

Draft Human DNA Profiling Bill 2012:

The Privacy Issues and Concerns

J. Gowrishankar

Centre for DNA Fingerprinting and Diagnostics

Hyderabad

Topics of this presentation

- 1. Science of human DNA profiling**
- 2. Why is a DNA Profiling Bill needed?**
- 3. Salient features of the Human DNA Profiling Bill**
- 4. What are the privacy concerns?**
- 5. Some suggestions to overcome the concerns**

What is DNA profiling?

- A technology that is based on the fact that each person has a unique DNA sequence that differs from every other in approximately 3 million positions : determining the “signature profile” at just 17 “**neutral**” positions is sufficient to distinguish any one individual from every other – and miniscule amounts of DNA (eg., from a single hair) are sufficient for this purpose.
- “**The 50:50 rule**”: Each parent contributes precisely 50% of his/her DNA sequence to the child. The child receives 50% of its DNA sequence from one parent and 50% from the other (with different combinations being inherited in siblings). The “signature profile” of an individual is hence dictated by, and in turn can be employed as an unambiguous predictor of, his/her parentage (and other kinships).

DNA profiling can therefore be used to establish that two biological samples have been derived

(i) from a single individual, or

(ii) from two individuals who are related to one another

(i.e., the value from DNA profiling is achieved, as for regular fingerprints, only through making of comparisons)

A typical output from DNA profiling analysis

Position	Mother	Child	Father
D3S1358	15, 15	15, 16	16, 17
THO1	6, 9	9, 9	6, 9
D21S11	30, 32.2	32.2, 32.2	31.2, 32.2
D18S51	14, 16	16, 16	14, 16
Penta E	15, 19	15, 15	13, 15
D5S818	12, 13	10, 13	10, 11
D13S317	8, 12	10, 12	10, 11
D7S820	8, 10	10, 11	11, 12
D16S539	10, 11	9, 11	9, 12
CSF1PO	10, 12	10, 11	11, 11
Penta D	11, 14	12, 14	12, 13
vWA	14, 18	14, 14	14, 18
D8S1179	14, 16	15, 16	14, 15
TPOX	10, 11	11, 11	8, 11
FGA	21, 24	24, 24	21, 24
Amel (Gender Marker)	X, X	X, X	X, Y

Applications of DNA profiling technology in Justice Delivery system

- ***Civil :***

- Establishment of parentage/other kinships in paternity/ maternity disputes, immigration cases, insurance/ compensation claims, or identification of victims of natural disasters

- ***Criminal :***

- Identification of deceased individuals from body parts/skeletal remains
- Establishing the link between a suspect and scene/victim of crime in cases of assault, murder, rape etc.
- Data Bank matching also possible to apprehend repeat offenders

Why is a DNA Profiling Bill needed?

- 1. To regulate the quality of laboratories and personnel that undertake DNA profiling, and to keep updating with advances in field**
- 2. To apprehend repeat offenders**
- 3. To enable post-conviction DNA testing**
- 4. To protect against privacy infringement**

Practices in and experience of other countries

- **USA : DNA Identification Act (1994)**
- **UK : Criminal Justice and Public Order Act (1994)
Criminal Justice and Police Act (2001)**
- **Canada : DNA Identification Act (1998)**

Similar legislation enacted in other countries including Norway, Finland, Belgium, Denmark, Australia, New Zealand

Preparation of draft Human DNA Profiling Bill: need for bridging the domain knowledge between technical and legal experts

- **Conference: "Impact of New Biology on Justice Delivery System" at Hyderabad attended by Judges of the Supreme Court and High Courts, scientists, legal academics leading to the “Hyderabad Declaration 2003”**
- **Constitution of DNA Profiling Advisory Committee by the Union Cabinet, comprised of scientists, legal experts and police officers (2003), and drafting of Bill in 2006 through work of three sub-committees:**
 1. **Legal issues**
 2. **Quality Control and Quality Assurance issues**
 3. **Ethical & Social issues**
- **Draft Bill formulated based on existing laws of other countries (USA, UK, Australia, Canada)**
- **Draft Bill further vetted in detail by a second Committee (2006-08)**
- **Draft Bill put up on website for public comments and circulated to all Ministries – comments from latter responded to (2008-09)**
- **Language of the Bill has also been scrutinized and finalized by officials of the Legislative Department, Ministry of Law and Justice (2010)**

Salient features of the draft Human DNA Profiling Bill

- Enablement for collection of DNA profiles of individuals for lawful purposes
- Creation of the DNA Profiling Board as an Authority *inter alia* to define and establish standards and to implement quality control measures including compulsory accreditation of laboratories
- Authority to create and maintain databases, administered by a National DNA Data Bank Manager, for detection of, and to serve as deterrents against, repeat offenders
- Provision of an opportunity for previously convicted individuals to seek DNA testing to establish their innocence
- Provision of penalties for abuse/misuse of DNA profiling samples and data

National DNA Data Bank

The National DNA Data Bank will maintain the following indices:

- **a crime scene index;**
- **a suspects' index;**
- **an offenders' index;**
- **a missing persons' index;**
- **unknown deceased persons' index;**
- **a volunteers' index; and**
- **such other DNA indices as may be specified by Regulations.**

National DNA Data Bank : comparisons with laws of other countries

- **Criteria for entry of DNA profiles into Data Bank vary from country to country eg., Belgium has no suspects' database, Austria limits it only for suspects of "serious offences", UK has it for all suspects**
- **Likewise, criteria for removal of DNA profiles from Data Bank also vary eg., in time of retention for convicted offenders as well as for suspects; in the UK, the law allows for indefinite retention of suspects' profiles even if the suspect is released or acquitted**

Criteria for collection of DNA samples

Country	Convicts	Suspects
Austria	Any recordable offence	Any recordable offence
Finland	Specific violent offences	More than 1 year of prison plus other specified offences
France	Specific offences	Specific offences
Germany	Specific offenders and with court order	Specific offenders and with court order
USA	Violent crimes	Only some States allow suspect profiles
England and Wales	Any recordable offence	Any recordable offence
India (proposed)	Offenders (a person who has been convicted of or an undertrial charged with specified offence)	Suspects (a person suspected of having committed an offence)

Criteria for removal of DNA profiles from DNA Databases

Country	Convicts	Suspects
Austria	Indefinite	When acquitted
Finland	1 year after death	1 year after notification of acquittal or charges dropped
France	40 years after sentence, or until the age of 80	Upon request from prosecutor or suspect if not convicted or no evidence of an offence
Germany	Reviewed after 10 years for adults, 5 years for juveniles. Indefinite retention possible	Reviewed after 10 years for adults, 5 years for juveniles. Indefinite retention possible
USA	No purging required for convicted offenders	States have different criteria
England and Wales	Indefinite	Indefinite
India (proposed)	When the offender is acquitted of the charge or conviction is set aside	

DNA profiling and privacy issues

- The information from the 17 “**neutral**” DNA positions uniquely identifies an individual, his/her gender and relationship with biological relatives, but otherwise has no correlation with age, colour, race, behavioral or morphological features, and health/disease predilections
- **However, biological samples and/or DNA stored from an individual can potentially be used/abused to determine such correlations**
- Potentially, an individual in the general population can be identified by information on a relative that is stored in the DNA database

Privacy issues related to the Human DNA Profiling Bill: the major concerns

- **DNA Profiling Board's recommendations and actions: who regulates the regulator?**
- **Need for provisions to protect against misuse of DNA samples (note that such misuse can also occur with any blood sample collected for medical lab tests, hair from barber shop, etc)**
- **Need to empower individuals :**
 - (i). **to seek details of their own information and samples in databases and archives**
 - (ii). **to proceed against infringers (the latter is already provided for in the Bill)**
- **National DNA Data Bank: multiple concerns (listed in next slide)**

Privacy concerns regarding National DNA Data Bank

- **Possibility of misuse of volunteers' index, missing persons' index, etc**
- **Offenders' index encompasses even minor crimes (eg., MV Act offences)**
- **Potential for misuse of the exclusion clause for training purposes**
- **No safeguards following release of information to international law enforcement agencies**
- **No clarity on time period for which records will be retained in Data Bank**
- **Suspects' index is liable to be extensively misused**

Some suggestions to overcome the concerns

- **DNA Profiling Board to be required to publish, and to obtain public inputs and feedback on, its draft recommendations before finalization (it is already provided that its Regulations will be laid in Parliament)**
- **DNA Data Bank search can only be undertaken for specific purposes after authorization by an officer of suitable seniority: crime scene sample against offenders' index; a claimant's sample against missing persons' index; or a suspect's sample against specific entries of crime scene index**
- **Provision for empowerment of an individual's right to view his/her own information**
- **Suspect's DNA sample for determining profile can only be taken with judicial consent (i.e., analogous to search warrant)**

Some suggestions to overcome the concerns (...contd)

- **Creating a separate Part in the Schedule listing those crimes whose offenders alone will be included in the Data Bank**
- **An enabling provision in the Bill that with respect to privacy issues, the statutes of the Privacy Bill shall apply and override those in this Bill**
- **Establishing criteria for destruction of DNA samples of living individuals**
- **[However, it may be advisable to include only the principles, but not all details, of the provisions to protect privacy in text of the Bill –more convenient to do so in Rules and Regulations**

DNA Profiling Bill and privacy issues : my perception

- **DNA profile information itself has very little scope of being misused, since it can only establish identity and/or biological relationship : no intrinsic value for determining traits of an individual**
- **On the other hand, DNA samples need to be protected from misuse, as for example has been done in the USA through the landmark *Genetic Information Nondiscrimination Act 2008***