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 0r 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

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