating bodies in forensic genetics

Organization/subgroup	Purpose	Web site
International Society of Forensic Genetics (ISFG) • DNA Commission • European DNA Profiling (EDNAP) group • Paternity Testing Workshops	International organization promoting scientific knowledge in forensic genetics • Makes recommendations for use of DNA markers • Harmonization of European DNA technologies	http://www.isfg.org/ http://www.rechtsmedizin.uni-mainz.de/Remadnau/ednap/ednap.htm
European Network of Forensic Science Institutes (ENFSI)	Mainly represents government institutions; coordinates efforts to develop European DNA databases	www.enfsi.org/
American Academy of Forensic Sciences (AAFS)	Academic body for north American forensic scientists	http://www.aafs.org/
Federal Bureau of Investigation (FBI) • Scientific Working Group DNA Analysis Methods (SWGDAM)	Responsible for setting standards, training and development of the national DNA database	http://www.fbi.gov/publications.htm
National Institute of Science and Technology (NIST) • STRBase	Supports the forensic community by organizing collaborative proficiency exercises • Database giving characteristics of forensically useful short tandem repeats (STRs) and SNPs	http://www.cstl.nist.gov/biotech/strbase/index.htm

Current methods in human identification

Human forensic casework is now done using commercially developed autosomal STR multiplexes (single-tube PCR reactions that amplify multiple loci); other sources of genetic variation that find more specialized uses are autosomal SNPs, and markers on the Y chromosome and mitochondrial DNA (mtDNA) (FIG. 1). Differences in practice between jurisdictions are considerable owing to historical, social and legal circumstances. Detailing these is beyond the scope of this article, so we take a predominantly UK perspective here. However, despite these differences, the rapid development and universal acceptance of new DNA-based technology in forensic genetics is mostly owing to active collaboration between international groups that are coordinated under various academic and government-sponsored institutions (TABLE 1). Recommendations on standard practice, quality issues and collaborative activities are made at a global level.

Autosomal STR profiling. The first widely used multiplex (the 'quadruplex'[14]) consisted of four SIMPLE STRs. However, because it had a high match probability of ~1 in 10,000, the first criminal cases involving autosomal STR profiling were reported in conjunction with SLP profiling. Subsequent addition of two highly variable COMPLEX STRs decreased the match probability to ~1 in

Box 1 | Evaluating the weight of DNA evidence

The evidential weight of a match between crime stain profile and suspect is quantified by the match probability (*Pm*): the chance of two unrelated people sharing a profile. For independently inherited loci, *Pm* is calculated by multiplying the individual allele frequencies in the profile in question (the 'product rule'): the greater the number of loci, and the greater the heterozygosity of each locus, the lower the value of *Pm*. However, there are a number of situations in which *Pm* can be substantially increased:

- If the profile is partial because of degradation, reducing the number of informative loci
- If a suspect and a perpetrator share many alleles by descent (for example, are brothers);
- If a suspect and a perpetrator originate from the same subpopulation.

POPULATION STRUCTURE can cause frequencies of alleles (and hence profiles) to vary between subpopulations — an issue that caused great controversy in the application of SLP profiling[29]. The debate was resolved by applying guidelines to ensure match probabilities quoted in court were conservative (that is, favourable to the defendant). Similar conservatism is now applied to STR profiles[31].

Despite the high discriminating power of very low *Pm* values, interpretation in the courtroom has not been without controversy[32], and this is because of the way that DNA evidence is sometimes presented. A well-known example is the 'prosecutor's fallacy', or 'fallacy of the transposed conditional': suppose a crime is committed in London (population ~7 million) and a crime-scene profile is obtained that has a *Pm* of 10^{-6}. The prosecutor, finding that a defendant matches the profile, might say: 'The odds are a million to one in favour of the defendant being guilty.' But, given the population size, ~7 people in the city are expected to match the profile, so it can then be argued that the odds are actually 7 to 1 in favour of innocence; however, this 'defence fallacy' unrealistically assumes that each of the 7 people has equal probability of guilt, which is untrue as DNA evidence is not used in isolation. This problem of logic can be avoided by an approach based on a likelihood ratio, using conditional probabilities based on prosecution and defence scenarios: the job of the court, based on an evaluation of both DNA and non-DNA evidence, is to decide the ultimate issue of guilt or innocence, given *all* of the evidence. Under complex scenarios with many different variables, 'Bayesian networks'[33,34] — intuitive graphical means to display hypotheses regarding the probabilistic relationships between variables — are a powerful aid to understanding, although they are not intended to supplant the role of the jury.

POPULATION STRUCTURE
The absence of random mating within a population, leading to allele frequency differences among subpopulations.

SIMPLE STR
Short tandem repeat loci composed of uninterrupted runs of a single repeat type.

COMPLEX STR
Short tandem repeat loci containing more than one run of repeats that can be of one or more repeat type.

-63-

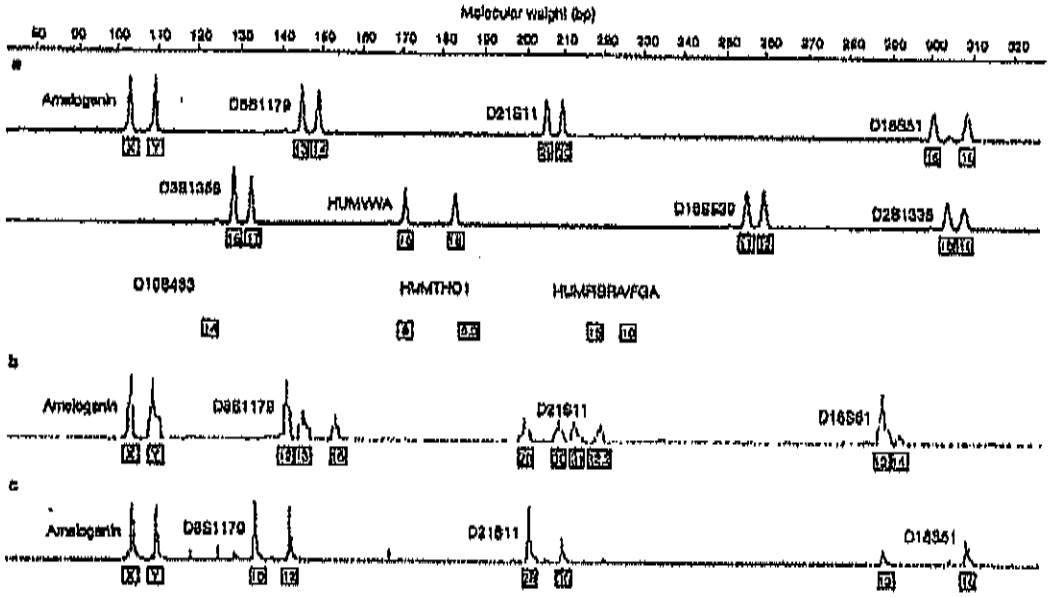


Figure 2 | Electropherograms illustrating autosomal STR profiles. a | An electropherogram of the second-generation multiplex 'SGM Plus' profile from a male, including X- and Y-specific amelogenin products of 106 and 112 bp, respectively. Most short tandem repeats (STRs) are heterozygous and the alleles are evenly balanced. Numbers beneath STR peaks indicate allele sizes in repeat units. The STR profile is displayed in the green, blue and yellow channels of a four-colour fluorescent system, with the red channel being used for a size marker (not shown). b | A typical mixture from two individuals (green channel only shown). Mixtures can only be identified if the alleles of the minor component are above the background 'noise' in an electropherogram (in practice a ratio of ~1:10) and can usually be resolved by inspection[11]. In this example, the contributions are in even proportions — for example, D21S11 shows four alleles where the peaks are approximately equal in height, whereas D18S51 shows two peaks in a 2:1 ratio. The X- and Y-specific amelogenin peaks are of approximately equal height, indicating that this is a mixture from two males. More complex mixtures might require interpretative methods based on likelihood ratios[96,97], calculations based on peak area[12] and consideration of PCR stutter[79], and have led to the development of computer programs to deduce potential underlying genotypes[110,121]. c | A profile (green channel only shown) obtained by 'low copy number' (LCN) testing[103], a method used in the United Kingdom when little DNA (typically <100 pg or <17 diploid genomes) is available. The method uses an increased number of PCR cycles (for example, 34, rather than the usual 28), and leads to marked heterozygote imbalance at some loci (here, D21S11 and D18S51) because of stochastic variation in amplification. Extreme imbalance is drop-out (failure to amplify) of an allele (not shown). Drop-out is a stochastic effect of the limited number of template molecules, and therefore no two amplifications of the same extract will behave the in the same way. The LCN protocol requires duplicate PCR of an extract and only those alleles that are observed in both PCRs are reported. (See also BOX 2.)

50 million. This 'second-generation multiplex' (SGM) also included a PCR assay targeted at the XY-homologous amelogenin genes[9], thereby revealing the sex of a sample donor. It became clear that STRs were more sensitive than other methods and allowed unambiguous assignment of alleles, making the method suitable for the development of databases. In 2000, an additional four loci were added to the multiplex, which was renamed SGM Plus[10], thereby reducing the match probability to less than 10^{-11}. The above account tracks developments in the United Kingdom; events elsewhere unfolded differently, and globally there are now a number of different systems that nonetheless have many loci in common. The US FBI CODIS (Combined DNA Index System) contains 13 STRs plus the amelogenin sex test (FIG. 1), with a match probability lower than that of the UK system. Typically, two separate multiplexes are used in the United States[11], but to improve efficiency, new multiplexes that amplify 16 loci in a single reaction (including amelogenin) have also been introduced[12]. In Germany, eight loci are used, including the *ACTBP2* locus[13]. International collaborations have recommended core loci to facilitate international data exchange — for example, a set of seven for common use in Europe[14]. Detailed information on most forensic STR markers can be found at STRBase (see Online links box) and in REF. 15, which also describes the technology of STR typing.

The match probabilities obtained with STR multiplexes are so low that their reciprocals vastly exceed the entire human population. However, although DNA profiling is often referred to as 'individual identification' and assessments can be made whether or not a DNA profile is unique in an unsampled population[16], it would

ALLELE/LADDER
An accurate marker used to identify alleles at a particular STR, generated by PCR amplification of a series of sequenced alleles from that STR.

ELECTROPHEROGRAM
The graphical output of electrophoresis devices in STR and sequencing analysis, showing fluorescence intensity as a function of molecular weight/ peak at a particular wavelength (colour) corresponds to a specifically labelled molecule of a particular size.

HETEROZYGOTE BALANCE
The proportion of the two alleles of a heterozygote, expressed as the area of the smaller peak divided by the area of the larger peak in an electropherogram.

be a rare case in which everyone on the planet could be considered as the pool of potential contributors for a crime-scene sample[17]. Reporting of DNA evidence in court takes a conservative approach to the low match probabilities and commonly uses likelihood-based methods to take account of the factors applying to a particular case (BOX 1).

Multiplexes are analysed and typed using automated sequencing equipment. These are typically multi-channel capillary electrophoresis systems that are used to detect fluorescently labelled PCR products (FIG. 2a) and are combined with robotics and laboratory information management systems, including bar-coding of samples to reduce operator errors. This automation reduces cost and increases throughput. Interpretation (defining the alleles in a profile) is more difficult to automate. However, there has been progress in converting traditional subjective expert opinion into programmable (heuristic) rules for computer programs (known as 'expert systems'[18]), generally intended to complement, rather than replace, the human expert. These take into account fragment size (accurately measured with respect to internal standard markers and to an ALLELIC LADDER[19] used to identify alleles), ELECTROPHEROGRAM peak height and area and an assessment of HETEROZYGOTE BALANCE, and include automated checks to interpret artefacts such as PCR STUTTER[20]. DNA quality from 'reference samples' (taken from individuals to create databases — see next section) is predictably good and makes automation of typing and interpretation relatively straightforward. In the UK Forensic Science Service, if two expert systems working on different principles agree on a profile it is accepted, but there are regular challenges with 'blind' controls. For casework samples, preliminary assessment is vital to determine the best method of processing; but automation is more difficult because DNA quality and quantity are variable and DNA mixtures are often encountered, complicating interpretation. Anomalous profiles can also arise for biological reasons (such as mutation) and if methods are used that are sensitive enough to detect single DNA molecules ('low copy number'), then laboratory-based contamination of single or multiple alleles is a strong possibility and interpretation strategies are needed to deal with this. These situations are discussed in BOX 2.

STR-based forensic DNA analysis has achieved worldwide public and professional acceptance as a reliable means of individual identification and has had a major impact on criminal justice systems. The increase in sensitivity of DNA methods has allowed the reopening and solving of 'cold' cases and has also led to the exoneration of prisoners (some of whom were awaiting execution) convicted through miscarriages of justice. Most of these cases have been in the United States (see the Innocence Project web site in the Online links box), where post-conviction testing attracts federal funding, although one case in the United Kingdom has been described[21].

DNA databases of autosomal STR profiles. As well as matching a crime-scene profile to that from an apprehended suspect, a match ('hit') can be made to a DNA database of offender profiles (an 'intelligence database'), allowing a new suspect to be investigated. The advances in automation described above have allowed the establishment of such databases, which are now in use or under development in many countries. Criteria for including a profile in a database vary among countries (TABLE 2). The largest example, the UK National DNA Database[22,23], contains (at July 25th 2004) ~2.5 million reference profiles (mostly from buccal scrapes) and ~200,000 crime-scene profiles. Since 1995, there have been more than 550,000 matches between reference profiles and crime-scenes, and more than 30,000 matches between crime scenes. A new method of using the database, 'familial searching', has recently been introduced. In 2003, a lorry driver was killed in Surrey, UK, by a brick thrown through his windscreen. A DNA profile was obtained from the brick, but had no match in the database. A geographically restricted search of the database was carried out for potential close relatives of the perpetrator, under the assumption that close

BOX 2 | Dealing with anomalous autosomal STR profiles

As shown in FIGURE 2, several factors can complicate the interpretation of DNA profiles. These include mixed samples and the availability of only small amounts of DNA, which (in the UK) is analysed by 'low-copy number' (LCN) methods and can lead to allele drop-out. LCN analysis also increases the probability of contamination (additional 'foreign' alleles in the profile), despite stringent precautions to prevent it.

Contamination can be gross and lead to full additional profiles, where typically the negative control will be affected; these can be searched against forensic staff elimination databases and stored in a separate database to allow detection and monitoring of problems such as contamination of plasticware during manufacture[100,101]. Alternatively, contamination can contribute an extra one or two alleles per DNA profile (allele DROP-IN[102,103]), where the negative control is usually unaffected. The probabilities of a match, of drop-out and of contamination (based on computer simulation analysis of negative control data[104]) can be readily incorporated into the calculation of the likelihood ratio (LR) when the significance of the DNA evidence is being assessed[102]; calculations are complex but are aided by a computer program (LoComatioN)[102] that can also combine the results of several profiles into a single LR. Here, we no longer think of a DNA profile either matching or not matching a suspect, because the twin effects of drop-in and drop-out will alter the suspect's apparent profile so that it does not match the crime scene sample, without indicating an exclusion; rather, the probability of the evidence is lowered.

Anomalous profiles can arise from causes other than mixtures but can readily be resolved by careful analysis:

- Mutations in the PCR primer target region can cause allele drop-out or heterozygote imbalance[105,107].
- An STR can be duplicated and segregated in a normal Mendelian fashion or a somatic STR mutation occurring early in development can lead to a three-peak profile for the STR, which might vary between tissues; examples are on STRBase (see Online links and REF. 108).
- The STR D21S11 can reveal three alleles in trisomy 21 cases (reviewed in REF. 109).
- Discordant results in the amelogenin sex test can be observed in rare individuals, including cases of sex-reversal (XX males and XY females) and males[110–112] carrying deletions that remove *AMELY*.
- A true mixed profile can also originate from a single individual. Analysis of DNA from people who had undergone successful bone marrow transplants 25 years previously[113], showed a mixed profile in buccal and fingernail samples; in blood, the recipient's own profile had been completely replaced by that of the donor, whereas in hair, the recipient's profile remained unmixed.

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Table 2 | Characteristics of some national DNA databases

Country (Year established)	Reference profile size	Crime-scene sample size	Suspect to scene hits	Scene to scene hits	Entry criteria for suspects	Entry criteria for convicted offenders	Removal criteria
UK (1995)	2.6 million	200,000	550,000	30,000	Any recordable offence*	Entered as suspect	Never removed, including suspects
USA (1994)	1.62 million	67,000	Figure unavailable	Figure unavailable	No suspects entered, but under revision	Depends on state law	Depends on state law
Germany (1998)	288,840	54,570	13,700	5,500	Offence leading to >1 yr in prison	After court decision	After acquittal or 5–10 years after conviction, if prognosis is good
Austria (1997)	84,740	11,460	3,200	1,350	Any recordable offence‡	Entered as suspect	Only after acquittal
New Zealand (1996)	44,000	6,000	4,000	2,500	No suspects entered	A relevant offence (including ≥7 yr in prison)	Never removed, unless conviction quashed
Switzerland (2000)	42,630	7,240	4,640	5,540	Any recordable offence*	Entered as suspect	After acquittal or 5–30 years after conviction
France (2001)	14,490	1,080	50	70	No suspects entered	Sexual assault and serious crime	40 years after conviction
Finland (1999)	6,170	5,450	2,080	760	Offence leading to >1 yr in prison	Entered as suspect	Only after acquittal
Slovenia (1998)	4,820	2,350	370	80	Any recordable offence*	Entered as suspect	Depends on severity of crime
Netherlands (1997)	4,260	13,700	2,820	4,260	No suspects entered§	Offence leading to >4 yr in prison	20–30 years after conviction
Sweden (2000)	3,980	9,860	2,500	4,750	No suspects entered	Offence leading to >2 yr in prison	10 years after release from prison

*Trial leads to a term of imprisonment. ‡Except when the suspect's DNA is tested for the case. Adapted from NBR 140, with additional information from Peter Schneider and Jan Vanlinder (personal communications). See also BOX 3.

relatives are more likely to share alleles than unrelated people (50% for brothers). This highlighted 150 candidates, leading to the identification of a suspect whose profile matched that on the brick. He was convicted of manslaughter[24].

Legal differences between countries make such speculative searches impossible in some jurisdictions and can also complicate the international exchange of data when crime is itself becoming increasingly international. However, although large databases with permissive entry criteria can be powerful, they also raise ethical questions (BOX 3).

Autosomal SNP typing. Compared to STRs, SNPs have much lower heterozygosities (a per-SNP maximum of 0.5) and so ~80 SNPs are required to approach the low match probability of an STR profile[21] (see BOX 1). In addition, mixtures are especially difficult to resolve for

Box 3 | DNA databases: ethical issues

DNA databases are seen by some as without fault[114], but they have not been without their critics[115,116]. Any criminal whose profile is in a database risks detection in further criminal activity — the probability of identifying a suspect when a crime-scene profile is checked against the UK database is >40%[25]. Culprits are apprehended more quickly and criminals might be deterred from future offending, but it is unclear whether overall crime rates are reduced. The UK database is projected to reach 4 million samples[25], which is ~10% of the population and >30% of 10–50-year-old men (those most likely to offend[26]). This enormous size is a result of the relatively liberal criteria for database entry: most samples are taken (with or without consent) from individuals arrested for offences that could lead to a prison sentence, whereas in some other jurisdictions only more serious offences are considered and a specific degree of connection (decided by a court) between the suspect and the offence is necessary before DNA can be sampled (TABLE 2). One justification given for the United Kingdom practice is that minor criminals might also be perpetrators of more serious crimes — one example is the arrest and subsequent conviction, in 2001, of a man for a murder committed in 1968, triggered by a match between crime-scene DNA evidence and a sample taken from the culprit in connection with a motoring offence[114]. Recent legislative changes allow retention of profiles from exonerated suspects and from individuals profiled during mass screens (albeit with consent).

The use of any database involves a balance between the rights of the individual and the interests of the state; this differs from country to country, and some believe it is tipped too far towards the state in systems like that of the UK[117]. However, the discoverer of DNA fingerprinting, Alec Jeffreys[118], has argued for the UK database to be extended to the entire population, under the auspices of an independent authority, arguing that the current database is discriminatory because some groups in the population are probably overrepresented among suspects. James Watson[119] has called for a global database to fight crime and terrorism — an enormously costly and complex endeavour, raising serious issues in ethics and law[117].

Retention of samples for possible retesting with future technologies (as is done in the UK) is also considered controversial by some, who argue that it could reveal private genetic information.

PCR STUTTER
A PCR artefact in which, as well as a band of the expected size, an additional band is seen which is typically one repeat unit smaller, resulting from slippage synthesis errors by the PCR polymerase

DROP-IN
Addition of (typically) one or two alleles to a DNA profile, owing to contamination.

Box 4 | The challenge of large human identification cases

DNA analysis has a key role in the identification of victims of accidents, disasters and wars, therefore aiding emotional closure for bereaved relatives. Reference material often comes from these relatives[3] — for example, an approach used early on in the identification of the skeletal remains of murder victim Karen Price compared STR alleles with her presumptive parents[110].

An early example of a mass identification case followed the Waco disaster[111,112] in 1993, in which more than 70 occupants of a heavily fortified compound in Waco, Texas, perished in a fire following a siege by US law enforcement agencies. About 40 bodies were unidentifiable by conventional means and, of these, 26 could be identified by quadruplex STR profiling. Reference samples came from living or dead (but positively identified) relatives. For instance, given the alleles present in parents, the possible genotypes of children could be sought among profiles of victims (taking account of the possibility of STR mutations between the generations), and the weight of identification evidence considered on a likelihood basis (BOX 1).

Air crashes, such as the August 1996 Spitsbergen disaster[113] or the September 1998 Swissair flight 111 air crash[12], present problems because of the level of damage to bodies from fragmentation and burning. However, given an accurate list of passenger and crew, the site can be considered a 'closed scene', where there are no unknown victims; families are often among the dead, so allele sharing is expected. Reference profiles can be obtained from personal effects of victims such as clothing or toothbrushes[12], and samples provided by relatives, leading to complete identification.

Without doubt the largest mass identification cases are those arising from wars and genocides, such as that in the former Yugoslavia, where >30,000 people went missing in Bosnia-Herzegovina alone >10,000 bodies required identification (reviewed in NEJM 124). On a comparable scale, and with unique challenges, has been the effort to identify the remains of the estimated 2,819 people who died in the World Trade Center terrorist attacks of September 11th, 2001 (reviewed in NEJM 125). Physical identification was impossible for most victims and mixed profiles were common[126]. Technical developments during the identification process have included:

- new computer programs to deal with large and complex kinship calculations, involving reference samples from ~6,000 relatives and ~5,000 personal effects[127,128];
- novel DNA extraction procedures[129];
- redesigned STR multiplexes ('miniSTRs', based on shorter DNA amplicons[17]) and autosomal SNP multiplexes to allow analysis of severely degraded DNA[115].

Despite these efforts, the remains of ~1,000 people might never be identified[125].

binary markers, although this limitation might be overcome by targeting rare tri-allelic SNPs[16].

The practical advantage of SNP typing is that DNA template size can in principle be only as large as a pair of specific primers; ~50 bp. This is considerably smaller than the ~300 bp needed for successful STR profiling (although special STR multiplexes have been developed that use particularly small amplicons[17]) and makes SNPs of interest for the analysis of severely degraded material. The technical challenges of the World Trade Center disaster (see BOX 4) have led to the application of forensic SNP typing. The European Network of Forensic Science Institutes (ENFSI) and the US FBI Scientific Working Group on DNA Analysis Methods (SWGDAM) (TABLE 1) working groups are assessing potentially useful multiplexes and will make recommendations for global standardization[28], although it is hard to imagine that SNP profiling will replace STR-based systems.

Y-chromosomal analysis. Autosomal STR profiles owe their variability to three processes: independent chromosomal reassortment, recombination and mutation. On the Y chromosome, mutation alone functions to diversify STR HAPLOTYPES. These haplotypes are therefore less diverse than autosomal profiles (genotypes) containing an equivalent number of markers, leading to relatively high average-match probabilities of ~0.003 for 11 Y-STRs[29]. However, Y chromosomes have one crucial forensically useful property: they are confined to males. As most serious offences are committed by men[30], we expect to find their Y chromosomes at crime scenes; in male–female body-fluid mixtures where conventional methods fail to resolve autosomal profiles, Y-STR typing can give specific information about the male component. Although differential lysis often allows autosomal profiling of a rapist, the vasectomized or naturally azoospermic rapist leaves no sperm; in such cases[31], Y-specific profiling is effective, even in the presence of a 4,000-fold excess of female DNA[32]. In multiple rape it might be possible to gain information about the number of assailants.

There are 219 known useful STRs on the Y chromosome[33], but a set of 9 or 11 loci is commonly typed in casework, and there is a large collaborative quality-controlled online population database of more than 24,000 9-loci profiles from 200 populations[34,35]. Clearly, the product rule (see BOX 1) for independently segregating autosomal STRs cannot be applied to markers on the non-recombining Y chromosome and haplotype frequencies are instead often determined simply by counting or by more sophisticated BAYESIAN methods[29]. Excluding STR mutation, all patrilineal relatives (brothers, father, sons, paternal uncles and so on) of a suspect will share his Y haplotype and this needs to be considered when assessing the strength of the evidence[36]. Furthermore, the potential association of surnames inherited through the paternal line[37] with Y haplotypes has led to suggestions that surname prediction from haplotype might be possible. However, the complexity of the relationship[38] probably precludes this approach as an absolute determinant, although it might be powerful if used in the context of a Bayesian method

HAPLOTYPE
The combination of allelic states of a set of polymorphic markers lying on the same DNA molecule, such as the Y chromosome or mtDNA

BAYESIAN
Statistical method, based on Bayes' theorem, that allows inferences to be drawn from both the data themselves and any prior information.

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of analysis. On a larger scale, the Y chromosome shows particularly strong population structure[42] and the availability of local population databases is essential. These difficulties can complicate the evaluation of match significance, but exclusion of a suspect remains straightforward. The use of Y-chromosome analysis will increase, particularly in rape casework, aided by the availability of standardized commercial Y-STR[43] and Y-SNP kits (reviewed in REF. 21).

Mitochondrial DNA. mtDNA shares many of the theoretical disadvantages of the Y chromosome: it is non-recombining, so markers (almost all SNPs, but including length variation in a run of C nucleotides) do not segregate independently, thereby reducing diversity; it is uniparentally inherited (through the mother), so all members of a matriline share a haplotype; and it shows marked population structure[44]. Furthermore, there is the complication of heteroplasmy.

The advantage of mtDNA lies in its copy number, which is between ~200 and 1,700 per cell (reviewed in REF. 45); this means that it has a greater probability of survival than nuclear DNA does. Forensic applications[12,46] include analysis of samples that are old or severely damaged, or low in DNA (such as hair shafts), and include historical criminal cases (see BOX 5). The normal practice is to sequence two segments of the CONTROL REGION that are particularly polymorphic, known as hypervariable segments I and II (HVSI, HVSII). SNPs outside the hypervariable segments will increase the power of mtDNA typing[47,48].

Rather than considering the average-match probability (which is high[17], at ~0.005–0.025), match significance is usually evaluated by the 'counting method' — how many times a specific sequence has been observed in a population database[17,18], with a correction for sampling error. There has been criticism of the quality of some forensic datasets, on the basis of highly improbable sequences that are detectable by phylogenetic analysis[18].

Heteroplasmy can lead to different sequences being found between hairs or tissues in a single individual, and even along the length of a single hair shaft[21]. Mutation, which distinguishes heteroplasmic types, is particularly common at some sites ('hot spots'), but this can be built into the interpretation using a likelihood ratio approach[18]. Shared heteroplasmy between two samples can actually increase the strength of evidence, as was the case in confirming the matrilineal relationship between the putative Tsar Nicholas II and his brother Georgij Romanov[20] (BOX 5).

Putting face and place to a DNA profile

When a profile from a crime scene does not find a 'hit' in an intelligence database, any information that can be deduced from the DNA about the donor is useful. A basic piece of information, sex, has already been mentioned, but two other areas, population of origin and phenotypic features, have also been investigated and used to aid criminal investigations.

Deducing population of origin. Most (~85%; REFS 34,35) genetic variation is found within human populations. Nonetheless, individuals from different populations are, on average, slightly more different from each other than are individuals from the same population, and this allows sets of markers to be used to predict population of origin (reviewed in REF. 36). Similar methods might be applicable to the analysis of a crime-scene sample.

Forensic STR profiles are very variable among individuals and so show low inter-population variance (F_{ST}). They are therefore not ideal for predicting population of origin. The ability of SGM Plus profiles to classify individuals into one of five police-defined 'ethnic groups' has been assessed[37], and showed, for example, that 67% of profiles known to be from

Box 5 | Forensic DNA analysis of historical samples — the case of the Russian royal family

The first DNA-based historical criminal investigation was carried out in 1994 when bones purported to be those of the Russian royal family (the Romanovs), executed by a Bolshevik firing squad in 1918, were analysed using a combination of mitochondrial DNA (mtDNA) sequencing, sex typing, STR analysis and PCR cloning[20].

The samples were more than 70 years old, yet yielded autosomal STR profiles consistent with the presence of a family group and mtDNA sequences matching reference sequences from living matrilineal relatives: the sequence obtained from Prince Philip, Duke of Edinburgh, matched those of the putative Tsarina and her children, whereas those from the Duke of Fife and Princess Xenia Cheremeteff-Sfiri matched that of the putative Tsar Nicholas II, except for one discrepant base. After PCR cloning, the putative Tsar's mtDNA was shown to comprise two different molecules (one of which matched the living reference samples) and was concluded to be an example of heteroplasmy, thought at the time to be rare; this led to speculation about the reliability of the results. However, when an independent analysis was carried out on the remains of the Tsar's brother, Georgij Romanov, by the Armed Forces DNA Identification Laboratory in Rockville, Maryland[20], it was discovered that he shared a heteroplasmy at the same position in the mtDNA molecule; this effectively dispelled any lingering doubts. After a consideration of all of the DNA and non-DNA (anthropological) evidence, the Russian authorities pronounced the remains to be those of the Romanovs.

The remains of one of the Tsar's daughters, Anastasia, were absent from the grave, and controversy surrounded the claim that she escaped execution and survived, under the identity of Anna Anderson. STR analysis[20] of 20-year-old paraffin wax embedded samples from Anderson was inconsistent with her being a daughter of the Tsar and Tsarina. However, the mtDNA sequences matched those of Carl Maucher, a putative maternal relative of a woman named Franziska Schankowska. The mtDNA results were confirmed by an independent group from Penn State University, who concurrently analysed hair shafts purported to have come from Anna Anderson[21].

CONTROL REGION
Part of mitochondrial DNA that is non-coding and therefore more able to accumulate variation than the rest of the molecule.

African-Caribbeans were classified correctly, whereas the remainder were wrongly assigned to other ethnic groups. Despite the misclassification, prediction is useful if it reduces the number of suspect investigations carried out before the actual perpetrator is reached. Policemen are not anthropologists and one problem with interpreting these studies is the over-simplified way in which populations are defined. The haploid Y chromosome and mtDNA show strong geographic differentiation because their small EFFECTIVE POPULATION SIZE (only quarter of that of any autosome) leads to enhanced GENETIC DRIFT. Mating practices might also contribute to inter-population differences. These markers therefore contain information on population of origin, but, owing to ADMIXTURE, can give misleading results.

Markers with greater power have emerged from studies of admixed populations for epidemiological purposes or for mapping disease genes by LINKAGE DISEQUILIBRIUM. Autosomal binary or STR loci have been identified that show large allele frequency differences (30–50%) between parental population groups[34,35]. Multilocus genotypes based on such ANCESTRY INFORMATIVE MARKERS (AIMS) can be analysed using model-based clustering algorithms, yielding individual proportions of ancestry from a number of populations. Although forensic evaluation has not yet been carried out, tests using 175 AIMs are already available commercially for forensic applications[36]; their use will probably increase, although it might be limited in admixed populations.

Phenotypic information. A strong prediction of population of origin might indicate some aspects of phenotype, such as skin colour. However, direct genetic tests would be more useful. Many human phenotypes (for example, stature, facial features and pigmentation) have a strong genetic component.

The only relevant trait that has undergone serious investigation is pigmentation. However, although there are many human genes that when mutated are known to cause abnormal pigmentation such as albinism[37], only a minority appear to influence 'normal' variation. The best studied is the melanocortin 1 receptor (*MC1R*) gene, the gene product of which lies in the cell membrane of the MELANOCYTE. Binding of α-melanocyte stimulating factor to the receptor leads to production of black/brown pigments, whereas in the absence of a signal through *MC1R*, red/yellow pigments predominate. The *MC1R* gene has more than 30 known variant alleles involving amino-acid substitutions, three of which are associated with red hair, fair skin and freckling[38,39]. Population studies[34] show that homozygosity or compound heterozygosity for such a variant gives a >90% probability of having red hair. This test is therefore useful as an investigative tool in populations such as that of the United Kingdom where red hair is found at an appreciable frequency.

Other candidate pigmentation genes have been investigated, but with less success. Linkage analysis has identified a locus on chromosome 15 that influences eye colour[40], for which the *P* gene, the product of which is involved in melanin production, is a candidate[41]. Two amino-acid substitutions in the gene are associated with blue or gray eyes[42]. A broader association study including SNPs in several candidate genes[37] has identified 61 SNPs that explain 15% of the variation in eye colour in a sample, but probably do not provide useful predictive testing. Work on these and other phenotypes will probably increase in the future. However, the complexity of these quantitative traits, coupled with variability introduced by environmental and nutritional differences, means that even if the genes influencing them were identified there is no guarantee that simple deterministic tests would emerge.

Non-human species in forensic genetics

Forensic analysis of animal DNA has been used both when animal material (usually pet hairs) is found at crime scenes, and in investigations of the illegal trade in endangered species. The best-known example of the former was the matching, using 10 feline-specific dinucleotide STRs, of cat hairs on a bloodstained leather jacket with a pet cat, known as Snowball, who lived with the suspect in a murder case[43]. More recently, a commercial kit containing 11 tetranucleotide STRs has been produced for the individual identification of cats. Work on canine identification is mostly based on STRs developed for parentage testing[44], but also includes mtDNA profiling[45]. In a recent case, the conviction of a man for the murder of a seven-year-old girl in California was supported by mtDNA analysis of dog hairs that matched a pet belonging to the victim.

In the endangered species field, species-specific methods target the gene that encodes cytochrome b of mtDNA[31,32]; examples include tests for tiger-bone DNA in traditional Chinese medicines (all of which proved to be cow or pig[31]), and also for rhinoceros horn[32].

As with animal material, plant material can be associated with a crime scene and provide vital evidence. When morphology is uninformative, DNA could, in principle, offer species identification or a link to a specific place. However, in the analysis of plant DNA there is no easy equivalent of the widely studied animal mtDNA sequences (although regions of the chloroplast genome and the nuclear ribosomal RNA loci seem promising) and STRs in most species are poorly characterized. PCR-based fingerprinting methods such as RANDOM AMPLIFIED POLYMORPHIC DNA (RAPD) can allow identification of plant strains and have been used in the analysis of mosses in a murder case[46], and in civil disputes over the identity of commercially valuable cultivars of strawberry[47] and chilli[48]. A species-specific PCR assay is available for *Cannabis sativa*[49] and the isolation of a hexanucleotide STR from the same species provided a marker with some potential to identify the source of cannabis samples[50].

Microorganisms can be sources of evidence in situations such as foodstuff contamination and medical negligence cases involving infections, such as HIV transmission[51]. However, in October 2001, at least five people died in the United States from inhalation anthrax after

EFFECTIVE POPULATION SIZE
The size of an idealized population that has the same properties with respect to genetic drift as does the actual population in question.

GENETIC DRIFT
The stochastic fluctuation of allele frequencies in a population owing to chance variations in the contribution of each individual to the next generation.

ADMIXTURE
The formation of a hybrid population through the mixing of two ancestral populations.

LINKAGE DISEQUILIBRIUM MAPPING
Analysing single nucleotide polymorphism alleles in population-based studies to identify loci that are associated with a particular disease or phenotype.

ANCESTRY INFORMATIVE MARKERS
Markers showing marked allele frequency differences between ancestral populations, useful for determining the probable ancestry of an individual.

MELANOCYTE
The specialized cell type, lying at the boundary between the dermis and epidermis, in which the pigment melanin is synthesized.

RANDOM AMPLIFIED POLYMORPHIC DNA
Polymorphic markers generated by using short (8–12 bases long) primers to amplify random fragments of DNA.

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MULTIPLE DISPLACEMENT AMPLIFICATION
A method for whole-genome amplification using a highly processive polymerase from bacteriophage φ29 and random primers to synthesize long molecules from the template.

DROP-OUT
Absence of one or more alleles in a DNA profile, owing to stochastic failure of PCR amplification when the number of template molecules is small.

handling mail deliberately contaminated with spores of *Bacillus anthracis* and it is the threat of acts of bioterrorism like this, as well as potential attacks on crops and animals, that has led to a surge in interest in the field of forensic microbiology, renamed 'microbial forensics'[81]. Its aim is to develop methods to show that a micro-organism has come from a particular source and DNA analysis will probably have a major role. There are formidable problems in the wide range of possible species that could be encountered, the limited sequence diversity between strains and sub-strains and the lack of universally applicable cross-species methods to detect variation. Microbiologists, epidemiologists and forensic scientists have met to define problems and make recommendations, many of which will be expensive to implement. Although the extent of the bioterrorism threat is unclear, the 2001 attacks showed the major impact that even small-scale incidents can have; also, developments in this area will probably have useful spin-offs in tracing natural disease outbreaks.

Future developments

Forensic genetics will continue to take advantage of technical developments in DNA analysis. A 'sci-fi' vision of a hand-held device (the 'lab on a chip') that would allow rapid DNA profiling at the crime scene is close to realization, with developments in microfabrication of capillary electrophoretic arrays[82]; single integrated platforms that extract, amplify and sequence DNA have already been developed[83], but it will be some time before such devices are validated for forensic use. Methods of whole-genome amplification (in particular, MULTIPLE DISPLACEMENT AMPLIFICATION[84]) have potential forensic value when the amount of template DNA is extremely small. However, allele DROP-OUT and imbalance has been observed with less than 50 picograms of input DNA[85], and further work is needed to determine whether there are any advantages over conventional low copy number typing methods.

One of the most difficult problems facing the forensic biologist is the identification of body fluids. Molecular biological approaches to the identification of blood, semen and saliva stains using analysis of specific mRNAs (which are surprisingly stable) have been described[86] and will probably increase in use and importance.

As our understanding of the genetic basis of disease and differences in the response to drugs increases, it will be increasingly applied to determining the cause of death — 'forensic molecular pathology'. Work has already been done[87,88] on molecular diagnosis of the genetic cardiac arrhythmia long QT syndrome, which can cause sudden unexplained death leaving no trace at autopsy, and also on the post mortem determination of functional copy number of a gene (*CYP2D6*) encoding a drug metabolizing enzyme[89], variation in which can lead to adverse drug effects, including death.

The most important and controversial developments, however, probably lie in the area of DNA databases (BOX 3) and debates on database issues seem set to continue well into the second two decades of forensic DNA analysis.

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Competing interests statement
The authors declare no competing financial interests.

Online links

DATABASES
STRBase
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Access to this interactive links box is free online.

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CORRECTION

ENCODED EVIDENCE: DNA IN FORENSIC ANALYSIS

Mark A. Jobling and Peter Gill

Nature Reviews Genetics 5, 739–751 (2004); doi:10.1038/nrg1455

The reference highlight for reference 120 (Hagelberg, E., Gray, I.C. & Jeffreys, A.J. Identification of the skeletal remains of a murder victim by DNA analysis. *Nature* 352, 427–429 (1991)) incorrectly read "The first analysis of bone samples to identify a murder victim, using mitochondrial DNA analysis." This should have read "The first analysis of bone samples to identify a murder victim, using analysis of STRs." Jobling and Gill apologize to the authors for this error.

This correction has been made to the online enhanced text and PDF version of this review.

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Jairam Ramesh
Member of Parliament (Rajya Sabha)
Chairman
Parliamentary Standing Committee on Science & Technology, Environment, Forests, and Climate Change

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January 18, 2021

Dear Binoy:

I regret that you have submitted a dissent note to our Standing Committee's report on the DNA (Use and Application), Regulation Bill, 2019 even though I have tried my utmost to bring about a consensus and even though some of the suggestions made by you have been incorporated in our report.

Undeniably, the issues you have raised in the dissent note are very important and should engage Parliament's attention. But let me say the following in response while emphasizing that the Bill in front of the Committee has a limited purpose:

1. We have provided adequate safeguards for the use of DNA technology in the justice delivery system. We have also drawn attention to reforms that are required in the larger legal ecosystem to prevent the abuse of this technology and make its use more effective.
2. Our recommendations on the composition of the DNA Regulatory Board are at complete variance with what the Bill contains presently. I believe that our recommendations, if accepted, will lead to an independent Board functioning professionally and transparently and according to international standards.
3. You are aware that a Personal Data Protection Bill is under discussion. But the universe of that Bill is very different from that of the Bill before our committee.

Finally, please allow me to recall me the recent case of DNA tests that were carried out at the Central Forensic Science Laboratory at Chandigarh that confirmed claims of the families concerned that three youth killed by the Indian Army on July 18th, 2020 in Shopian district of J&K on the suspicion that they were militants/ terrorists were, actually, from Rajouri. This has forced the Indian Army conduct an investigation.

With warm personal regards,

Jairam Ramesh
18/1/2021

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Annexure I

As introduced in Lok Sabha

Bill No. 128 of 2019

THE DNA TECHNOLOGY (USEANDAPPLICATION) REGULATION BILL,2019

ARRANGEMENTOFCLAUSES

CLAUSES

CLAUSES

As introduced in Lok Sabha

Bill No. 128 of 2019

THE DNATECHNOLOGY (USEANDAPPLICATION) REGULATION BILL, 2019

A

BILL

to provide for the regulation of use and application of Deoxyribonucleic Acid (DNA) technology for the purposes of establishing the identity of certain categories of persons including the victims, offenders, suspects, undertrials, missing persons and unknown deceased persons and for matters connected therewith or incidental thereto.

Be it enacted by Parliament in the Seventieth Year of the Republic of India as follows:—

CHAPTER I

PRELIMINARY

Short title, extent and commencement

1. (*1*) This Act may be called the DNA Technology (Use and Application) Regulation 5 Act, 2019.

(*2*) It extends to the whole of India.

(*3*) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint:

Provided that different dates may be appointed for different provisions of this Act and any reference in any such provision to the commencement of this Act shall be construed as a reference to the coming into force of that provision.

Definitions.

2. (*1*) In this Act, unless the context otherwise requires,—

(*i*) "Board" means the DNA Regulatory Board established under sub-section (*1*) of section 3;

(*ii*) "bodily substances" means any biological material of, or from the body of, a person, whether living or dead, unidentified human remains, and includes intimate bodily substance and non-intimate bodily substance as defined in clauses (*a*) and (*c*) of sub-section (*3*) of section 23;

(*iii*) "Chairperson" means the Chairperson of the Board;

(*iv*) "crime scene index" means a list of entries of DNA profiles, in a DNA Data Bank derived from DNA samples found—

(*a*) at any place where an offence was committed or is reasonably suspected of having been committed; or

(*b*) on or within the body of the victim, or a person reasonably suspected of being a victim, of an offence; or

(*c*) on anything worn or carried by the victim at the time when an offence was, or is reasonably suspected of having been, committed; or

(*d*) on or within the body of a person, or on anything, or at any place, associated with the commission of an offence;

(*v*) "Director" means a Director of the National DNA Data Bank or a Regional DNA Data Bank appointed under section 27;

(*vi*) "DNA Data Bank" means a DNA Data Bank established under sub-section (*1*) of section 25;

(*vii*) "DNA laboratory" means any laboratory or facility established by the Central Government or a State Government or a person or an organisation which has been granted accreditation under this Act to perform DNA testing;

(*viii*) "DNA profile" means the result of analysis of a DNA sample for establishing human identification in respect of matters listed in the Schedule;

(*ix*) "DNA sample" means bodily substances of any nature collected for conducting DNA testing and includes the materials derived in a DNA laboratory from such bodily substances;

(*x*) "DNA testing" means the procedure followed in DNA laboratory to develop DNA profile;

(*xi*) "Fund" means Fund of the Board constituted under sub-section (*1*) of section 40;

(*xii*) "known sample" means the bodily substances of a person whose identity is established;

(*xiii*) "medical practitioner" means a medical practitioner who possesses any medical qualification as defined in clause (*h*) of section 2 of the Indian Medical Council Act, 1956 and whose name has been entered in a State Medical Register under that Act; 102 of 1956.

(*xiv*) "Member" means a Member of the Board and includes the Chairperson and Vice-Chairperson;

(*xv*) "Member-Secretary" means the Member-Secretary of the Board;

(*xvi*) "missing persons' index" means a list of entries of DNA profiles, in a DNA Data Bank, derived from—

(*a*) unidentified human remains; or

(*b*) the personal effects of persons who are missing; or

(*c*) the bodily substances of relatives of the missing persons;

(*xvii*) "notification" means a notification published in the Official Gazette;

(*xviii*) "offenders' index" means a list of entries of DNA profiles of samples taken from offenders, in a DNA Data Bank;

(*xix*) "prescribed" means prescribed by rules made by the Central Government under this Act;

(*xx*) "proficiency testing" means a quality assurance measure used to monitor performance and identify areas in which improvement may be needed and includes—

(*a*) internal test which is devised and administered by the DNA laboratory; and

(*b*) external test, which may be open or blind, and which is devised and administered by an external agency;

(*xxi*) "quality assurance" includes the systematic actions necessary to demonstrate that a product or service meets specified standards of quality;

(*xxii*) "quality manual" means a document which specifies the quality procedures, quality systems and practices of an organisation relating to standards, quality control and quality assurance;

(*xxiii*) "quality system" means the organisational structure, responsibilities, procedure, process and resources for implementing quality management;

(*xxiv*) "regulations" means the regulations made by the Board under this Act;

(*xxv*) "suspects' index" or "undertrials' index" means a list of entries of DNA profiles derived from DNA samples taken from the suspects or, as the case may be, undertrials, in a DNA Data Bank;

(*xxvi*) "unknown deceased persons' index" means a list of entries of DNA profiles derived from DNA samples taken from the remains of a deceased person, whose identity is not known, maintained in a DNA Data Bank;

(*xxvii*) "validation process" means the process by which a procedure is evaluated to determine its efficacy and reliability for casework analysis and includes—

(*a*) developmental process, being the acquisition of test data and determination of conditions and limitations, of any new DNA methodology for use on case samples; and

(*b*) internal process, being an accumulation of test data within the DNA laboratory, to demonstrate that the established methods and procedures are performed as specified in the laboratory.

45 of 1860. 1 of 1872. 2 of 1974.

(*2*) The words and expressions used and not defined in this Act but defined in the Indian Penal Code, the Indian Evidence Act, 1872 and the Code of Criminal Procedure, 1973, shall have the meanings respectively assigned to them in those Codes or that Act.

CHAPTER II

DNA Regulatory Board

Establishment of DNA Regulatory Board.

3. (*1*) The Central Government may by notification, establish for the purposes of this Act, a Board to be called the DNA Regulatory Board.

(*2*) The Board shall be a body corporate by the name aforesaid, having perpetual succession and a common seal, with power, subject to the provisions of this Act, to acquire, hold and dispose of property, both movable and immovable, and to contract, and shall, by the said name, sue or be sued.

(*3*) The head office of the Board shall be at such place in the National Capital Region, as the Central Government may, by notification, specify.

(*4*) The Board may, with the approval of the Central Government, establish regional offices at such other places as it may deem necessary.

Composition of Board.

4. The Board shall consist of the following Members to be appointed by the Central Government, namely:—

(*a*) the Secretary to the Government of India in the Department of Biotechnology, who shall be the Chairperson, *ex officio*;

(*b*) an eminent person from the field of biological sciences having experience of not less than twenty-five years in the field, who shall be the Vice-Chairperson;

(*c*) a member of the National Human Rights Commission to be nominated by its Chairperson, *ex officio*;

(*d*) the Director-General of the National Investigation Agency and the Director of the Central Bureau of Investigation or their nominees not below rank of the Joint Director, to be nominated by the Central Government, *ex officio*;

(*e*) the Director-General of Police of a State, to be nominated by the Central Government by rotation every three years from amongst the States in alphabetical order, *ex officio*;

(*f*) the Director of the Centre for DNA Fingerprinting and Diagnostics, Hyderabad, to be nominated by the Central Government, *ex officio*;

(*h*) the Director of the National Accreditation Board for Testing and Calibration of Laboratories, New Delhi, to be nominated by the Central Government, *ex officio*;

(*h*) the Director of a Central Forensic Science Laboratory to be nominated by the Central Government, by rotation every three years, *ex officio*;

(*i*) an officer not below the rank of the Joint Secretary to the Government of India in the Ministry of Law and Justice, to be nominated by the Central Government, *ex officio*;

(*j*) an officer not below the rank of the Joint Secretary to the Government of India in the Ministry of Science and Technology, to be nominated by the Central Government, *ex officio*;

(*k*) one expert, from amongst persons of eminence in the field of biological sciences having experience of not less than twenty-five years in the field; and

(*l*) an officer, not below the rank of Joint Secretary to the Government of India or equivalent, with knowledge and experience in biological sciences, to be nominated by the Central Government, *ex officio*, who shall be the Member-Secretary.

Term of office and conditions of service of Chairperson, Vice-Chairperson and Member.

5. (*1*) The Chairperson shall hold the office in the Board till he remains Secretary in the Department of Biotechnology.

(*2*) The Vice-Chairperson appointed under clause (*b*) and the Member appointed under clause (*k*), of section 4, shall hold office for a period of three years or till he attains the age of sixty-five years, whichever is earlier and shall be eligible for re-nomination for a further period of three years.

(*3*) The Vice-Chairperson appointed under clause (*b*) and the Member appointed under clause (*k*), of section 4, shall be entitled to such pay and allowances as may be prescribed.

(*4*) The Chairperson and other *ex officio* Members may be entitled to such allowances as may be prescribed.

Meetings of Board.

6. (*1*) The Board shall meet at such time and place and shall, subject to this section, observe such rules of procedure with regard to the transaction of business at its meetings (including the quorum at such meetings) as may be specified by regulations.

(*2*) The Chairperson shall preside over the meetings of the Board and if, for any reason, he is unable to attend a meeting, the Vice-Chairperson and in his absence, the senior-most Member present, reckoned from the date of his appointment to the Board, shall preside over such meeting:

Provided that in case of common date of appointment of Members, the Member senior in age shall be considered as senior to the other Members.

(*3*) All questions which come up before any meeting of the Board shall be decided by a majority of votes of the Members present and voting, and in the event of an equality of votes, the Chairperson or, in his absence, the Vice-Chairperson or, in his absence, the Member presiding over the meeting, shall have a casting vote.

(*4*) Save as otherwise provided under this Act, the Chairperson shall have powers of general superintendence and direction of the affairs of the Board and may also exercise such other powers as may be delegated to him by the Board.

(*5*) All orders and decisions of the Board shall be authenticated by the Member-Secretary.

Member not to participate in meetings in certain cases.

7. Any Member having any direct or indirect interest, whether pecuniary or otherwise, in any matter coming up for consideration at a meeting of the Board, shall, as soon as possible after relevant circumstances have come to his knowledge, disclose the nature of his interest at such meeting and such disclosure shall be recorded in the proceedings of the Board, and such Member shall not take part in any deliberation or decision of the Board with respect to that matter.

Removal and resignation of Chairperson or Member and filling up of casual vacancies of Board.

8. (*1*) The Central Government may remove from office the Chairperson or any other Member, who—

(*a*) has been adjudged as an insolvent;

(*b*) has been convicted of an offence involving moral turpitude;

(*c*) has become physically or mentally incapable of acting as a Member;

(*d*) has acquired such financial or other interest as is likely to affect prejudicially his functions as a Member; or

(*e*) has so abused his position as to render his continuance in office prejudicial to the public interest:

Provided that the Chairperson or a Member shall not be removed from office on the grounds specified under clause (*d*) or clause (*e*) except by an order made by the Central

Government after an inquiry made in this behalf in which the Chairperson or such Member has been given a reasonable opportunity of being heard in the matter.

(*2*) If, for any reason, other than temporary absence, any vacancy occurs in the office of a Member, the Central Government shall appoint another Member from the same category in accordance with the provisions of this Act to fill such vacancy, and such Member shall hold office for the remainder of the term of the Member in whose place he has been appointed.

(*3*) Any Member may, by a notice of not less than thirty days in writing under his hand, addressed to the Central Government, resign from office:

Provided that the Member shall, unless he is permitted by the Central Government to relinquish his office sooner, continue to hold office until the expiry of three months from the date of receipt of such notice or until a person is duly appointed in his place or till the expiry of his term of office, whichever is earlier.

Vacancies, etc., not to invalidate proceedings of Board.

9. No act or proceeding of the Board shall be invalid merely by reason of— (*a*) any vacancy in, or any defect in the constitution of, the Board; or

(*b*) any defect in the appointment of a person acting as a Member of the Board; or

(*c*) any irregularity in the procedure of the Board not affecting the merits of the case.

Delegation of powers of Board.

10. (*1*) The Board may, by general or special order published in the Official Gazette, delegate to the Chairperson or any other Member, subject to such conditions, if any, as may be specified in the order, its functions under this Act (except the power to make regulations), as it may deem necessary.

(*2*) An order made under this section shall be laid, as soon as may be after it is made, before each House of Parliament.

Officers and other employees of Board.

11. (*1*) The Board may, with the approval of the Central Government, appoint such officers and other employees, as it considers necessary, for the efficient discharge of its functions under this Act.

(*2*) The salaries and allowances payable to, and the other terms and conditions of service, including the manner of appointment, of the officers and other employees, under sub-section (*1*) shall be such as may be prescribed.

Functions of Board.

12. The Board shall for the purposes of this Act, perform the following functions, namely:—

(*a*) advice the Central Government and the State Governments on all issues relating to establishing of DNA laboratories and DNA Data Banks, including planning, organisational structure, size, number, location and laying down guidelines, standards and procedures for establishment and functioning of such laboratories and Data Banks including manpower, infrastructure and other related issues concerning monitoring of their performance and activities; upgradation of DNA laboratories; and making recommendations on funds required for such purposes;

(*b*) grant accreditation to laboratories and to suspend or revoke such accreditation;

(*c*) supervise DNA laboratories and DNA Data Banks, including their quality control;

(*d*) develop the training modules and frame guidelines for training of manpower, including the police and investigating agencies dealing with DNA related matters;

(*e*) regulate and audit DNA training programmes for DNA laboratories and DNA Data Banks;

(*f*) identify scientific advances and recommend research and development activities in DNA testing and related issues, including intellectual property issues;

(*g*) lay down procedures for communication of information relating to DNA profile in civil and criminal proceedings and for investigation of crimes by law enforcement and other investigating agencies;

(*h*) recommend methods for optimum use of DNA techniques and technologies for administration of justice or for such other relevant purposes as may be specified by regulations;

(*i*) adopt and disseminate best practices, concerning the collection and analysis of DNA sample to ensure quality and consistency in the use of DNA techniques, and on all ethical and human rights issues relating to DNA testing in consonance with international guidelines enumerated by the United Nations Organisation and its specialised agencies, *inter alia*, relating to—

(*i*) the rights and privacy of citizens;

(*ii*) the issues concerning civil liberties;

(*iii*) issues having ethical and other social implications in adoption of DNA testing technology; and

(*iv*) professional ethics in DNA testing;

(*j*) give advice on matters under this Act which may be referred to it by the Central Government or the State Government;

(*k*) make recommendations to the Central Government for the application of privacy protection in relation to the access to, or the use of, DNA samples and their analyses, and ensure—

(*i*) implementation and sufficiency of such protection;

(*ii*) appropriate use and dissemination of DNA information;

(*iii*) accuracy, security and confidentiality of DNA information;

(*iv*) timely removal and destruction of obsolete, expunged or inaccurate DNA information; and

(*v*) such other steps as may be required to protect privacy;

(*l*) facilitate exchange of ideas and information on DNA technology;

(*m*) create awareness among public and other stakeholders, including police officers, prosecutors and judicial officers on the use and application of DNA technology;

(*n*) assist in such manner as may be prescribed, in criminal investigation between various investigation agencies within the country and with any foreign State, international organisation or institution in dealing with DNA testing;

(*o*) advice the Central Government on any modifications required to be made in respect of any matter under the Schedule;

(*p*) frame guidelines for storage and destruction of bodily substances including known sample;

(*q*) perform such other functions as may be prescribed.

CHAPTER III

ACCREDITATION OF DNA LABORATORIES

Prohibition of DNA testing, etc., without accreditation.

13. (*1*) No laboratory shall undertake DNA testing, analysing or any other procedure to generate data and perform analysis relating thereto without obtaining accreditation from the Board:

Provided that a laboratory functioning as on the date of the commencement of this Act, may undertake DNA testing or any other procedure relating thereto, for a period of sixty days from such commencement and apply to the Board in accordance with sub-section (*2*) for obtaining accreditation:

Provided further that such laboratory may, after making an application, continue to undertake DNA testing or any other procedure relating thereto, until its application is decided by the Board.

(*2*) A laboratory seeking accreditation under sub-section (*1*) shall apply to the Board in such form and manner along with such fees and documents as may be specified by regulations.

(*3*) A laboratory seeking accreditation shall comply with such onsite assessment requirements, standards and such other requirements, as may be specified by regulations.

(*4*) The application for renewal of accreditation shall be made to the Board at least sixty days prior to the expiration of the accreditation in such form and manner and along with such fees as may be specified by regulations.

Granting of accreditation or renewal thereof.

14. (*1*) The Board may, within a period of ninety days from the receipt of application for accreditation or renewal thereof, and after carrying out inspection of the laboratory, its records and books, and if it is satisfied that the laboratory fulfils all requirements under this Act, by order, grant accreditation to such laboratory or renew it, subject to such conditions as it may deem fit:

Provided that no application for accreditation shall be rejected by the Board without recording the reasons thereof, and giving the applicant an opportunity of being heard.

(*2*) The accreditation or renewal of accreditation under this section shall be valid for a period of two years.

Power of Board to suspend or revoke accreditation.

15. (*1*) The Board may revoke the accreditation granted to a DNA laboratory, if such laboratory fails to—

(*a*) undertake DNA testing or any other procedure relating thereto;

(*b*) comply with any of the conditions subject to which the accreditation has been granted;

(*c*) comply with the provisions of this Act or the rules and regulations made thereunder or any other law for the time being in force;

(*d*) comply with the guidelines issued by the Board under this Act; or

(*e*) submit or offer for inspection its laboratory or books of account and any other relevant documents, including audit reports, when so demanded by the officers or agency authorised by the Board.

(*2*) Where the Board is of the opinion that any delay in revoking accreditation given to a DNA laboratory is prejudicial or detrimental to the public interest, it may suspend the accreditation forthwith pending final decision on such revocation.

(*3*) No revocation of accreditation of a DNA laboratory shall be made by the Board without giving the laboratory an opportunity of being heard.

(*4*) On the revocation or suspension of accreditation of the DNA laboratory, the laboratory shall hand over all DNA samples and records relating to DNA testing from its laboratory to such DNA laboratory as may be directed by the Board and it shall not retain any sample or record.

Appeal against rejection, suspension or revocation of accreditation.

16. Any laboratory aggrieved, by an order of rejection of its application for accreditation or renewal thereof under section 14 or an order of suspension or revocation of accreditation under section 15, may prefer an appeal to the Central Government or such other authority as that Government may, by notification, specify, within a period of sixty days from the date of such order, which shall be decided by the Central Government or the authority, as the case may be, within a period of sixty days from the date of receipt of such appeal.

CHAPTERIV

OBLIGATIONS OF DNA LABORATORY

Obligations of DNA laboratory.

17. (*1*) Every DNA laboratory, which has been granted accreditation for undertaking 15 DNA testing or any other procedure under this Act, shall—

(*a*) follow such standards and procedures for quality assurance in the collection, storage, testing and analysis of DNA sample,

(*b*) establish and maintain such documentation and quality system,

(*c*) prepare and maintain quality manuals containing such details,

(*d*) share DNA data prepared and maintained by it with the National DNA Data Bank and the Regional DNA Data Bank, in such manner,

as may be specified by regulations.

(*2*) The DNA laboratory shall report the results of the DNA testing in conformity with the provisions of this Act and the regulations made thereunder.

Appointment of in-charge, scientific, technical and other staff, of DNA laboratory.

18. Every DNA laboratory shall appoint a person to be in-charge of the laboratory and employ such scientific, technical and other staff, possessing such qualifications and experience as may be specified by regulations, for discharging the duties and performing the functions under this Act.

Responsibilities of person in charge of DNA laboratory.

19. The incharge of the DNA laboratory shall,—

(*a*) take such measures for facilitating skill upgradation and advancement in the knowledge of its employees in the field of DNA testing and other related fields, as may be specified by regulations;

(*b*) ensure that its employees undergo regular training in DNA related subjects, in such institutions, level and intervals, as may be specified by regulations;

(*c*) maintain such records relating to the laboratory and its personnel as may be specified by regulations.

Measures to be taken by DNA laboratory.

20. (*1*) Every DNA laboratory shall,—

(*a*) possess such infrastructure,

(*b*) maintain such security and follow such procedure to avoid contamination of DNA samples,

(*c*) establish and follow such documented evidence control system to ensure integrity of physical evidence,

(*d*) establish and follow such validation process and written analytical procedure,

(*e*) prepare such indices,

(*f*) use such equipment for the methods it employs,

(*h*) have such documented programme for calibration of instruments and equipment,

(*h*) conduct annual quality audits with such standards,

(*i*) install such security system for the safety of DNA laboratory and its personnel,

(*j*) charge such fees for conducting DNA testing or any other procedure relating thereto, not exceeding twenty-five thousand rupees,

as may be specified by regulations.

(*2*) The DNA laboratory shall, after deriving the DNA profile and depositing it with the DNA Data Bank,—

(*a*) return the biological sample or remaining material for its preservation to the investigating officer in a criminal case till the disposal of the case or the order of the court; and

(*b*) in all other cases, destroy the biological sample or remaining material and intimate the person concerned.

(*3*) For the purposes of this section,—

(*a*) "analytical procedure" means an orderly step by step procedure designed to ensure operational uniformity;

(*b*) "quality audit" means an inspection used to evaluate, confirm or verify activity related to quality;

(*c*) "calibration" means a set of operations which establish, under specified conditions, the relationship between values indicated by a measuring instrument or measuring system, or values represented by a material, and the corresponding known values of a measurement.

Consent for taking bodily substances to be taken from a person arrested.

21. (*1*) No bodily substances shall be taken from a person who is arrested for an offence (other than the specified offences) unless the consent is given in writing for the taking of the bodily substances.

Explanation.—For the purposes of this sub-section, "specified offences" means any offence punishable with death or imprisonment for a term exceeding seven years.

(*2*) If the consent required under sub-section (*1*) for taking of bodily substances from a person is refused or cannot be obtained, the person investigating the case may make an application to the Magistrate having jurisdiction for obtaining bodily substances from the arrested person.

(*3*) The Magistrate may, if he is satisfied that there is reasonable cause to believe that the bodily substances may confirm or disprove whether the person so arrested was involved in committing the offence, order for taking of bodily substances from such person.

Bodily substances given voluntarily.

22. (*1*) Subject to sub-section (*2*), any person who—

(*a*) was present at the scene of a crime when it was committed; or

(*b*) is being questioned in connection with the investigation of a crime; or

(*c*) intends to find the whereabouts of his missing or lost relative, in disaster or otherwise,

may voluntarily consent in writing to bodily substances being taken from him for DNA testing.

(*2*) If the person giving voluntary consent is below the age of eighteen years and the consent of the parent or guardian of such person is refused or cannot be obtained, the person investigating the case may make an application to the Magistrate having jurisdiction, for obtaining such bodily substances and the Magistrate, if he is satisfied that there is reasonable cause for taking the bodily substances from such person, order for taking of bodily substances from that person.

Sources and manner of collection of samples for DNA testing.

23. (*1*) For the purposes of this Act, samples for DNA testing may be collected from the following sources, namely:—

(*a*) bodily substances;

(*b*) scene of occurrence or scene of crime;

(*c*) clothing and other objects; or

(*d*) such other sources as may be specified by regulations.

(*2*) For the purposes of sub-section (*1*),—

(*a*) any intimate bodily substance from living persons shall be collected, and intimate forensic procedures shall be performed, by a medical practitioner;

(*b*) any non-intimate bodily substance shall be collected and non-intimate forensic procedure shall be performed by the technical staff trained for the collection of samples for DNA testing, under the supervision of a medical practitioner or a scientist having expertise in molecular biology or such other person as may be specified by regulations:

Provided that before collecting bodily substances for DNA testing of a victim or a person reasonably suspected of being a victim who is alive, or a relative of a missing person, or a minor or a disabled person, written consent of such victim or such relative or the parent or guardian of such minor or disabled person shall be obtained and, in case of refusal, the person investigating the case may make an application to the Magistrate having jurisdiction, for obtaining such bodily substances and the Magistrate, if he is satisfied that there is reasonable cause for taking the bodily substances from such person, order for taking of bodily substances from that person.

(*3*) For the purposes of this section,—

(*a*) "intimate bodily substance" means a sample of blood, semen or any other tissue, fluid, urine or pubic hair, or a swab taken from a person's body orifice other than mouth; or skin or tissue from an internal organ or body part, taken from or of a person, living or dead;

(*b*) "intimate forensic procedure" means any of the following forensic procedures conducted on a living person, namely:—

(*i*) external examination of the genital or anal area, the buttocks and breasts in the case of a female;

(*ii*) taking of a sample of blood;

(*iii*) taking of a sample of pubic hair;

(*iv*) taking of a sample by swab or washing from the external genital or anal area, the buttocks and breasts in the case of a female;

(*v*) taking of a sample by vacuum suction, by scraping or by lifting by tape from the external genital or anal area, the buttocks and breasts in the case of a female;

(*vi*) taking of a photograph or video recording of, or an impression or cast of a wound from, the genital or anal area, buttocks and breasts in the case of a female;

(*c*) "non-intimate bodily substance" means any of the following taken from or of a person, living or dead, namely:—

(*i*) handprint, fingerprint, footprint or toe print;

(*ii*) a sample of hair other than pubic hair;

(*iii*) a sample taken from a nail or under a nail;

(*iv*) swab taken from any part of a person's body including mouth, but not any other body orifice;

(*v*) saliva; or

(*vi*) a skin impression;

(*d*) "non-intimate forensic procedure" means any of the following forensic procedures conducted on a living individual, namely:—

(*i*) examination of a part of the body other than the genital or anal area, the buttocks and breasts in the case of a female, that requires touching of the body or removal of clothing;

(*ii*) taking of a sample of hair other than pubic hair;

(*iii*) taking of a sample from a nail or under a nail;

(*iv*) taking of a buccal swab with consent;

(*v*) taking of a sample by swab or washing from any external part of the body other than the genital or anal area, the buttocks and breasts in the case of a female;

(*vi*) scraping or lifting by tape from any external part of the body other than the genital or anal area, the buttocks and breasts in the case of a female;

(*vii*) taking of a handprint, fingerprint, footprint or toe print; or

(*viii*) taking of a photograph or video recording of, or an impression or cast of a wound from, a part of the body other than the genital or anal area, the buttocks and breasts in the case of a female.

Taking of bodily substances for re-examination.

24. If the trial court is satisfied with the plea of the accused person that the bodily substances taken from such person or collected from the place of occurrence of crime had been contaminated, the court may direct the taking of fresh bodily substances for re-examination.

CHAPTERV

DNA DATA BANK

Establishment of DNA Data Banks.

25. (*1*) The Central Government shall, by notification, establish a National DNA Data Bank and such number of Regional DNA Data Banks for every State, or two or more States, as it may deem necessary.

(*2*) A Regional DNA Data Bank shall share all DNA data stored and maintained by it with the National DNA Data Bank.

(*3*) The National DNA Data Bank shall receive DNA data from Regional DNA Data Banks and shall store the DNA profiles received from the DNA laboratories in such format as may be specified by regulations.

Maintenance of indices by DNA Data Bank.

26. (*1*) Every DNA Data Bank shall maintain the following indices for various categories of data, namely:—

(*a*) a crime scene index;

(*b*) a suspects' index or undertrials' index;

(*c*) an offenders' index;

(*d*) a missing persons' index; and

(*e*) unknown deceased persons' index.

(*2*) In addition to the indices referred to in sub-section (*1*), every DNA Data Bank shall maintain, in relation to each DNA profile, the following information, namely:—

(*a*) in case of a profile in the suspects' index or undertrials' index or offenders' index, the identity of the person from whose bodily substances the profile was derived; and

(*b*) in case of a profile, other than a profile in the suspects' index or undertrials' index or offenders' index, the case reference number of the investigation associated with the bodily substances from which the profile was derived.

(*3*) The indices maintained under sub-section (*1*) shall include information of data based on DNA testing and records relating thereto, prepared by a DNA laboratory.

Directors of DNA Data Banks.

27. (*1*) The Central Government shall appoint a Director of the National DNA Data Bank, on the recommendations of a selection committee to be constituted by that Government, in such manner and consisting of such persons, as may be prescribed, for the purposes of execution, maintenance and supervision of the National DNA Data Bank.

(*2*) The Director of the National DNA Data Bank shall be a person of eminence possessing such educational qualifications and experience in biological sciences, as may be prescribed.

(*3*) The Director of the National DNA Data Bank shall be not below the rank of a Director to the Government of India or equivalent and shall function under the supervision and control of the Board.

(*4*) The Director of the National DNA Data Bank shall exercise such powers and perform such duties, as may be specified by regulations.

(*5*) The Central Government may appoint a Director for each Regional DNA Data Bank, who shall be not below the rank of Deputy Secretary to the Government of India or equivalent, and shall function under the supervision and control of the Board.

Officers and other employees of National DNA Data Bank and Regional DNA Data Banks.

28. (*1*) The Board may, with the approval of the Central Government, appoint such officers and other employees, as it considers necessary, for the efficient discharge of the functions of the National DNA Data Bank and the Regional DNA Data Banks.

(*2*) The salaries and allowances payable to, and the terms and other conditions of service including the manner of appointment, of the Director of the National DNA Data Bank and the Director of each of the Regional DNA Data Bank shall be such as may be prescribed.

(*3*) The Board may appoint such number of officers and experts and other employees to assist the DNA Data Banks in the discharge of its functions, on such remunerations and upon such terms and conditions of service, including the manner of appointment, as may be specified by regulations.

Comparison and communication of DNA profiles.

29. (*1*) The criteria and procedure to be followed by the National DNA Data Bank on receipt of a DNA profile for comparison with DNA profiles maintained in the DNA Data Bank and communication of the results shall be made to such persons and in such manner as may be specified by regulations:

Provided that if the DNA profile is derived from the bodily substances of a living person who is neither an offender nor a suspect or an undertrial, no comparison shall be made of it with the DNA profiles in the offenders' index or suspects' index or undertrials' index maintained in the DNA Data Bank.

(*2*) Any information relating to a person's DNA profile contained in the suspects' index or undertrials' index or offenders' index of the DNA Data Bank shall be communicated only to the authorised persons.

Sharing of DNA profiles with foreign Government or international organisation.

30. (*1*) On receipt of a DNA profile from the Government of a foreign State or an international organisation or any institution of such Government or international organisation, the National DNA Data Bank may compare such DNA profile with the DNA profiles contained in the crime scene index, the offenders' index, the suspects' index, the undertrials' index, the missing persons' index and the unknown deceased persons' index, to determine whether there is a match between the profiles and the Director of the National DNA Data Bank may, with the prior approval of the Central Government communicate any of the following information to such Government or organisation or institution, as the case may be, through any agency authorised by notification by the Central Government, namely:—

(*a*) that there is no match between the profiles;

(*b*) if there is a match between the profiles, any information relating to such matching DNA profile; or

(*c*) if, in the opinion of the Director of National DNA Data Bank, the DNA profile is similar to the one contained in the DNA Data Bank, information relating to such similar DNA profile.

(*2*) After receiving the similar DNA profile under clause (*c*) of sub-section (*1*), if the foreign Government or organisation or institution referred to in sub-section (*1*) informs that the possibility of a match between the similar DNA profile with the DNA profile provided by it has not been excluded, any further information in relation to such similar DNA profile may also be furnished in the manner specified in sub-section (*1*).

(*3*) The Central Government may, in consultation with the Board,—

(*a*) determine the nature and extent of sharing DNA profiles in respect of offenders, suspects, undertrials, missing persons and unknown deceased persons with the Government of a foreign State or an international organisation or an institution established by that Government or organisation, as the case may be;

(*b*) seek similar information from such foreign State, organisation or institutions,

and the provisions of sub-sections (*1*) and (*2*) shall *mutatis mutandis*, apply.

Retention and removal of records.

31. (*1*) The information contained in the crime scene index shall be retained.

(*2*) The Director of the National DNA Data Bank shall remove from the DNA Data Bank the DNA profile,—

(*i*) of a suspect, after the filing of the police report under the statutory provisions or as per the order of the court;

(*ii*) of an undertrial, as per the order of the court,

under intimation to him, in such manner as may be specified by regulations.

(*3*) The National DNA Data Bank shall, on receiving a written request of a person who is neither an offender nor a suspect or an undertrial, but whose DNA profile is entered in the crime scene index or missing persons' index of the DNA Data Bank, for removal of his DNA profile therefrom, remove the DNA profile of such person from DNA Data Bank under intimation to the person concerned, in such manner as may be specified by regulations:

Provided that where such DNA profile is of a minor or a disabled person, removal shall be made on receiving written request from a parent or the guardian of such minor or disabled person.

(*4*) Subject to this section, the criteria for entry, retention and removal of any DNA profile in, or from, the DNA Data Bank and DNA laboratories shall be such as may be specified by regulations.

CHAPTERVI

PROTECTION OF INFORMATION

Security and confidentiality of information.

32. (*1*) Subject to the provisions of this Act, the Board shall ensure that the information relating to DNA profiles, DNA samples and any records thereof, forwarded to, or in custody of the National DNA Data Bank or the Regional DNA Data Bank or a DNA laboratory or any other person or authority under this Act, are secured and kept confidential.

(*2*) The Board shall take all necessary measures to ensure that the information referred to in sub-section (*1*) are protected against access, use or disclosure not permitted under this Act or regulations made thereunder, and against accidental or intentional destruction, loss or damage.

(*3*) Without prejudice to sub-sections (*1*) and (*2*), the Board shall—

(*a*) adopt and implement appropriate technical and organisational security measures;

(*b*) ensure that every agency appointed or engaged for performing any functions under this Act have in place appropriate technical and organisational security measures for the information; and

(*c*) ensure that the agreements or arrangements, entered into with any investigation agency, international organisation or institution, impose obligations equivalent to those imposed on the Board under this Act, and require such agency, organisation or institution to act only on instructions from the Board.

(*4*) Notwithstanding anything contained in any other law for the time being in force, and save as otherwise provided in this Act, the Board or any of its officers or other employee, the Director of the National or Regional DNA Data Bank or any of its officers or other employees, or the in-charge and other staff of DNA laboratory or any officer or employee of the agency engaged under this Act shall not, whether during his service or thereafter, reveal any information relating to DNA profiles, DNA samples and any records thereof to anyone.

Use of DNA profiles, DNA samples and records, etc., for facilitating identification of persons.

33. All DNA data, including DNA profiles, DNA samples and records thereof, contained in any DNA laboratory and DNA Data Bank shall be used only for the purposes of facilitating identification of the person and not for any other purpose.

Access to information in certain cases.

34. Any information relating to DNA profiles, DNA samples and records thereof, maintained in a DNA Data Bank shall be made available for the following purposes, namely:—

(*a*) facilitating the identification of persons in criminal cases by the law enforcement and investigating agencies;

(*b*) judicial proceedings, in accordance with the rules of admissibility of evidence;

(c) facilitating prosecution and adjudication of criminal cases;

(*d*) taking defence by an accused in the criminal case in which he is charged;

(*e*) investigation relating to civil disputes or other civil matters or offences or cases specified in the Schedule, by making such information available to the concerned parties with the approval of the court, or to the concerned authority; or

(*f*) such other purposes, as may be specified by regulations.

Access to information for operation, maintenance and training.

35. Access to such information contained in the National DNA Data Bank and the Regional DNA Data Banks may be made available by the Director, if he considers appropriate,—

(*a*) to a person or class of persons, for the sole purpose of proper operation and maintenance of the DNA Data Bank; and

(*b*) to the personnel of any DNA laboratory for the sole purpose of training,

in accordance with such terms and conditions as may be specified by regulations.

Access to information in DNA Data Bank for one time keyboard search.

36. A person who is authorised to access an index of the DNA Data Bank, including information of DNA identification records or DNA profile in that index, may also access that index for the purposes of carrying out one time keyboard search on information obtained from any DNA sample collected for the purpose of criminal investigation, except for a DNA sample voluntarily submitted solely for elimination purposes.

Explanation.—For the purposes of this section, "one time keyboard search" means a search under which information obtained from a DNA sample is compared with the information in the index of the DNA Data Bank, without resulting in the information obtained from the DNA sample being included in the index.

Restriction on access to information in crime scene index.

37. Access to the information in the crime scene index contained in the DNA Data Bank shall be restricted, in such manner as may be specified by regulations, if such information relates to a DNA profile derived from bodily substances of—

(*a*) victim of an offence which forms or formed the object of relevant investigation; or

(*b*) a person who has been eliminated as a suspect in the relevant investigation.

Prohibition on access to information in DNA Data Bank.

38. (*1*) No person who receives the DNA profile for entry in the DNA Data Bank shall use it or allow or cause it to be used for purposes other than those for which it has been collected in accordance with the provisions of this Act.

(*2*) Save as otherwise provided in this Act, no person shall communicate, or authorise the communication of, or allow or cause to be communicated, any information on DNA profiles contained in the DNA Data Banks or the information communicated under section 29 or section 30.

(*3*) No person to whom information is communicated or who has access to information under this Act shall use that information for any purpose other than for which the communication or access is permitted under the provisions of this Act.

CHAPTERVII

FINANCE, ACCOUNTS, AUDIT AND REPORTS

Grants by Central Government.

39. The Central Government may, after due appropriation made by Parliament by law, in this behalf, make to the Board grants of such sums of money as the Central Government may consider necessary.

DNA Regulatory Board Fund.

40. (*1*) There shall be constituted a Fund to be called the DNA Regulatory Board Fund and there shall be credited thereto—

(*a*) any grants and loans made to the Board under this Act;

(*b*) all sums received by the Board including fees or charges, or donations from such other source as may be decided by the Central Government; and

(*c*) any income from investment of the amount of the Fund.

(*2*) The Fund shall be applied by the Board for meeting,—

(*a*) the salaries and allowances payable to the Members, the officers, experts and the other employees, including administrative expenses, of the Board; and

(*b*) the expenses for carrying out the purposes authorised under this Act.

Budget.

41. (*1*) The Board shall prepare, in such form and at such time in each financial year, as may be prescribed, its budget for the next financial year showing the estimated receipts and expenditure of the Board and forward the same to the Central Government.

(*2*) The Board, with the prior approval of the Central Government, shall adopt financial regulation which specifies in particular, the procedure for drawing up and implementing the Board's budget.

Annual report.

42. The Board shall prepare in such form and at such time in each financial year, as may be prescribed, its annual report giving a full account of its activities during the previous financial year and submit a copy thereof to the Central Government.

Accounts and audit of Board.

43. (*1*) The Board shall maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed in consultation with the Comptroller and Auditor-General of India.

(*2*) The Comptroller and Auditor-General of India and any person appointed by him in connection with the audit of the accounts of the Board under this Act shall have the same rights and privileges and authority in connection with such audit as the Comptroller and Auditor-General of India generally has in connection with the audit of Government accounts and, in particular, shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Board.

(*3*) The accounts of the Board, as certified by the Comptroller and Auditor-General of India or any other person appointed by him in this behalf, together with the audit report thereon shall be forwarded annually to the Central Government by the Board.

(*4*) The accounts of the Board shall be audited by the Comptroller and Auditor-General of India annually and any expenditure incurred in connection with such audit shall be payable by the Board to the Comptroller and Auditor-General of India.

Annual report and auditor's report to be laid before Parliament.

44. The Central Government shall cause the annual report and auditor's report of the Board to be laid, as soon as may be after they are received, before each House of Parliament.

CHAPTERVIII

OFFENCES AND PENALTIES

Penalty for unauthorised disclosure of information in DNA Data Bank.

45. Whoever, by virtue of his employment or official position or otherwise, has in his possession, or having access to, individually identifiable DNA information kept in the DNA laboratory or DNA Data Bank, wilfully discloses it in any manner to any person or agency not entitled to receive it under this Act, or under any other law for the time being in force, shall be punishable with imprisonment for a term which may extend to three years and also with fine which may extend to one lakh rupees.

Penalty for obtaining information from DNA Data Bank without authorisation.

46. Whoever, without authorisation, wilfully obtains individually identifiable DNA information from the DNA laboratory or DNA Data Bank, shall be punishable with imprisonment for a term which may extend to three years and also with fine which may extend to one lakh rupees.

Penalty for using DNA sample or result without authorisation.

47. Whoever, without authorisation, wilfully uses any DNA sample or result of any DNA analysis, shall be punishable with imprisonment for a term which may extend to three years and also with fine which may extend to one lakh rupees.

Penalty for unlawful access to information in DNA Data Bank.

48. Whoever, accesses information stored in the DNA Data Bank, otherwise than in accordance with the provisions of this Act, shall be punishable with imprisonment for a 5 term which may extend to two years and also with fine which may extend to fifty thousand rupees.

Penalty for destruction, alterations, contamination or tampering with biological evidence.

49. Whoever, knowingly and intentionally, destroys, alters, contaminates or tampers with biological evidence which is required to be preserved under any law for the time being in force, with the intention to prevent that evidence from being subjected to DNA testing or 10 to prevent the production or use of that evidence in a judicial proceeding, shall be punishable with imprisonment for a term which may extend to five years and also with fine which may extend to two lakh rupees.

Penalty for contravention where no specific punishment is provided.

50. Whoever, contravenes any of the provisions of this Act or the rules and regulations made thereunder for which no penalty is provided in this Act, shall be punishable with 15 imprisonment for a term which may extend to two years and also with fine which may extend to fifty thousand rupees.

Offences by companies or institutions.

51. (*1*) Where an offence under this Act, has been committed by a company or institution, every person who at the time the offence was committed was in-charge of, and was responsible to, the company or institution for the conduct of the business of the 20 company or institution, as well as the company or institution, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of 25 such offence.

(*2*) Notwithstanding anything contained in sub-section (*1*), where an offence under this Act has been committed by a company or institution and it is proved that the offence has been committed with the consent or connivance of or is attributable to any neglect on the part of any director, manager, secretary or other officer of the company or institution, 30 such director, manager, secretary or other officer shall also be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly.

Explanation.—for the purposes of this section,—

(*a*) "company" means any body corporate and includes a firm or other association of individuals; and 35

(*b*) "director", in relation to a firm, means a partner in the firm.

CHAPTER IX

MISCELLANEOUS

Chairperson, Members, officers to be public servants.

52. The Chairperson, Members and other officers of the Board, National DNA Data Bank and Regional DNA Data Banks shall be deemed, when acting or purporting to act in 40 pursuance of any of the provisions of this Act, to be public servants within the meaning of section 21 of the Indian Penal Code. 45 of 1860.

Protection of action taken in good faith.

53. No suit, prosecution or other legal proceedings shall lie against the Central Government or any officer of the Central Government or the Chairperson, Vice-Chairperson or any Member or officer of the Board or the National DNA Data Bank or the Regional DNA Data Banks acting under this Act for anything which is in good faith done or intended to be done under this Act or the rules or regulations made thereunder.

Power of Central Government to supersede Board.

54. (*1*) If at any time the Central Government is of the opinion—

(*a*) that, on account of circumstances beyond the control of the Board, it is unable to discharge the functions or perform the duties assigned to it by or under the provisions of this Act; or

(*b*) that the Board has persistently defaulted in complying with any direction issued by the Central Government under this Act or in the discharge of the functions or performance of the duties imposed on it by or under the provisions of this Act and as a result of such default, the financial position of the Board or the administration of the Board has suffered; or

(*c*) that circumstances exist which render it necessary in the public interest to do so,

it may, by notification, supersede the Board for such period, not exceeding six months, as may be specified in the notification:

Provided that before issuing any such notification, the Central Government shall give a reasonable opportunity to the Board to make representations against the proposed supersession and shall consider the representations, if any, of the Board.

(*2*) Upon the publication of a notification under sub-section (*1*) superseding the Board,—

(*a*) the Chairperson and other Members shall, as from the date of supersession, vacate their offices as such;

(*b*) all the powers, functions and duties which may, by or under this Act, be exercised or discharged by or on behalf of the Board shall, until the Board is reconstituted under sub-section (*3*), be exercised and discharged by an administrator who shall be an official not below the rank of a Secretary to the Government of India, to be appointed by the Central Government; and

(*c*) all property owned or controlled by the Board shall, until the Board is reconstituted under sub-section (*3*), vest in the Central Government.

(*3*) On the expiration of the period of supersession specified in the notification issued under sub-section (*1*), the Central Government may reconstitute the Board by a fresh appointment and in such case any person or persons who vacated their offices under clause (*a*) of sub-section (*2*), shall not be deemed to be disqualified for appointment:

Provided that the Central Government may, at any time, before the expiration of the period of supersession, take action under this sub-section.

(*4*) The Central Government shall cause a copy of the notification issued under sub-section (*1*) and a full report of any action taken under this section and the circumstances leading to such action to be laid before each House of Parliament at the earliest.

Power of Central Government to issue directions.

55. (*1*) Without prejudice to the foregoing provisions of this Act, the Board shall, in the discharge of its functions and duties under this Act, be bound by such directions on questions of policy as the Central Government may give in writing to it from time to time.

(*2*) If any dispute arises between the Central Government and the Board as to whether a question is or is not a question of policy, the decision of the Central Government thereon shall be final.

Power to amend Schedule.

56. (*1*) The Central Government may, if it is of the opinion that it is expedient so to do, by notification, amend the Schedule so as to include therein or exclude therefrom, or vary the description of, any entry in any Part thereof.

(*2*) Every notification issued under sub-section (*1*) shall, as soon as may be after it is issued, be laid before each House of Parliament.

Court not to have jurisdiction.

57. No court shall have jurisdiction to entertain any suit or proceeding in respect of any matter which the Board is empowered by or under this Act to determine.

Power to make rules.

58. (*1*) The Central Government may, by notification, make rules for carrying out the provisions of this Act.

(*2*) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:—

(*a*) the pay and allowances of the Vice-Chairperson and the Member under sub-section (*3*), and the allowances payable to the Chairperson and other *ex officio* Members under sub-section (*4*) of section 5;

(*b*) the salaries and allowances payable to, and the terms and other conditions of service of officers and employees of the Board under sub-section (*2*) of section 11;

(*c*) manner in which the Board shall assist and co-operate in criminal investigation between various investigation agencies within the country and with any foreign State, international organisation or institution in dealing with DNA testing under clause (*n*) of section 12;

(*d*) such other functions of the Board under clause (*q*) of section 12;

(*e*) the manner of constitution of a selection committee and persons comprising the committee, for the appointment of a Director of the National DNA Data Bank under sub-section (*1*) of section 27;

(*f*) the educational qualifications and experience of the Director of the National DNA Data Bank under sub-section (*2*) of section 27;

(*g*) the salaries and allowances payable to, and the terms and other conditions of service including the manner of appointment, of the Director of the National DNA Data Bank and the Director of each of the Regional DNA Data Bank, under sub-section (*2*) of section 28;

(*h*) the form in which and the time at which the Board shall prepare its budget under sub-section (*1*) of section 41;

(*i*) the form in which and the time at which the Board shall prepare its annual report under section 42;

(*j*) the form in which the annual statement of accounts shall be prepared by the Board under sub-section (*1*) of section 43; and

(*k*) any other matter which is to be, or may be prescribed, or in respect of which provision is to be, or may be made by rules for carrying out the provisions of this Act.

Power to make regulations.

59. (*1*) The Board may, with the previous approval of the Central Government and after previous publication, by notification, make regulations consistent with this Act and the rules made thereunder, to carry out the provisions of this Act.

(*2*) In particular, and without prejudice to the generality of the foregoing power, such regulations may provide for all or any of the following matters, namely:—

(*a*) the time and place at which the Board shall meet and the procedure it shall observe with regard to the transaction of business at its meetings (including quorum at such meetings), under sub-section (*1*) of section 6;

(*b*) the other relevant purposes for the optimum use of DNA techniques and technologies under clause (*h*) of section 12;

(*c*) the form, the fee and the manner in which an application for accreditation shall be made by a DNA laboratory under sub-section (*2*) of section 13;

(*d*) onsite assessment requirements, standards and such other requirements to be complied by a DNA laboratory under sub-section (*3*) of section 13;

(*e*) the form, the fee and the manner in which an application for renewal of accreditation shall be made by a DNA laboratory under sub-section (*4*) of section 13;

(*f*) the obligations to be carried out by a DNA laboratory under sub-section (*1*) of section 17;

(*g*) the educational qualifications experience and other eligibility criteria, in respect of person in charge of a DNA laboratory, technical and managerial staff, and other employees of DNA laboratory under section 18;

(*h*) the measures to be taken, the level and intervals in which the employees shall undergo training and the records to be maintained, by the in charge of a DNA laboratory under section 19;

(*i*) the measures to be taken by DNA laboratories under sub-section (*1*) of section 20;

(*j*) the other sources for collection of DNA sample, under clause (*d*) of sub-section (*1*), of section 23;

(*k*) such other person under whose supervision DNA sample may be collected, under clause (*b*) of sub-section (*2*) of section 23;

(*l*) the format in which the National DNA Data Bank shall receive DNA data from Regional DNA Data Banks and store the DNA profiles under sub-section (*3*) of section 25;

(*m*) the powers and duties of the Director of the National DNA Data Bank under sub-section (*4*) of section 27;

(*n*) the appointment of number of officers, experts and other employees, their remunerations, terms and conditions of service, including the manner of appointment under sub-section (*3*) of section 28;

(*o*) the criteria and the procedure to be followed by the National DNA Data Bank on receipt of a DNA profile, the person to whom the result shall be communicated and the manner of communication under sub-section (*1*) of section 29;

(*p*) the manner in which the DNA profile of a suspect or an undertrial shall be expunged by the Director of the National DNA Data Bank under sub-section (*2*) of section 31;

(*q*) the manner in which the DNA profile of a person who is neither an offender nor a suspect shall be expunged from the crime scene index or a missing persons' index under sub-section (*3*) of section 31;

(*r*) other criteria for entry, retention and expunction of any DNA profile under sub-section (*4*) of section 31;

(*s*) the other purposes for which the information relating to DNA profiles, DNA samples and records relating thereto shall be made available under clause (*f*) of section 34;

(*t*) the terms and conditions for access to information under section 35;

(*u*) the manner in which access to the information in the crime scene index shall be restricted under section 37;

(*v*) any other matter which is to be, or may be, or in respect of which provisions is to be, or may be, made by regulations for carrying out the provisions of the Act.

Rules and regulations to be laid before Parliament.

60. Every rule and every regulation made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or regulation or both Houses agree that the rule or regulation should not be made, the rule or regulation shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule or regulation.

Power to remove difficulties.

61. (*1*) If any difficulty arises in giving effect to the provisions of this Act, the Central Government may, by order published in the Official Gazette, make such provisions not inconsistent with the provisions of this Act, as may appear to it to be necessary, for removing the difficulty:

Provided that no order shall be made under this section after the expiry of the period of two years from the date of commencement of this Act.

(*2*) Every order made under this section shall be laid, as soon as may be after it is made, before each House of Parliament.

SCHEDULE

[See sections 2*(1)(viii)*, 12*(o)*, 34*(e)* and 56*(1)]*

List of matters for DNA testing

PARTA

Offences under Indian Penal Code (45 of 1860) where DNA testing is useful for investigation of offences.

PART B

Offences under special laws:

(*i*) The Immoral Traffic (Prevention) Act, 1956 (104 of 1956);

(*ii*) The Medical Termination of Pregnancy Act, 1971 (34 of 1971);

(*iii*) The Pre-conception and Pre-natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994 (57 of 1994);

(*iv*) The Protection of Women from Domestic Violence Act, 2005 (43 of

2005); (*v*) The Protection of Civil Rights Act, 1955 (22 of 1955);

(*vi*) The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 (33 of 1989);

(*vii*) The Motor Vehicles Act, 1988 (59 of 1988).

PARTC

Civil disputes and other civil matters:

(*i*) Parental dispute (maternity or paternity);

(*ii*) Issues relating to pedigree;

(*iii*) Issues relating to assisted reproductive technologies (surrogacy, *in-vitro* fertilisation and intrauterine implantation or such other technologies);

(*iv*) Issues relating to transplantation of human organs (donor and recipient) under the Transplantation of Human Organs Act, 1994 (42 of 1994);

(*v*) Issues relating to immigration or emigration;

(*vi*) Issues relating to establishment of individual identity.

PARTD

Other cases:

(*i*) Medical negligence;

(*ii*) Unidentified human remains;

(*iii*) Identification of abandoned or disputed children and related issues.

STATEMENTOF OBJECTSAND REASONS

The Deoxyribonucleic Acid (DNA) is like a set of instructions or blueprint of all living forms, and it encodes a detailed set of plans for building different pieces of the cell of a living organism to grow and function. The DNA content of every human individual is comprised of one-half of the DNA from each of the two parents. The DNA blueprint varies from one individual to another, and it is this variation, which makes every individual (except identical twins) unique and different. The individual-to-individual variations in DNA permit its use as a means of identification and for establishment of biological relationships between individuals.

2. DNA technology, based on sound scientific principles has been found to be very effective in establishing the parentage of a child and identifying the source of a biological specimen obtained from a scene of crime. The concerns regarding appropriate use of DNA technology by the courts of law and other agencies has made it necessary to develop guidelines and standards for the DNA testing.

3. DNA technology has the potential of wide application in the justice delivery systems. In criminal cases, it helps in investigation of crimes through biological evidence including semen evidence in rape cases, blood evidence in murder cases, saliva evidence in identification of source of anonymous threat letters, etc. In civil cases, it helps in investigations relating to identification of victims of disasters like cyclones, air crash, etc. A number of crimes are committed by repeat offenders, who apprehension and conviction will be aided by comparison of biological evidence at the scene of crime with DNA profiles stored in a DNA Data Bank. At the same time, the DNA analysis offers substantial information, which if misused or improperly used, can cause harm to individuals or society.

4. Recognising the need for regulation of the use and application of DNA technology, a DNA Profiling Advisory Committee comprising of members from the fields of molecular biology, forensic science, human genetics, population biology, bioethics, legal profession, law enforcement agencies, etc., was constituted in December, 2003 to make recommendations for enacting suitable legislation. On the recommendations of the said Committee, a draft Bill was prepared. Later on, an Expert Committee chaired by the Secretary, Department of Biotechnology, was constituted in 2012 to discuss the privacy related issues. Based on the recommendations of the Expert Committee, the Bill was revised and subsequently referred to the Law Commission of India who in its two hundred and seventy-first report suggested the enactment of a legislation.

5. In view of the above, the DNA Technology (Use and Application) Regulation Bill, 2018 seeks to regulate the use of DNA technology for the purposes of establishing the identity of certain categories of persons including the victims, offenders, suspects, under trials, missing persons and unknown deceased persons. The Bill, *inter alia*, seeks to—

(*i*) prohibit laboratories from undertaking DNA testing, analysing, etc., without obtaining accreditation;

(*ii*) establish a National DNA Data Bank and Regional DNA Data Banks which shall store and maintain the DNA profiles in accordance with the provisions relating to the use and access to information, its retention and expunction;

(*iii*) establish a DNA Regulatory Board to carry out the functions assigned to it under the proposed legislation which, *inter alia*, include—

(*a*) advising the Central Govenment and the State Governments on all issues relating to establishing of DNA laboratories and DNA Data Banks and laying down guidelines, standards and procedures for establishment and functioning of such laboratories and Data Banks;

(*b*) granting accreditation to labouratories for undertaking DNA testing, analysing, etc., and to suspend or revoke such accreditation;

(*c*) assisting in criminal investigation between various investigation agencies within the country and with any foreign State, international organisation or institution; and

(*d*) making recommendations to the Central Government for the application of privacy protection in relation to the access to, or the use of, DNA samples and their analysis;

(*iv*) make provision for the security and confidentiality of information relating to DNA profiling, DNA samples and any records thereof, forwarded to or in the custody of Natioinal DNA Data Bank, Regional DNA Data Banks, DNA laboratories or any person or authority;

(*v*) provide for offences and penalties for contravention of certain provisions of the Bill.

6. The Bill seeks to achieve the above objectives.

NEW DELHI;
The 27*th June*, 2019

DR.HARSHVARDHAN

Notes on Clauses

Clause 2 of the Bill seeks to define the various expressions used in the Bill.

Clause 3 of the Bill seeks to provide for the establishment of the DNA Regulatory Board as body corporate, having perpetual succession and a common seal, whose head office shall be at such place in the National Capital Region, as the Central Government may specify. The Board may, with the approval of the Central Government, establish regional offices at such other places as it may deem necessary.

Clause 4 of the Bill seeks to provide for the composition of the DNA Regulatory Board which shall consist of a Chairperson, a Vice-Chairperson, Member-Secretary and ten other Members to carry out the functions assigned to it under the Bill.

Clause 5 of the bill seeks to provide for the terms of office, conditions of service of, Chairperson, Vice-Chairperson and other Members of the Board including their pay and allowances.

Clause 6 of the Bill seeks to provide for the procedure for meetings of the Board. It further provides that the Chairperson shall have powers of general superintendence and direction of the affairs of the Board and may also exercise such other powers as may be delegated to him by the Board.

Clause 7 of the Bill seeks to provide that the Members of the Board shall not participate in meetings in certain cases.

Clause 8 of the Bill seeks to provide for the removal and resignation of Chairperson or Member and filling up of casual vacancies of Board.

Clause 9 of the Bill seeks to provide that no act or proceeding of the Board shall be invalid merely by reason of any vacancy in, or any defect in the constitution of, the Board; or any defect in the appointment of a person acting as a Member of the Board; or any irregularity in the procedure of the Board not affecting the merits of the case.

Clause 10 of the Bill seeks to provide that the Board may, by general or special order published in the Official Gazette, delegate to the Chairperson or any other Member, subject to such conditions, if any, as may be specified in the order, its functions under the Bill (except the power to make regulations), as it may deem necessary. It further provides for laying of such order before each House of Parliament.

Clause 11 of the Bill seeks to provide that the Board may, with the previous approval of the Central Government, appoint such officers and other employees, as it considers necessary, for the efficient discharge of its functions under the Bill. It further provides that the salaries and allowances payable to, and the other terms and conditions of service, including the manner of appointment, of the officers and employees, shall be prescribed by rules made by the Central Government.

Clause 12 of the Bill enumerates the various functions of the Board which shall include, *inter alia*, (*a*) advising the Central Government and the State Governments on all issues relating to estabiaing of DNA laboratories and DNA Data Banks and laying down guidelines, standards and procedures for establishment and functioning of such laboratories and Data Banks;

(*b*) granting accreditation to laboratories for undertaking DNA testing, analysing, etc., and to suspend or revoke such accreditation; (*c*) assisting in criminal investigation between various investigation agencies within the country and with any foreign State, international organisation or institution; and (*d*) making recommendations to the Central Government for the application of privacy protection in relation to the access to, or the use of, DNA samples and their analyses.

Clause 13 of the Bill seeks to provide that no laboratory shall undertake DNA testing, analysing or any other procedure to generate data and perform analysis relating thereto without obtaining accreditation from the Board. It further provides that a laboratory functioning as on the date of the commencement of the Bill, may undertake DNA testing or any other procedure relating thereto, for a period of sixty days from such commencement and apply to the Board in accordance with sub-clause (*2*) of the said clause, for obtaining accreditation and that such laboratory may, after making an application, continue to undertake DNA testing or any other procedure relating thereto, until the Board decides its application. It also provides that the application for renewal of accreditation shall be made to the Board at least sixty days prior to the expiration of the accreditation in such form and manner and along with such fees as may be specified by regulations made by the Board.

Clause 14 of the Bill provides for grant of accreditation or renewal to the laboratory which seeks to undertake DNA testing, analysing or any other procedure to generate data and perform analysis relating thereto. It further provides that the accreditation or renewal of accreditation under this clause shall be valid for a period of two years.

Clause 15 of the Bill seeks to provide for the power of Board to suspend or revoke accreditation granted to a DNA laboratory, if such laboratory fails to comply with the conditions specified therein. It further provides that no revocation of accreditation of a DNA laboratory shall be made by the Board without giving the laboratory an opportunity of being heard. It also provides that on the revocation or suspension of accreditation of the DNA laboratory, the laboratory shall hand over all DNA samples and records relating to DNA testing from its laboratory to such DNA laboratory as may be directed by the Board and it shall not retain any sample or record.

Clause 16 of the Bill seeks to provide that any laboratory aggrieved by an order of rejection of its application for accreditation or renewal thereof under clause 14 or an order of suspension or revocation of accreditation under clause 15, may prefer an appeal to the Central Government or such other authority as that Government may, by notification, specify, within a period of sixty days from the date of such order, which shall be decided by the Central Government or the authority, as the case may be, within a period of sixty days from the date of receipt of such appeal.

Clause 17 of the Bill seeks to provide that every DNA laboratory, which has been granted accreditation for undertaking DNA testing or any other procedure under the Bill, shall follow such standards and procedures for quality assurance in the collection, storage, testing and analysis of DNA sample, establish and maintain such documentation and quality system, prepare and maintain quality manuals containing such details and share DNA data prepared and maintained by it with the National DNA Data Bank and the Regional DNA Data Banks, in such manner as may be specified by regulations.

Clause 18 of the Bill seeks to provide that every DNA laboratory shall appoint a person to be in charge of the laboratory and employ such scientific, technical and other staff, possessing such qualifications and experience as may be specified by regulations, for discharging the duties and performing the functions under the Bill.

Clause 19 of the Bill seeks to provide that the in-charge of the DNA laboratory shall take such measures for facilitating skill up gradation and advancement in the knowledge of its employees in the field of DNA testing and other related fields, as may be specified by regulations, ensure that its employees undergo regular training in DNA related subjects, in such institutions, level and intervals, as may be specified by regulations and maintain such records relating to the laboratory and its personnel as may be specified by regulations.

Clause 20 of the Bill seeks to specify the various measures to be taken by DNA laboratory.

Clause 21 of the Bill seeks to prohibit taking of bodily substances from a person who is arrested for an offence (other than the specified offences) unless the consent is given in writing for the taking of the bodily substances.

Clause 22 of the Bill seeks to provide that any person who was present at the scene of a crime when it was committed; or is being questioned in connection with the investigation of a crime; or intends to find the whereabouts of his missing or lost relative, in disaster or otherwise, may voluntarily consent in writing to bodily substances being taken from him for DNA testing, subject to certain conditions specified therein.

Clause 23 of the Bill seeks to provide for the sources and manner of collection of samples for DNA testing.

Clause 24 of the Bill seeks to provide that if the trial court is satisfied with the plea of the accused person that the bodily substances taken from such person or collected from the place of occurrence of crime had been contaminated, the court may direct the taking of fresh bodily substances for re-examination.

Clause 25 of the Bill seeks to provide for the establishment of a National DNA Data Bank and such number of Regional DNA Data Banks for every State, or two or more States, as it may deem necessary. It further provides that the Regional DNA Data Banks shall share all DNA data stored and maintained by it with the National DNA Data Bank.

Clause 26 of the Bill seeks to provide that every DNA Data Bank shall maintain the indices for various categories of data and the information specified therein.

Clause 27 of the Bill seeks to provide for the appointment of a Director for the National DNA Data Bank and Directors for each Regional DNA Data Banks.

Clause 28 of the Bill seeks to provide for appointment of the officers and other employees of the National DNA Data Bank and the Regional DNA Data Banks, their salaries and allowances, terms and other conditions of service including the manner of appointment, of the Director of the National DNA Data Bank and the Director of each of the Regional DNA Data Bank.

Clause 29 of the Bill seeks to provide for the criteria and procedure to be followed by the National DNA Data Bank in comparing and communicating of DNA profile.

Clause 30 of the Bill seeks to provide for the manner of sharing of DNA profiles with foreign Government or organisation or institution or agencies. It further provides that the Central Government may, in consultation with the Board, determine the nature and extent of sharing DNA profiles in respect of offenders, suspects, under trials, missing persons and unknown deceased persons with the Government of a foreign State or an international organisation or an institution established by that Government or organisation, and seek similar information from such foreign State, organisation or institutions.

Clause 31 of the Bill seeks to provide for the manner of retention and removal of records in the DNA Data Bank.

Clause 32 of the Bill seeks to make provision for the security and confidentiality of Information. It requires the Board to ensure that the information relating to DNA profiles, DNA samples and any records thereof, forwarded to, or in custody of the National DNA Data Bank or the Regional DNA Data Banks or a DNA laboratory or any other person or authority under the Bill, are secured and kept confidential.

Clause 33 of the Bill seeks to provide all DNA data, including DNA profiles, DNA samples and records thereof, contained in any DNA laboratory and DNA Data Bank shall be used only for the purposes of facilitating identification of the person and not for any other purpose.

Clause 34 of the Bill seeks to provide for the access to information in certain cases.

Clause 35 of the Bill seeks to provide for the access to information for the sole purpose of operation, maintenance and training, in accordance with such terms and conditions as may be specified by regulations.

Clause 36 of the Bill seeks to provide for the access to information in DNA Data Bank for one time keyboard search by the person specified therein.

Clause 37 of the Bill seeks to provide for the restriction on access to information in crime scene index, in such manner as may be specified by regulations, if such information relates to a DNA profile derived from bodily substances of a victim of an offence which forms or formed the object of relevant investigation; or a person who has been eliminated as a suspect in the relevant investigation.

Clause 38 of the Bill seeks to provide for the prohibition on access to information in DNA Data Banks.

Clause 39 of the Bill seeks to provide for the grants to the Board by the Central Government.

Clause 40 of the Bill seeks to provide for the constitution of the DNA Regulatory Board Fund.

Clause 41 of the Bill seeks to provide for the preparation of the budget by the Board showing the estimated receipts and expenditure of the Board and forwarding the same to the Central Government.

Clause 42 of the Bill seeks to provide for the preparation of the annual report by the Board giving a full account of its activities during the previous financial year and submit a copy thereof to the Central Government.

Clause 43 of the Bill seeks to provide that the accounts and other relevant records of the Board shall be maintained in the form specified by the Central Government by notification and the same shall be audited by the Comptroller and Auditor-General of India.

Clause 44 of the Bill seeks to provide that the annual report and auditor's report of the Board shall be laid before each House of Parliament.

Clause 45 of the Bill seeks to specify the punishment for unauthorised disclosure of Information in DNA Data Bank. It provides that whoever, by virtue of his employment or official position or otherwise, has in his possession, or has access to, individually identifiable DNA information kept in the DNA laboratory or DNA Data Bank, wilfully discloses it in any manner to any person or agency not entitled to receive it under the Bill, or under any other law for the time being in force, shall be punishable with imprisonment for a term which may extend to three years and also with fine which may extend to one lakh rupees.

Clause 46 of the Bill seeks to specify the punishment for obtaining information from DNA Data Bank without authorisation. It provides that whoever, without authorisation, wilfully obtains individually identifiable DNA information from the DNA laboratory or DNA Data Bank, shall be punishable with imprisonment for a term which may extend to three years and also with fine which may extend to one lakh rupees.

Clause 47 of the Bill seeks to specify the punishment for using DNA sample or result without authorisation. It provides that whoever, without authorisation, wilfully uses any DNA sample or result of any DNA analysis, shall be punishable with imprisonment for a term which may extend to three years and also with fine which may extend to one lakh rupees.

Clause 48 of the Bill seeks to specify the punishment for unlawful access of information in DNA Data Bank. It provides that whoever, accesses information stored in the DNA Data Bank, otherwise than in accordance with the provisions of the Bill, shall be punishable with imprisonment for a term which may extend to two years and also with fine which may extend to fifty thousand rupees.

Clause 49 of the Bill seeks to specify the punishment for destruction, alterations, contamination or tampering with biological evidence. It provides that whoever, knowingly and intentionally, destroys, alters, contaminates or tampers with biological evidence which is required to be preserved under any law for the time being in force, with the intention to

prevent that evidence from being subjected to DNA testing or to prevent the production or use of that evidence in a judicial proceeding, shall be punishable with imprisonment for a term which may extend to five years and also with fine which may extend to two lakh rupees.

Clause 50 of the Bill seeks to specify the punishment for contravention when no specific punishment is provided. It provides that whoever, contravenes any of the provisions of the Bill or the rules and regulations made there under for which no penalty is provided in the Bill, shall be punishable with imprisonment for a term which may extend to two years and also with fine which may extend to fifty thousand rupees.

Clause 51 of the Bill seeks to specify the punishment for offences by companies or institutions.

Clause 52 of the Bill seeks to provide that the Chairperson, Members and other officers of the Board, National DNA Data Bank and Regional DNA Data Banks shall be deemed, when acting or purporting to act in pursuance of any of the provisions of the Bill, to be public servants within the meaning of section 21 of the Indian Penal Code.

Clause 53 of the Bill seeks to provide for the protection of action taken in good faith by any officer of the Central Government or Board or any Member or officer or other employee of the Board.

Clause 54 of the Bill seeks to empower the Central Government to supersede Board in the circumstances specified therein.

Clause 55 of the Bill seeks to empower the Central Government to issue directions.

Clause 56 of Bill seeks to empower the Central Government to amend the Schedule.

Clause 57 of the Bill seeks to provide that no court shall have jurisdiction to entertain any suit or proceeding in respect of any matter which the Board is empowered by or under the Bill to determine.

Clause 58 of the Bill seeks to empower the Central Government to make rules on matters enumerated therein.

Clause 59 of the Bill seeks to provide that the Board may, with the previous approval of the Central Government and after previous publication, by notification in Official Gazette, make regulations consistent with the Bill and the rules made there under, to carry out the provisions of the Bill.

Clause 60 of the Bill seeks to provide that every rule and regulation made under the Bill shall be laid before each House of Parliament.

Clause 61 of the Bill seeks to empower the Central Government, by order published in the Official Gazette, to remove difficulties which may arise in giving effect to the provisions of the Bill within a period of two years from the date of enforcement of the Act. It further requires every such order to be laid before each House of Parliament.

FINANCIAL MEMORANDUM

Clause 3 of the Bill provides for the establishment of a DNA Regulatory Board to exercise powers conferred on, and perform the functions assigned to it, under the proposed legislation.

2. Clause 25 of the Bill provides for the establishment of a National DNA Data Bank and Regional DNA Data Banks.

3. Clause 40 of the Bill provides for constitution of a Fund to be called the DNA Regulatory Board Fund, into which shall be credited grants and loans made to the Board, all sums received by the Board including fees or charges, or donations from such other source as may be decided by the Central Government and any income from investment of the amount of the Fund.

4. It is estimated that there would be an expenditure of approximately twenty crore rupees as non-recurring capital expenditure and a further recurring expenditure of five crore rupees per annum to carry out all the activities envisaged under the proposed legislation.

5. The Bill, if enacted and brought into operation, would not involve any other expenditure of a recurring or non-recurring nature from the Consolidated Fund of India.

MEMORANDUM REGARDING DELEGATED LEGISLATION

Clause 58 of the Bill empowers the Central Government to make rules with respect to the matters specified under sub-clause (*2*) which, *inter alia*, relate to (*a*) the allowances payable to the Chairperson and other *ex officio* Members and the pay and allowances of the Vice-Chairperson and the expert Member; (*b*) the salaries and allowances payable to, and the terms and other conditions of service of officers and employees of the Board; (*c*) the manner in which the Board shall assist and co-operate in criminal investigation between various investigation agencies within the country and with any foreign State, international organisation or institution in dealing with DNA testing; (*d*) the manner of constitution of a selection committee and persons comprising the committee, for the appointment of a Director of National DNA Data Bank; (*e*) the salaries and allowances payable to, and the terms and other conditions of service including the manner of appointment, of the Director of the National DNA Data Bank and the Director of each of the Regional DNA Data Banks; (*f*) and the form for preparation of the annual report and the annual statement of accounts by the Board.

2. Clause 59 of the Bill empowers the Board to make regulations with the previous approval of the Central Government. The matters in respect of which the Board may make regulations, *inter alia*, relate to (*a*) the time and place of meeting of the Board and the procedure with regard to the transaction of business at its meetings; (*b*) the form, the fee and the manner in which an application for accreditation shall be made by a DNA laboratory; (*c*) onsite assessment requirements, standards and such other requirements to be complied by a DNA laboratory; (*d*) the obligations to be carried out by a DNA laboratory; (*e*) the educational qualifications and experience and other eligibility criteria in respect of person in-charge of a DNA laboratory, technical and managerial staff, and other employees of DNA laboratory; (*f*) the measures to be taken by DNA laboratories; (*g*) the format in which the National DNA Data Bank shall receive DNA data from Regional DNA Data Banks and store the DNA profiles; (*h*) the manner in which the DNA profile of a suspect or an under trial and of a person who is neither an offender nor a suspect shall be expunged; (*i*) the terms and conditions for access to information; and (*j*) the manner in which access to the information in the crime scene index shall be restricted.

3. Clause 60 of the Bill requires that the rules and regulations made under the proposed legislation be laid before each House of Parliament.

4. The matters in respect of which the rules or regulations may be made are matters of procedure and administrative detail, and as such, it is not practicable to provide for them in the Bill itself. The delegation of legislative power is, therefore, of a normal character.

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BILL

to provide for the regulation of use and application of Deoxyribonucleic Acid (DNA) technology for the purposes of establishing the identity of certain categories of persons including the victims, offenders, suspects, undertrials, missing persons and unknown deceased persons and for matters connected therewith or incidental thereto.

(Dr. Harsh Vardhan, Minister of Science and Technology and Earth Sciences)

MGIPMRND—1057LS(S3)—01-07-2019.

Annexure-II

Statement I

List of persons/organisations who submitted memoranda to the Committee

1. Dr. Shambhavi Naik, Takshashila Institution, Bengaluru
2. Shri Apar Gupta, Internet Freedom Foundation, New Delhi
3. Shri Arghya Sengupta, Vidhi Centre for Legal Policy, New Delhi
4. Dr. M R Madhavan, PRS Legislative Research, New Delhi
5. Dr. Murali Neelakantan, Head at Amicus, Mumbai
6. Ms. Shreya Rastogi, National Law University, Delhi
7. Ms. Smitha Krishna Prasad, National Law University, Delhi
8. Ms. Pallavi Bedi, Centre for Internet & Society, New Delhi
9. Shri Gopal Krishna, Citizens Forum for Civil Liberties, New Delhi
10. Ikigai Law, New Delhi
11. Dr J R Gaur, Director (Retd), FSL, Himachal Pradesh
12. Mr. Achin Jana, Advocate, High Court of Calcutta
13. Dr. Nupur Chowdhury, Centre for the Study of Law and Governance, Jawaharlal Nehru University, New Delhi
14. Shri Ashish Gosain, LLM, Advocate, Supreme Court of India
15. Dr. Kirodeelal Meena
16. Shri Gopal P K
17. Shri Anshul Ranjan

Statement II

List of Non-official/official expert witnesses who appeared before the Committee

1. Dr. Shambhavi Naik, Fellow, Takshashila Institution, Bengaluru
2. Shri Apar Gupta, Executive Director, Internet Freedom Foundation, New Delhi
3. Shri Arghya Sengupta, Founder, Vidhi Centre for Legal Policy
4. Dr. M.R. Madhavan, President, PRS India, New Delhi
5. Dr. Mandira Kala, Head of Research, PRS India, New Delhi
6. Shri Murali Neelakantan, Advocate and Principal at Amicus, Mumbai
7. Ms. Shreya Rastogi, Associate Researcher, National Law University, Delhi

8. Ms. Smitha Krishna Prasad, Associate Director, Centre for Communication Governance, National Law University, Delhi.
9. Ms. Pallavi Bedi, Fellow, Centre for Internet and Society, New Delhi.
10. Shri Amber Sinha, Fellow, Centre for Internet and Society, New Delhi.
11. Dr. J.M. Vyas, Director General, Gujarat Forensic Sciences University (GFSU), Gujarat
12. Prof. Seyed E. Hasnain, Vice Chancellor, Jamia Hamdard University, New Delhi
13. Dr. J. Gowrishankar, Director, Indian Institute of Science Education and Research (IISER), Mohali
14. Dr. Debashis Mitra, Director, Centre for DNA Fingerprinting & Diagnostics (CDFD), Hyderabad
15. Shri R.S. Verma, Additional Secretary, Department of Legal Affairs

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Annexure-III

Written views of eminent persons on the Bill

In addition to the views expressed by the experts who appeared before the Committee, the Chairman requested a few distinguished police administrators and jurists for their views on the Bill. These are as follows:

1. *Shri R.K. Raghavan, IPS (Retd) and former Director CBI*

I have gone through the draft legislation bill several times. In my view it is a nearly perfectly drafted law that does not need any drastic changes. Of course there are the usual apprehensions that a DNA data bank can be misused by law enforcement or adversaries of suspects whose data are stored. These exist the world over. There is nothing like a foolproof law just as there is no perfect human being who will not be swayed by pecuniary considerations or personal prejudices.

We can fault the lawmakers only if they do not provide for adequate safeguards against prospects of those in authority coercing individuals to submit themselves to collection of DNA samples. Or if they fail to fuse enough security into the system that stores DNA data. For offences punishable up to seven years, the consent of a suspect is required for drawing his or her sample. This is guarantee enough against coercion.

I bring it to the notice of the Honourable Parliamentary Committee that a DNA sample is used not only to fix criminal responsibility. It is also used to discharge a person arraigned for a crime by mistake. In the U.S., for instance, DNA has been used both by police agencies for solving a complicated offence, and by convicted criminals to exculpate themselves. There are scores of cases in which persons on death row awaiting the electric chair had moved courts successfully to prove their innocence. Unfortunately the statutes of only a few States allow prisoners to demand a DNA test. There is a strong movement to extend this facility to other States as well. Is this not reason enough to stabilise DNA testing after building enough safeguards against tampering or leakage of data.

The DNA data bank is a computerised system. It is as safe as the best computer systems in the world are. And it has been well established - particularly after Wikileaks- that to expect 100 percent security is preposterous. Ultimately a system is as strong as its weakest link.

I am all for the Bill to be pursued. The only requirement is statutory provision for

rigorous training of law enforcement/ laboratory personnel who will be handling the collection and storage of data.

2. *Justice B.S. Chauhan, retired Supreme Court Judge and former Chairman Law Commission*

The issues raised by the honourable Members of the Committee were raised in the Law Commission also at the time of drafting the Bill. All legal, ethical and constitutional issues were considered at that time. The issues raised by the honourable Members are misconceived for the reason that this Bill is proposed only for the purpose of identification (alive or dead) and not beyond it. It protects the privacy of individuals, maintains confidentiality, serves public interest and subserves the cause of justice. The Code of Criminal Procedure, 1973 (Cr.PC) was amended in 2005 and the amendment came into force with effect from 23.06.2006. Two provisions were inserted in the code – s. 53A and s.311A. This Bill does not go beyond the scope those two provisions in the Cr.PC. The said provisions are in force and being observed by all courts and investigating agencies. The provisions contained in Clauses 21(2), 21(3), 22(2) and the Proviso to Clause 23(2)b are squarely covered by the said provisions added in the Cr.PC. While using the provisions for the purpose of identification of a human being or a dead person, strict adherence to 13 CODIS loci will eliminate the apprehension of revealing genetic traits.

The proposed provisions in the Bill are a part of legislations in almost all developed countries. The apprehension of enforcing Clause 2(iv) is not worth consideration for the reason that a mere apprehension of abuse of legal provision is not a ground of challenging the validity of law. Therefore, the Legislature should not hesitate to enact a provision merely on the apprehension that it would be vulnerable to misuse. Here, I would like to cite the examples of two Acts, viz., The Dowry Prohibition Act, 1961 and The Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989. Though there are widespread allegations that these Acts are liable to be misused, they find place in our statute book. Further, I assure you, due care has been taken to prevent violation of statutory provisions, providing for severe penalties. While preparing the draft Bill, the Commission had taken into consideration all judgments of the honourable Supreme Court protecting the fundamental, Constitutional, legal and human rights of citizens, whether alive or dead.

As explained above, the purpose of the Bill is restricted only to identification of a person, living or dead, that too with proper safeguards, and hence the objection raised by the honourable Members about the long title is misplaced.

3. *Justice Madan Lokur, retired Supreme Court Judge*

Preamble - Inclusion of "suspects" and "undertrials"

The preamble to the Bill provides for "*the regulation of use and application of Deoxyribonucleic Acid (DNA) technology for the purposes of establishing the identity of certain categories of persons including the victims, offenders, suspects, undertrials, missing persons and unknown deceased persons and for matters connected therewith or incidental thereto.*

1. The first question that requires an answer is whether a 'suspect' should be subjected to DNA technology for the purposes of identification, possibly in respect of a crime. In a 'blind' crime or a crime involving a large number of persons (such as a riot) everybody is suspect, without any real basis. Theoretically, therefore, thousands of persons can be subjected to DNA profiling on a mere suspicion. Such an unbridled power is easily capable of misuse and abuse by targeting innocents, against whom there is not a shred of evidence. Such an unbridled police power ought not to be conferred on anybody or any agency as it would amount to a threat to the life, liberty, dignity and privacy of a person.
2. Although the preamble does not refer to a witness, the text of the Bill does and the view expressed above would be applicable with greater vigour to a witness, who has absolutely no connection with the commission of a crime, and might, in most cases be merely a bystander or a 'chance witness.'
3. An undertrial is a person who has been arrested in connection with a crime and is in lawful judicial/police custody or is on bail pursuant to an order passed by a competent court. The rights of undertrials are, in effect, considered later while referring to the rights of arrested persons since they fall in the same broad category.

Targeting through misuse

4. Misuse of the provisions of the Bill can lead to targeting of select groupings, including social, linguistic, religious and other minorities on the ground of being suspects. The Law Commission in its 271st Report noted with concern the targeting of minorities on the basis of collected DNA information. The Law Commission was considering the 2017 Draft Bill and it noted as follows:

"7.5. The Bill of 2017 provides provisions intended to protect the right to privacy. The mechanism provided permits for processing of DNA samples only for 13 CODIS loci which would not violate in any way the privacy of a person and as a result will never go beyond identification of a particular person. The strict adherence to 13 CODIS loci will eliminate the apprehension of revealing genetic traits."

5. The precautionary note sounded by the Law Commission seems to have been overlooked in the present Bill which does not contain any safeguard or mechanism to prohibit processing of DNA samples for anything other than identification. Clause 33 of the present Bill states that *"All DNA data, including DNA profiles, DNA samples and records thereof, contained in any DNA laboratory and DNA Data Bank shall be used only for the purposes of facilitating identification of the person and not for any other purpose."* While this may appear mandatory, it is really directory in nature since there is no penalty for violating the prohibition, rendering it toothless. Further, there is no anti-discrimination clause in the Bill which would emphasise protection against targeting of any ethnic, racial or other group or community.

6. The Bill does not mandate the creation of separate Data Banks for DNA samples collected for the purpose of criminal investigations and those collected for civil matters. The creation of a single data base through Clause 25 which may be searched for both criminal and civil purposes will result in the DNA of people who only consented to give samples for civil purposes becoming potential results in a criminal investigation search, through false positives or otherwise. This will result in a presumption against the person, even though they have not consented to giving their DNA sample for use in the criminal investigation. It will also place them at a disadvantage vis-à-vis other persons, who may also be potential suspects or accused, whose DNA does not happen to be in the Data Bank.

7. International organisations working in genetic research[1] have emphasized the need to restrict DNA profiling in the Bill so that it uses only non-coding DNA which prevents the use of parts of the DNA which code for personal characteristics, including medical conditions.

[1] Helen Wallace, Director of GeneWatch UK in The Hindu https://www.thehindu.com/opinion/op-ed/decoding-the-dna-bill/article24636395.ece

8. The "Forensic Genetics Policy Initiative" (FGPI) published a report "Establishing Best Practice for Forensic DNA Databases" in 2017[2] after extensive consultation and a review of policies worldwide, in which it is noted that DNA use policies must attempt to minimise the potential for racial/ ethnic bias as follows:

> "DNA databases have often been controversial because of racial bias with respect to the selection of those individuals who are subject to DNA testing and retention. This bias results from multiple causes throughout the criminal justice systems in the UK and the USA. There is no single legislative provision that can eliminate racial bias with regard to whose records are kept on a DNA database. However, it is clear that the retention of DNA profiles from innocent persons who have been arrested but not convicted of offences will exacerbate such bias. …
>
> Best practice will involve a combination of legal provisions preventing discrimination, combined with in-depth consideration of the effect of policies on ethnic minorities."

9. Quite apart from the above, in motivated investigations, the involuntary taking of samples from "suspects" and "undertrials" may also enable targeting of vulnerable persons by the police, particularly in motivated investigations.

Clause 2(iv) - Crime Scene Index

1. The Crime Scene Index defined in Clause 2(iv) of the Bill includes DNA profiles from samples "on or within the body of a person, or on anything, or at any place, associated with the commission of the offence" - 2(iv)(d).

2. Clause 31(1) of the Bill provides that the information in the Crime Scene Index shall be indefinitely retained. Therefore, DNA profiles (prepared on the basis of samples taken under Clause 22) can be retained in the crime scene index and stored indefinitely. This appears to be a very broad power to store biological information without any clear objective specified.

3. Access to information in the Crime Scene Index is restricted by Clause 37 only with regard to the profiles of victims or persons who have been eliminated as suspects in an investigation. Access is therefore not restricted to any other profiles maintained in this index, even if the persons are

[2] Available at http://dnapolicyinitiative.org/

undertrials or only witnesses. This could pose a threat to the privacy of the persons whose profiles are stored in the Crime Scene Index.

4. The FGPI's 2017 Report notes that evidence from crime scenes is more effective than individual DNA profiles. However, it stresses that *"Best practice legislation requires a clear definition of crime scene evidence, so that police are not allowed to collect DNA that people have left behind elsewhere (for example, on a coffee cup in a shop or at a political meeting), unless the location is part of a criminal investigation."*

5. There is no definition of what constitutes evidence from the "crime scene" in Clause 2(iv) of the Bill and given the broad nature of 2(iv)(d), there is a high degree of possibility of collection, storage and retention of material which is not relevant for the purposes of the investigation.

In providing a view on a few other provisions of the present Bill, the overriding concern has been that of privacy under Article 21 and equality of treatment, both procedural and substantive, under Article 14 of the Constitution of India.

A. General Observations

Regarding Clauses 21(2), 21(3), 22(2) and the Proviso to Clause 23 (2) (b)

1. Clause 21 of the Bill is too broad in its application. Under Clause 21(1), consent is not required for taking a biological sample of a person arrested for a 'specified offence' that is, an offence punishable with death or imprisonment for more than 7 years. On the other hand, consent is postulated for taking a biological sample of a person arrested for an offence with imprisonment for 7 years or less. Is this categorization justified?

   To get over the rigour of equal treatment under the law mandated by Article 14 of the Constitution, not only must there be an intelligible differentia, but it must have a reasonable nexus with the object sought to be achieved. In ***The State of West Bengal vs. Anwar Ali Sarkar***[3] while considering Article 14, it was pithily held by one of the learned Judges of the Supreme Court that:

   > "Mere classification, however, is not enough to get over the inhibition of the Article. The classification must not be arbitrary but must be rational, that is to say, it must not only be based on some qualities or characteristics which are to be found in all the persons grouped together and not in others who are left out but those qualities

[3] [1952] 1 SCR 284

> or characteristics must have a reasonable relation to the object of the legislation. In order to pass the test, two conditions must be fulfilled, namely, that the classification must be founded on an intelligible differentia which distinguishes those that are grouped together from others and that that differentia must have a rational relation to the object sought to be achieved by the Act. The differentia which is the basis of the classification and the object of the Act are distinct things and what is necessary is that there must be a nexus between them. In short, while the Article forbids class legislation in the sense of making improper discrimination by conferring privileges or imposing liabilities upon persons arbitrarily selected out of a large number of other persons similarly situated in relation to the privileges sought to be conferred or the liability proposed to be imposed, it does not forbid classification for the purpose of legislation, provided such classification is not arbitrary in the sense I have just explained."

Applying the test laid down, it could be said that there is an intelligible differentia between offences where the punishment exceeds 7 years and where the punishment is 7 years or less. However, the object sought to be achieved by this classification is not clear. If the object is to secure conviction on the basis of scientific evidence (as it appears), then the term of imprisonment is irrelevant and has no rational nexus with the object sought to be achieved. Conviction on the basis of scientific evidence is important regardless of whether that person has committed an offence punishable with imprisonment of more or less than 7 years.

2. The provisions of Clause 21 apply to a person who is arrested but not convicted or under trial. It is common knowledge that two or more persons may be accused of the same crime, as conspirators or accomplices. Depending on the role of the accused person, one of them might be arrested for a 'specified offence' while the other may not be arrested for a specified offence. Therefore, though the crime is the same, the offence is different and therefore the punishment is also different. The test laid down by the Supreme Court of "the object sought to be achieved" is not met by the section or is, at best, tenuous. Is the focus on the crime or the criminal or the punishment or on collection of evidence?

3. It is also common knowledge that the police have the propensity to accuse a person of an offence carrying the maximum punishment. For example, a case

of voluntarily causing grievous hurt is usually recorded as an attempt to murder. In a case of voluntarily causing grievous hurt, the punishment is maximum 7 years and it would, therefore, not be a 'specified offence' while attempt to murder would be a 'specified offence'. In such a case, the accused transitions from a state of 'voluntarily' providing a biological sample to a state of being obliged to provide a biological sample, which could have a long-term adverse impact on the accused, apart from violating privacy rights.

4. A person can also be arrested for a frivolous, trumped-up, or a motivated 'specified offence' that has no substance at all and even in such a case the DNA sample can be taken, for which the arrested person has no recourse in law. It is not enough to say that the law will take its own course when a person's reputation has already been damaged and a biological sample taken. The importance of Article 21 pales into insignificance in such cases.

5. The application of clause 21 to children below the age of 18 years is disconcerting. The propensity of the police, while arresting a juvenile in conflict with law, is to record the age of the juvenile as 19 years so that he is kept in a jail (for the convenience of the police) rather than an Observation Home. There are several decisions of the courts which conclude that the offender was a juvenile when he/she committed the crime, but was tried as an adult. In such cases, a juvenile in conflict with law would be virtually compelled to provide a biological sample if he/she is arrested for a 'specified offence' much to the detriment of the future of the juvenile and contrary to principles of restorative justice.

6. The other rather disconcerting aspect is that under clause 21, the stage of taking the sample is at the point of arrest, or apprehension. This could lead to a conflict with regard to a juvenile between the ages of 16-18 years who is apprehended for a 'specified offence'. The juvenile could then be treated as an adult by the police, thereby by-passing the provisions of Section 15 of the Juvenile Justice (Care and Protection of Children) Act, 2015. There is then a clear danger that a preliminary assessment under Section 15 of the Juvenile Justice would not be made and a biological sample taken of the juvenile without determining whether the juvenile had the mental and physical capacity to commit such offence, the ability to understand the consequences of the offence and the circumstances in which he allegedly committed the offence. There is nothing in the Bill to safeguard the rights of the child against such use or abuse of the police's broad powers under Clause 21.

7. The right to privacy as recognised in ***Justice K.S. Puttaswamy & Ors. v. Union of India & Ors.***[4] ("Puttaswamy I") includes bodily privacy and individual autonomy. *Puttaswamy I* recognised that privacy is not an absolute right but laid down the standards to be met when privacy is infringed as follows:

> "188. (H) …A law which encroaches upon privacy will have to withstand the touchstone of permissible restrictions on fundamental rights. In the context of Article 21 an invasion of privacy must be justified on the basis of a law which stipulates a procedure which is fair, just and reasonable. The law must also be valid with reference to the encroachment on life and personal liberty under Article 21. An invasion of life or personal liberty must meet the three-fold requirement of
> (i) legality, which postulates the existence of law;
> (ii) *need*, defined in terms of a legitimate state aim; and
> (iii) *proportionality* which ensures a rational nexus between the objects and the means adopted to achieve them." (Emphasis supplied.)

The involuntary taking of a bodily sample for creating a DNA profile will undoubtedly entail a violation of this right under Article 21.

B. Lack of Procedural Safeguards

1. The National Human Rights Commission (NHRC) published its Guidelines for the Administration of Lie Detector Tests in 2000, which were subsequently approved and adopted verbatim by the Supreme Court in ***Selvi v. State of Karnataka***[5] for the purpose of voluntary administration of Lie Detector Tests (polygraph tests). The Court also directed that similar guidelines should be adopted for the other two techniques in the case, that is, narcoanalysis and brain electrical activation profiles (BEAP). The Guidelines are reproduced below.

2. NHRC guidelines relating to the administration of Lie Detector Test provide, inter alia, that

    i. No Lie Detector Test should be administered without the consent of the accused. Option should be given to the accused as to whether he wishes to avail the test.

[4] (2017) 10 SCC 1
[5] (2010) 7SCC 263

ii. If the accused volunteers for the tests, he should be given access to a lawyer. The police and the lawyer should explain the physical, emotional and legal implication of such a test to him.

iii. The consent should be recorded before a Judicial Magistrate.

iv. During the hearing before the Magistrate, the accused should be duly represented by a lawyer.

v. At the hearing, the person should also be told in clear terms that the statement that is made shall not be a 'confessional' statement to the Magistrate but will have the status of a statement made to the police.

vi. The Magistrate shall consider all factors relating to the detention including the length of detention and the nature of interrogation.

vii. The actual recording of the Lie Detector Test shall be done in an independent agency (such as a hospital) and conducted in the presence of a lawyer.

viii. A full medical and factual narration of the manner of information received must be taken on record.

Similar guidelines must be developed for the taking of biological samples to create a DNA profile.

3. Further, there must be a statutory gap of a few days after consent is given before a Magistrate for taking a sample to enable the person to consider the implications of consent. The procedure should be similar to that always followed under Section 164, Cr.P.C. for recording of confessions by a Magistrate. The reason for this precaution is that giving a biological sample may amount to self-incrimination. The individual should also have access to a lawyer during this period.

4. The 271st Law Commission Report refers to the "Report of the Group of Experts on Privacy (Chaired by Justice A.P. Shah) submitted to the Planning Commission on 16 October 2012" wherein several safeguards were suggested to prevent misuse of DNA data and protect the right to privacy. Two of these need to be incorporated in the current Bill. For example,

i. There should a mechanism using which citizens can appeal against the retention of data.

ii. There was no proper procedure to obtain consent and there was no mechanism under which a volunteer can withdraw his data (in the earlier draft Bill). Before giving the data to a third party, the person must be notified and consent must be sought, if the third party was not an authorised agency.

5. The Bill provides no limitation on how many samples can be taken from a person. It should be limited to a one-time exercise only. Presently, if there is a procedural or other defect in taking or storing the DNA sample, the arrested person can once again be subjected to the process and this can go on indefinitely. Therefore, a defective investigation can be covered up, unlike in other statutes dealing with taking material samples for the purpose of investigation. For example, the NDPS Act and the Prevention of Food Adulteration Act, where if the process of taking and sealing the sample is not in accordance with law, the benefit of doubt will go to the accused person. The Bill eliminates the possibility of the arrested or accused person being given the benefit of doubt in case of defective procedure while collecting, storing, transporting, or analysing the sample. A citizen should not suffer for the fault of the investigating agency.

C. Post-Order of the Magistrate

1. The exercise of discretion by the Magistrate in Clauses 21, 22, and 23 is uncanalised.

2. With respect to Clause 21(2) and 21(3), for arriving at a conclusion whether the bodily substance will confirm or disprove the involvement of the arrested person in the offence, the Magistrate will necessarily have to appreciate the evidence on record. Such a pre-trial assessment is dangerous. There are two problems with this. Firstly, the police will only place on record evidence that is inculpatory thereby placing the arrested person at a tremendous disadvantage, particularly since the arrested person is never made aware of the exculpatory evidence. Secondly, it is not clear whether evidence that is inadmissible can also be taken into consideration while passing an order by the Magistrate. For example, if the accused makes an inadmissible confessional statement before the police, can that inadmissible statement be used by the Magistrate to pass an order for taking a DNA sample? Can the admissibility or otherwise of evidence be tested before trial?

3. If the arrested person does not voluntarily provide a biological sample, and the Magistrate passes an adverse order against him/her, can the order passed by the Magistrate be challenged? The Bill does not provide for any appellate procedure and in the absence of any provision for appeal from such an order, there is no other statutory right to appeal by virtue of Section 372 of the Cr.P.C.: *"Section 372. No appeal to lie unless otherwise provided. - No appeal shall lie from any judgment or order of a Criminal Court except as provided for by this Code by any other law for the time being in force."*

4. The remaining options for an aggrieved person are not adequate. An application for revision under Section 397 of the Cr.P.C., would not be an adequate remedy since the power of revision is limited as compared to an appellate power, as has been held by the Supreme Court in ***Associated Cement Co. Ltd. vs. Keshvanand***[6]as follows:

> "10. It appears that learned Single Judge has equated appellate powers with revisional powers, and that the core difference between an appeal and a revision has been overlooked. It is trite legal position that appellate jurisdiction is coextensive with original court's jurisdiction as for appraisal and appreciation of evidence and reaching findings on facts and *appellate court is free to reach its own conclusion on evidence untrammelled by any finding entered by the trial court*. Revisional powers on the other hand belong to supervisory jurisdiction of a superior court. While exercising revisional powers the court has to *confine to the legality and propriety of the findings and also whether the subordinate court has kept itself within the bounds of its jurisdiction including the question whether the court has failed to exercise the jurisdiction vested in it*. Though the difference between the two jurisdictions is subtle, it is quite real and has now become well recognised in legal provinces." (Emphasis supplied.)

5. In ***Rajendra Rajoriya vs. Jagat Narain Thapak and Ors***.[7] the Supreme Court recently reiterated the limited scope of revision powers as follows:

> "12. The ambit of revisional jurisdiction is well settled. Section 397 of Code of Criminal Procedure empowers the Sessions Judge to call for and examine the record of any proceeding before any subordinate criminal court situate within its jurisdiction for the purpose of satisfying

[6] (1998) 1 SCC 687
[7] AIR 2018 SC 1229

itself as to the correctness, legality or propriety of any finding, sentence or order recorded or passed, and as to the regularity of any proceedings of such subordinate Court."

6. Further, a remedy under Section 482 of the Cr.P.C. is not at all an efficacious remedy since the arrested person will have to approach the High Court, which is not affordable for every arrested person. Access to the High Court is not easy even otherwise.

D. Retention and Removal of DNA Profiles

1. How long will all DNA profiles be retained? This is important because it has been said that apprehension and conviction of repeat offenders will be aided by comparison of biological evidence at the scene of the crime. Would the 'information' be available indefinitely? Clause 31(1) states that "the information contained in the crime scene index shall be retained". This implies indefinite retention of all profiles stored in this index.

2. Clause 31(2) provides for removal of certain DNA profiles in some circumstances. A suspect's DNA profile may be removed after a police report is filed or per a Court order - 31(2)(i). An undertrial's DNA profile may be removed only as per a court order - 31(2)(ii).

3. A person who is not an offender/ suspect/ undertrial and whose DNA profile exists in any index (crime scene/ missing persons) must make a written request to the Data Bank for removal of his/her profile - 31(3). It is possible that a DNA profile may be created from a sample found at a crime scene, but that the concerned individual is never informed of this, since the Bill does not appear to mandate the giving of notice to a person whose DNA sample is taken from a crime scene, and whose DNA profile is subsequently prepared.

4. From the scheme summarised above, it appears that an "offender" has no opportunity to seek removal of the DNA profile from the Data Bank at any point whatsoever.

5. Further, there is no provision for verification of whether the profile has actually been removed, giving no assurance to the person whose profile has been prepared.

6. Even if a written request is made for removal of the profile, the Data Bank is not obliged to remove it and there is no provision for appealing against the decision of the Data Bank.

7. The onus for removal should not be on the person whose DNA profile exists, but should be on the Data Bank to automatically remove profiles which are no longer required for law enforcement or other purposes, and retention beyond a certain time period should only be subject to a court order in that regard.

8. In this context, the Supreme Court of the United Kingdom (UKSC) and the European Court of Human Rights (ECHR) have held that indefinite retention of DNA information in the criminal justice system is in violation of Article 8 of the European Convention on Human Rights. These decisions were noted in the majority judgment in *Puttaswamy I*, as follows:

> "167. ***R(GC) v. The Commissioner of Police of the Metropolis*** [2011] UKSC 21 was a case concerning the extent of the police's power (under guidelines issued by the Association of Chief Police Officers-the ACPO guidelines) to indefinitely retain biometric data associated with individuals who are no longer suspected of a criminal offence. The UK Supreme Court, by a majority held that the police force's policy of retaining DNA evidence in the absence of 'exceptional circumstances' was unlawful and a violation of Article 8 of the European Convention on Human Rights."
>
> "223. The Grand Chamber of 18 judges in ***S and Marper v. United Kingdom*** [2008] ECHR 1581 examined the claim of the applicants that their Right to Respect for Private Life under Article 8 was being violated as their fingerprints, cell samples and DNA profiles were retained in a database after successful termination of criminal proceedings against them. The Court held that there had been a violation of Article 8 of the Convention. Finding that the retention at issue had constituted a disproportionate interference with the applicants' right to respect for private life, the Court held that:
>
> > *"the blanket and indiscriminate nature of the powers of retention of the fingerprints, cellular samples and DNA profiles of persons...fails to strike a fair balance between the competing public and private interests and that the Respondent State has overstepped any acceptable margin of appreciation".*
>
> …
>
> Regarding the retention of cellular samples and DNA profiles, it was held that:

"Given the nature and the amount of personal information contained in cellular samples, their retention per se must be regarded as interfering with the right to respect for the private lives of the individuals concerned. That only a limited part of this information is actually extracted or used by the authorities through DNA profiling and that no immediate detriment is caused in a particular case does not change this conclusion... [T]he DNA profiles' capacity to provide a means of identifying genetic relationships between individuals... is in itself sufficient to conclude that their retention interferes with the right to the private life of the individuals concerned... The possibility the DNA profiles create for inferences to be drawn as to ethnic origin makes their retention all the more sensitive and susceptible of affecting the right to private life.""

9. There is also some degree of uncertainty as to the index in which some profiles will be stored in. Clause 22(1) deals with a person who has not been arrested and is merely a witness or a part of the investigating process and provides that such person may voluntarily give a sample. It is unclear as to what is the purpose of this sample or which index it would be kept in. If it is to be kept in the "crime scene index", it will be retained indefinitely until an application is made for its removal. Putting the onus on the witness in a criminal investigation – a witness who merely happens to be present at the scene of the offence - to apply for the profile to be removed, failing which it shall be retained indefinitely, is an unreasonable condition.

4. <u>*Justice B.N. Srikrishna, retired Supreme Court Judge*</u>

1.The Supreme Court in Selvivs State of Karnataka has held that even in the case os suspects, accused and others, involuntary narco test, polygraph test and Brain Electronic Mapping are unconstitutional as violative of the guaranteed rights under Art,20(3)and such evidence would be inadmissible.. A fortiori, it would be prima facie unconstitutional in other cases too.

2. The Puttaswamy judgement of 9 judges of the Supreme Court holds that right to privacy is a fundamental right guaranteed under Part III of the Constitution founded in Art.21. In para 325 the court explains that this fundamental right can only be abridged by law that meets the three threshold criteria: (1) Law, there is a law made by the competent legislature; (2) Need, defined in terms of a legitimate State objective; and (3) Proportionality, which ensures a rational nexus between the objects and the means adopted to achieve them. Unless these threshold tests are met, the law would be unconstitutional.

3. In my general assessment, prima facie, the Bill fails on all three Puttaswamy threshold tests. It thus violates the fundamental right to privacy guaranteed under Art.21 as interpreted by Puttaswamy.

4. The Bill also cannot be justified on the basis of criminal law. As pointed out in Selvi case, involuntary tests are anathema to the fundamental rights guaranteed under Art.20(3) of the Constitution and material thus collected is inadmissible.

5. The sweep of the Bill seems rather over-wide and beyond the legitimate concerns of the State, as can be seen from the Title.

6. Clause 2(iv) would run counter to the triple test of Puttaswamy as it is over-wide in its ambit.

7. Clauses 21(2) and 21(3) seems to empower the magistrate to do something contrary to the right of privacy and collect evidence that may be inadmissible in view of the Selvi judgment.

8. 22920 and 23(2)(b) again permit involuntary collection of material and would prima facei run counter to the principles in Puttaswamy judgment.

To sum up, the Bill would appear to violate the privacy rights of all persons and particularly violative of the rights of accused and suspects also, if the collection of material is without consent.

5. *India Police Foundation*

The incredible advances in DNA science and and identification technology in handling of biological evidence holds great promise for furthering the cause of truth and justice in crime investigation and criminal justice system in general. The proposed legislation will be of immense value for resolving crime; identification of victims of accident/disaster/natural calamities, unidentified dead bodies, missing children/Women/Senior citizen/Mentally challenged etc

The proposed law will also help develop our sparse infrastructure and expertise in the field and promote science-driven crime investigation.

However, it is crucial that the proposed law has adequate safeguards against its misuse and allay privacy concerns. Our law should also conform to the UN standards.

The Concerns

1. Misuse of Sensitive DNA Information: can reveal extremely sensitive information about individuals (family ancestry (pedigree), skin colour, behaviour, illness, health status and susceptibility to diseases)
2. Access to such intrusive information can be misused to specifically target individuals and their families using their genetic data.
3. Can be misused for caste/community-based profiling. Needless to say, DNA based profiling would amount to violation of human rights and it could also compromise the privacy of the individuals.
4. The lawful and effective use of DNA technology is subject to its harnessing by trained and reliable officials and experts, making use of equipment, tools and technology, operational protocols and sampling methods.
5. The integrity of the process is critical: Vulnerable to manipulation, mislabelling and contamination by accident or design.
6. International best practices suggest that there must be an independent regulator of data to supervise and maintain checks on laboratory quality and examination of the crime scene and accordingly submit reports to the government. The Regulatory Body proposed here seems to meet the requirements, subject to appropriate checks and balances.
7. Physical and cyber security of DNA Database-Bank/ security of a huge number of DNA profiles is critical. The Bill requires provisions for appropriate firewalls and cyber defence.
8. Most importantly, protocols establishing *a trusted chain of custody of samples*, reliable and clearly defined processes for analysis, and proper use of expert evidence in court are critical to ensure their evidentiary value. *Any gaps in chain of custody will cast suspicion on the integrity of the sample itself.*
9. Appropriate standards for laboratory quality assurance and crime scene examination need to be developed and published.

Some specific comments:

1. The objective of the bill is to "provide for the regulation of use and application of Deoxyribonucleic Acid (DNA) technology *for the purposes of* establishing the identity of certain categories of persons including the victims, offenders, suspects, undertrials, missing persons and unknown

deceased persons and for matters connected therewith or incidental thereto".

Instead of '*for the purpose of*' - the objectives should be 'limited to' the above said purposes - to shut the possibility of any mischief through universal application of these provisions.

2. The term ""offender"" is not defined. Whether it means a convict or accused is not clear. (2 xviii)

3. Composition of the regulatory board: (4e). There is no representation of MHA. It is also desirable to have a judicial member (High court or District Session Judge). Most members of the board are from Central Government or Central organisations, there is scope for more decentralisation.

4. IPC offenses for which body samples can be taken without consent should have been clearly specified in the schedule. (page 23).

5. There does not appear to be any justification for inclusion of following Special and Local Acts –

    a. Omnibus inclusion of medical negligence – how can DNA evidence help resolve cases of medical negligence? (MTPA 1971 & PNDT,1994 are already included).
    b. How can DNA help in the Protection of Civil Rights Act 1955 (no injuries are caused-only spoken words)
    c. There is no justification of collecting DNA information for routine MV Act cases (death or injury because of accident are already covered under Sections 304 A, 337/338 of IPC)
    d. Immigration/emigration cases – while DNA information may help in some cases, setting up a data bank of all immigrants or emigrants is likely to be contested. (this needs clarification)

6. Section 21(1)Provides for taking consent of an accused – It is important to have safeguards to prevent obtaining 'consent' through coercion

7. 'Anybody being questioned' (22 1b) is too wide and subject to misuse. Can be safeguarded through a scheme for obtaining permission of a jurisdictional judicial magistrate for collection of samples.

8. Even 22(1)a is very wide - anybody present at a scene of crime may or may not be an accused or suspect. There is no need to collect DNA samples of

witnesses! While it may be useful to maintain DNA index of accused, unidentified victims, or the DNA samples of relatives of victims whose body has not been identified etc, there is no need to openly extend the crime scene index. (privacy concerns)

9. Presence of a lady doctor/lady forensic scientist must be made mandatory for collecting intimate bodily substances and doing intimate forensic procedures on a woman.(23(3) a,b)

10. Suspect index as per 26(1), when maintained ,must be temporary and in case of no arrest, must be deleted through an automatic protocol (mechanism to be evolved) and should not give other handles to extort bribes. The need for individuals to apply for removal of their names is fraught with risk. (privacy)

11. Safeguards needed to prevent misuse of data and information in the custody of the DNA bank (Section 32).

12. 34(a)- For obtaining information available in the Data Bank, law enforcement authorities / investigating agencies must submit a written request with adequate justification and FIR number under investigation (proforma to be devised), and signed by a police officer of prescribed rank only.

13. 34(f) is left undefined – is subject to misuse.

14. Section 57 is totally unwarranted, as it excludes the jurisdiction of courts (including SC and HC).

15. Access to foreign / international agencies: Procedure and purposes must be well defined. (5iiic-page 25) - Establish strict and clear protocols. Information should be handed over only after obtaining an order of an Indian Court having jurisdiction. This is the procedure that other democracies follow.

16. Penalties provided under the section 45 for theft or leaking / unauthorised sharing & usage of data should be minimum imprisonment of 10 years extendable to life imprisonment and fine up to 1 lakh for each instance involved. The proposal of imprisonment up to 3 years and fine up to 1 lakh for collective data isn't deterrent enough.

17. Private DNA labs should be audited regularly by well qualified technical staff of FSL, following an established procedure.

18. The bill must meet the UN standards of security and privacy.

6. An Eminent Jurist

The Government has been nudged into undertaking this exercise following filing of a Writ Petition by Lokniti Foundation in the Supreme Court. On 14.07.2014, the Supreme Court passed the following order :

> "....Having heard the learned counsel for the petitioner, we are disposed to think, that the learned ASG appearing for the Union of India should impress upon the competent authorities of the Union of India to think over it seriously so that an apposite road map is brought into existence on making it functional that would echo the voice and cry of the feelings and philosophy of the 21st Century. The matter be listed on 22.09.2014 to enable the learned ASG to file appropriate affidavit of the competent authority in this regard."

On 22.09.2014, the following order was passed :

> "At this juncture without getting into the nuances of the Bill, which is being thought of, we will desire Mr. Kaul to obtain instructions with regard to two aspects: (1) Whether pending the Bill coming into force the concerned Department can constitute a Data Bank in respect of dead persons who are not identifiable; and (2) when there are missing reports in respect of persons to collect the DNA from the permissible sources like siblings or others so that in case any unidentified dead body is found to match the DNA to arrive at the conclusion about the missing persons who are dead; or as an ancillary the missing person who is a victim of the crime of kidnapping or where any child, who is not able to find out his parents, can be in a position to find out through the DNA."

It appears that the Supreme Court was primarily concerned about the missing persons. But a look at the long title indicates that the scope is being widened by including suspects and under-trials. I think we are spreading the net too wide. The statement of objects and reasons refers to the 271st report of the Law Commission which suggested the enactment of the legislation. The report was given in July, 2017 while the judgment by the Nine Judges Bench in the Aadhar case came on 24.08.2017. The Law Commission's report was submitted when privacy was not declared as a fundamental right.

All of us seem to be laboring under the impression that creation of a DNA data base would provide instant solution to the ills plaguing the criminal justice system. Though in several judgments both of our Supreme Court as well as other jurisdictions, Judges have sung paeans to DNA technology, I became less sanguine after reading an article on the the effectiveness of the UK national DNA database by Aaron Opoku Amankwaa and Carole Mccartney. I have given the link to that article. I am sure you have already gone through it and I am merely carrying coal to newcastle. The authors question whether creation of a huge infrastructure by spending big amounts of money is really worth it.

Though I do not think inclusion of suspects and under-trials in the long title may lead to targeting of minorities, I have no doubt that it needlessly widens the scope and reach of the proposed regime. It is true that in some high profile cases, DNA matching had helped to crack cases. Likewise, at least in USA in a quite a few cases, the convicted persons have been able to obtain honourable exoneration by invoking this resource. But, the fact remains that DNA hit by itself may not in most cases form the sole basis of conviction. It may provide corroboration. Likewise, conviction can solely rest on other evidence even without the prop of DNA evidence. Therefore, DNA evidence is not always essential for solving crimes.

Clauses 21, 22 and 23 have serious implications for privacy rights. In my view, instead of predicating the power to take bodily substance on the term of sentence for the offence, we can instead make it offence-specific. In the schedule, these offences can be specifically enumerated. In IPC, for instance, for the offence of criminal intimidation (506 ii) the sentence can even be life imprisonment and this offence is included regularly in every FIR. That is why, the term of sentence ought not to be the criterion. The nature of the offence should be the deciding factor. DNA evidence will be relevant mostly in cases of theft, robbery, kidnapping, rape and murder. The investigation officer can be authorised to take bodily substance even without the consent of the person concerned in such cases. In all other cases, if the person concerned does not consent, the police ought not to have the power to go for his DNA profile. By conferring power on the magistrate, the requirement to obtain consent has been made redundant. The magistrates rarely say no to the investigation officer.

The provisions mentioned by you would also fail the test of proportionality. Privacy has been recognised as a fundamental right. Of course, it is not an absolute one. It may have to give way to public interest. But then, there must be a legislation to support the deprivation and it must also pass the test of proportionality. This bill is bound to fail on this score.

I will give only one instance. DNA has two parts, coded and non-coded. DNA profile taken by the State should contain information only to the extent it is required to establish the identity of the person. If the information is going to reveal the other aspects of the individual, if it furnishes more information than what is required, it is a clear invasion of one's privacy. We still the lack a robust data protection law. What is the guarantee that the information stored in the DNA bank will be safe and secure. The Bill does not contain any provision for destroying records. For instance, following acquittal, DNA profile of the erstwhile accused will have to be erased. The Bill does not say for how long the information is to be retained.

Decoding the information is an expert task by itself. The accuracy of analysis, the integrity of the sample are aspects that will have to be factored in. I foresee possible miscarriage of justice by false matching. The accused must of course have an unfettered right to insist on matching of his DNA profile with what is found in the crime scene to establish his innocence. But for the prosecution to maintain a huge DNA data bank is fraught with danger. There is no doubt that the law is required. But the law as proposed appears too sweeping and expansive.