



DATE: 23 JUNE 2026

1 Antarctic Treaty (Source: The Hindu)

The Antarctic Treaty is an international agreement signed in 1959 and entered into force in 1961 to ensure that Antarctica is used only for peaceful purposes and scientific research.

- Covers all areas south of 60° South Latitude.
- Foundation of the Antarctic Treaty System (ATS).

Key Objectives

- Antarctica shall be used only for peaceful purposes.
- Military bases, weapons testing, and military maneuvers are prohibited.
- Guarantees freedom of scientific research.

India's Antarctic Research Stations

- Dakshin Gangotri (1983)
- Maitri (1989).
- Bharati (2012).

India's Status

- Joined the Antarctic Treaty in 1983.
- Became a Consultative Party in 1983





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2 Battle of Plassey (Source: The Indian Express)

The Battle of Plassey (1757) was fought between the British and the Bengal Nawab Siraj Ud Daulah

Reasons for the Battle of Plassey

- The misuse of trade privileges given to the company by the Mughals led to financial problems for the Nawab.
- English fortified Calcutta without the permission of the Nawab and propogandised the Black Hole tragedy.
- Alliance of the Nawab with the French.

Result of the Battle of Plassey

- English monopolised trade and commerce in Bengal.
- English established military supremacy in Bengal.
- British acquired financial control in the Bengal region.
- English outshone French in Bengal.



3 DNA Profiling (Source: The Hindu)

DNA PROFILING

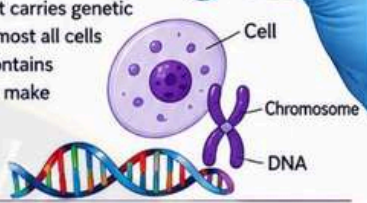
A genetic fingerprint that is unique to every individual

WHAT IS DNA PROFILING?

DNA profiling is a laboratory technique used to identify individuals by analyzing specific regions of their DNA. Except for identical twins, every person has a unique DNA profile.

WHAT IS DNA?





DNA (Deoxyribonucleic Acid) is the molecule that carries genetic information in almost all cells of the body. It contains instructions that make us who we are.



THE PROCESS OF DNA PROFILING

- 1 SAMPLE COLLECTION**
 Biological material is collected from a crime scene or an individual (blood, saliva, hair roots, skin cells, semen, etc.).
- 2 DNA EXTRACTION**
 DNA is isolated from the cells using chemicals that break open the cells and separate the DNA.
- 3 DNA AMPLIFICATION (PCR)**
 Specific regions of DNA called STRs (Short Tandem Repeats) are copied millions of times using PCR to obtain enough DNA for analysis.
- 4 SEPARATION & DETECTION**
 The amplified DNA fragments are separated by size using capillary electrophoresis and a unique pattern (DNA profile) is generated.
- 5 DNA PROFILE (STR PROFILE)**
 The pattern of bands or peaks at specific loci is a DNA profile. The chance of two unrelated individuals having the same profile is extremely small.
- 6 DATA ANALYSIS & INTERPRETATION**
 The DNA profile is compared with reference profiles in a database to determine a match or exclusion and reported with statistical confidence.

APPLICATIONS

 Criminal investigations Link suspects to crime scenes	 Paternity & kinship testing Determine biological relationships	 Missing person identification Identify unknown remains	 Disaster victim identification Assist in mass disasters
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CHALLENGES

- Degraded or low-quality samples may yield incomplete profiles.
- Contamination can cause false results.
- Close relatives may share similar DNA.
- Interpretation requires expertise and quality control.

ETHICAL & LEGAL CONSIDERATIONS

- Privacy of genetic information must be protected.
- Use must comply with legal frameworks and due process.
- Informed consent is essential for personal testing.
- Risk of misuse, discrimination and unauthorized access.

KEY TAKEAWAY

DNA profiling provides highly accurate and reliable information for identification and justice, but its use must balance science with ethics, privacy and legal safeguards.

