

## DNA Fingerprinting : Concerns in conviction of criminals

### What is the issue?

Though DNA fingerprinting technology has helped in solving many crimes, its efficiency is being suspected in the conviction of criminals

### What is DNA fingerprinting?

- It is a technique for identification of an individual by examining their DNA
- DNA Or Deoxyribo Nucleic Acid is composed of bases, (adenine (A), cytosine (C), guanine (G), and thymine (T)) , sugar and phosphate
- Two bases link to each other using hydrogen bonds to form basepairs
- Though 99.7% of the makeup is similar between any two people there is a 0.3% difference which accounts to almost 10 million different base pairs
- By examining this we can identify the relation between two people
- Blood, semen ,hair and teeth (with roots), , bones, flesh, saliva etc. can be used to study the DNA

DNA fingerprinting was first developed in 1984 by Alec Jeffreys in the UK

### What are its uses?

- For criminal identification
- To resolve disputes of maternity /paternity
- To identify mutilated remains
- In cases of exchange of babies in hospital wards,
- In forensic wildlife
- Close to 60 countries have got the legislations on DNA profiling

Click [here](#) to learn about DNA Technology (Use and Application) Regulation Bill

### What are the issues with DNA fingerprinting?

- **Ecological impacts** - Degradation of a sample with prolonged contact to sunlight, humidity, and heat
- **Unreliable results** - Instrumental errors also lead to unreliable results
- **Privacy issues** - Sensitive genetic information of a person is exposed to another individual and it is against human rights
- **Security concerns** - DNA databases holding DNA profiles
- **Lack of expertise** - Leads to mishandling of samples
- **Intermixing of samples** - Corruption, tampering with evidence, misconception during labeling sample is possible
- **Targeting of groups** - If people from one ethnic group are more often convicted, they will be overrepresented and leads to targeting

### How to address these issues?

- Acceptance by the legal fraternity and ensuring 100% conviction rate
- Legal framework for innocents is needed to allude the fears of DNA profiling in data collection and maintenance
- Stringent implementation of Human DNA Profiling Bill
- Experts have clarified that DNA profiling will not give out any details of background or identity of religion

**Source: The Hindu**

