Human DNA Profiling

The outrage over rapes and violent attacks on women and children has renewed the call for a sex offenders' registry or a DNA database of those accused and charged with rape.

DNA profiling or fingerprinting (also called DNA typing or testing) Bill

- **Human DNA Profiling** – A draft Bill for the Use and Regulation of DNA-Based Technology was devised by the Law Commission: The DNA Based Technology (Use and Regulation) Bill, 2017.
- In view of the scope of the use and misuse of human DNA profiling, it is required to be regulated by a special law with clearly defined standards and quality controls to ensure the credibility of the DNA testing, restricting it to the purposes laid down in the Act.
- The Bill seeks to set up two new institutions — a **DNA Profiling Board** and a **DNA Data Bank**. The Board is supposed to be the regulatory authority that will grant accreditation to DNA laboratories and lay down guidelines, standards and procedures for their functioning. It will advise central and state governments on all issues relating to DNA laboratories.
- The Data Banks will be responsible for storing DNA profiles received from the accredited laboratories and maintaining certain indices for five categories of data: crime scene index, suspects' index, offenders' index, missing persons' index and unknown deceased persons' index.

What is the use of DNA in criminal justice delivery system?

- DNA stands for deoxyribonucleic acid, the strands of identity that living beings receive from their ancestors. Outside of identical twins, no two people have the same DNA pattern.
- A typical adult has over three billion characteristics in her DNA and only 13 are required for a DNA profiling database.
- Discovery of DNA is considered as one of the most significant biological discoveries of the 20th century.
- It is acting as a very useful tool of forensic science that provides guidance in criminal investigation and civil disputes and also supplies the courts with accurate information about all the relevant features of identification of criminals.
- Before the use of DNA, identification was based on finger prints, foot prints, blood, or other evidence that a suspect may have left behind at the crime scene.
- Unlike blood found at a crime scene, DNA material remains usable for an endless period of time. The technology can be used even on decomposed human remains to identify the victims. In many cases it has been used to exonerate the innocent.
- The process of matching a suspect's DNA with the DNA found at a crime scene has provided new tool to law enforcement agencies and court officials.

Ethical Principles and Guidelines for Medical Research Involving Human Subjects

- **The Universal Declaration of Human Rights 1948** adopted by the United Nations General Assembly expressed concern about rights of human beings against involuntary maltreatment.
- **The Declaration of Helsinki, 1964,** set the guidelines adopted by the 18th World Medical Association General Assembly. It contains 32 principles, which stress on informed consent, confidentiality of data, vulnerable population and requirement of a protocol, including the scientific

reasons of the study.

- **The International Covenant on Civil and Political Rights, 1966 (ICCPR)** has provided that "No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment. In particular, no one shall be subjected without his consent to medical or scientific treatment". In 1988, the Human Rights Committee (HRC), a group of independent experts who issue authoritative interpretations of the ICCPR, commented that the right to privacy is not absolute.
- **The Belmont Report (1976)** was written by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (USA). It identified basic ethical principles and guidelines that address ethical issues arising from the conduct of research with human subjects.
- **Comprehensive Ethical Guidelines for Biomedical Research on Human Subjects** were finalized by Indian Council of Medical Research (ICMR) in the year 2000.
- **The Drugs and Cosmetics Act, 1940 and the Medical Council of India Act, 1956 (amended in 2002)** provide that all clinical trials in India should follow these guidelines. These guidelines were revised in the year 2006, influenced by the Belmont Report and have the same three basic ethical principles: **Respect for person, Beneficence, and Justice.** These ethical principles were fortified by inducting twelve general principles including (i) essentiality; (ii) voluntariness, informed consent and community agreement; (iii) non-exploitation; (iv) privacy and confidentiality etc.

Laws in Other Countries

Over the last 25 years, most countries have adopted a DNA fingerprinting law and have developed databases for use primarily in criminal investigation, disaster identification and forensic science.

- **USA:** The Federal Bureau of Investigation (FBI) in early 1990s designed the Combined DNA Index System (CODIS, US national DNA database). The database contains more than 12 million offender profiles, more than 2.5 million arrestee profiles and 750,000 forensic profiles. The database has aided in over 350,000 investigations and produced more than 365,000 hits.
- **United Kingdom (UK)** National DNA Database (NDNAD): The UK maintains DNA profiles of nearly 7% of its citizens.
- **China:** China passed a law (1999) allowing the Ministry of Justice and the Ministry of Interior to establish DNA Banks.
- **Canada** passed DNA Identification Act (2000) which allowed the establishment of DNA data bank and amended their criminal code.
- In countries such as Holland, Germany, France or Austria only individuals who have committed certain serious crimes are included in the DNA profiling.

Ethical Concerns with DNA Profiling

- There is a risk of information from DNA analysis getting misused. DNA samples can reveal not only a person's look and skin colour but also their allergies and susceptibility to diseases. This raises serious privacy concerns.
- There are fears that the government and the police may be able to misuse this data and threaten our individual rights when tissues samples, genetic information and personal data are stored indefinitely on a DNA database.
- The Supreme Court Privacy judgment (privacy as a fundamental right) has also brought privacy concerns related to DNA fingerprinting to the forefront. In this connection, the final judgment on Aadhaar will also be closely watched.
- Some other concerns are: planting of DNA in a crime scene, misinterpretation of tests, and errors in analyses. All of these have happened in many cases resulting in the miscarriage of justice.
- Phantom of Heilbronn is a popular case when the German police admitted that a woman (hypothesized serial killer; 'woman without a face') they were searching for more than 15 years based on DNA traces at crime scenes never in fact existed! The DNA on the cotton swab used at the crime scene was of the woman who worked at the cotton factory.
- In the wake of the Cambridge Analytica scandal, questions arise about misuse of DNA information just as personal information and profiles are being misused for data mining.
- DNA tests initially started as a supplement to other evidences. Today, however, the law has changed and now DNA is collected from suspects who may be arrested (not convicted) or charged

with minor offences with huge assumption of guilt.

- DNA dragnets (people in a community persuaded to give their saliva or blood in order to identify a possible suspect) may be a tool to target a minority community or groups of people on the basis of race, ethnicity or class. Violation of civil liberties could major worry with DNA profiling.
- Use of DNA technology makes a number of people (relatives, family members) suspects until the criminal is identified. In one popular case in the US, genealogy database was used to find the suspect using family tree. A number of people related to the criminal become suspects and remain so until confirmation.
- In 2007, as per reports close to three-quarters of the young black male population in the U.K. were on the DNA database. This along with the recent Windrush scandal should raise serious concerns for civil rights and liberty.
- If such a DNA database is made in India, chances are the poor and minorities would be more in it not because they are criminals but because the administration and police would suspect them more.

Conclusion: DNA Fingerprinting with Safeguards

- It has been observed that DNA fingerprinting can be extremely effective in identification of perpetrators of crime. The issues revolve around collection of database, storage, its use and abuse which should be strictly regulated by law and practice.
- The new Bill makes substantial changes to 2015 DNA fingerprinting bill. It includes removal of the volunteers' index and new indices, specifying serious offences for
  DNA collection, allowing anyone to approach the courts for redressal, and removal of discretionary powers of the database manager.
- The probabilistic nature of DNA typing cannot be an argument against its adoption. The current methods of investigation are even less reliable. It is not a replacement of available investigation procedures but a supplement.
- The technology has proved its use most recently in the highly publicized Shimla (Kothkai, 2017) rape-murder case of the 16-year-old girl. CBI cracked it with DNA mapping and technical surveillance spanning over nine months. All accused initially apprehended were released after DNA tests were negative for them. Blood samples were collected from 250 people and advanced DNA analysis was done leading to identification of the perpetrator who was also an accused in several criminal cases.
- India should adopt the technology with institutional safeguards as provided for in the draft bill.