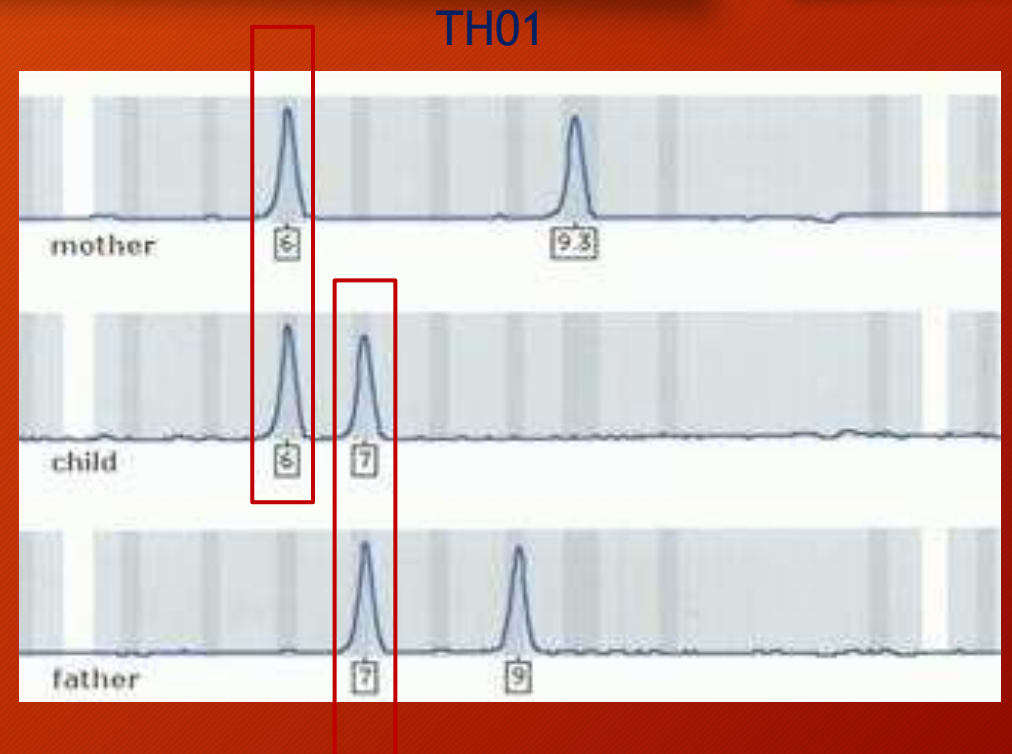


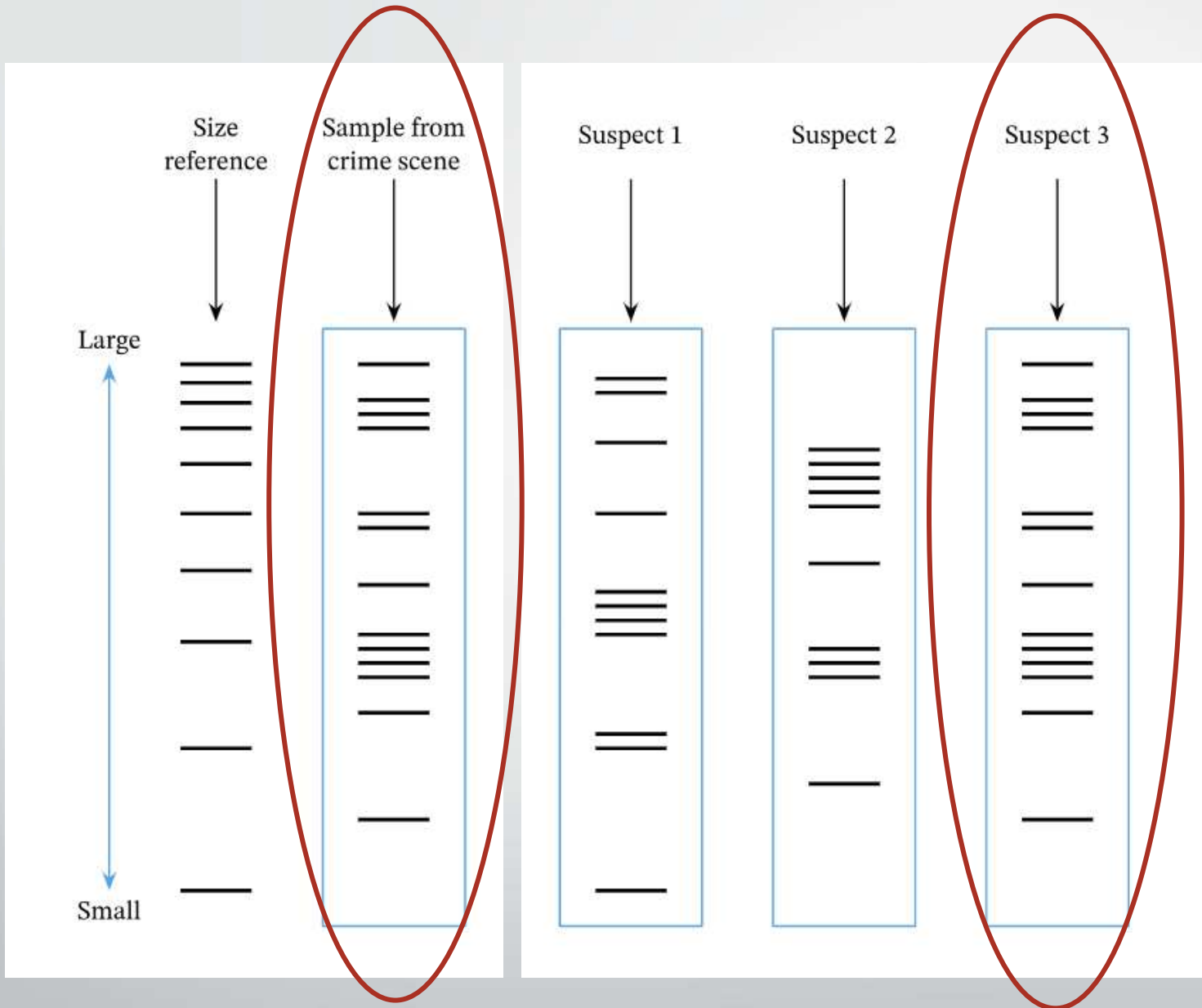
ILLUSTRATED DNA CASE STUDIES

Ms. Shreya V R
Scientific Officer
Truth Labs

Paternity Testing

- In every STR marker, the child receives 1 allele from each parent.
- In this example, for STR marker TH01, the mother contributes the allele 6 to the child and the father contributes allele 7.





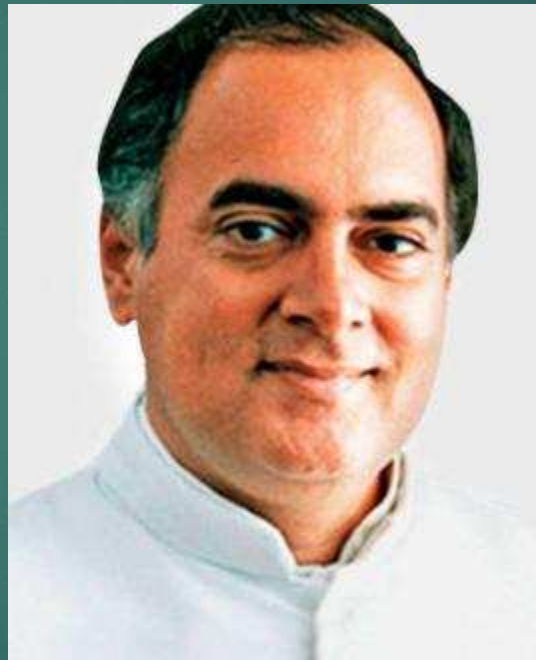
DNA: Famous Cases



- ▶ Shot dead
- ▶ Charred remains of the body were recovered
- ▶ 1st case in India - used DNA Fingerprinting for investigating - 1995

DNA: Famous Cases (contd.)

- ▶ Rajiv Gandhi's Assassination
- ▶ Carried out by a suicide bomber
- ▶ Identity established as Thenmozhi Rajaratnam (Dhanu), a member of LTTE's suicide squad, called Black Tigers



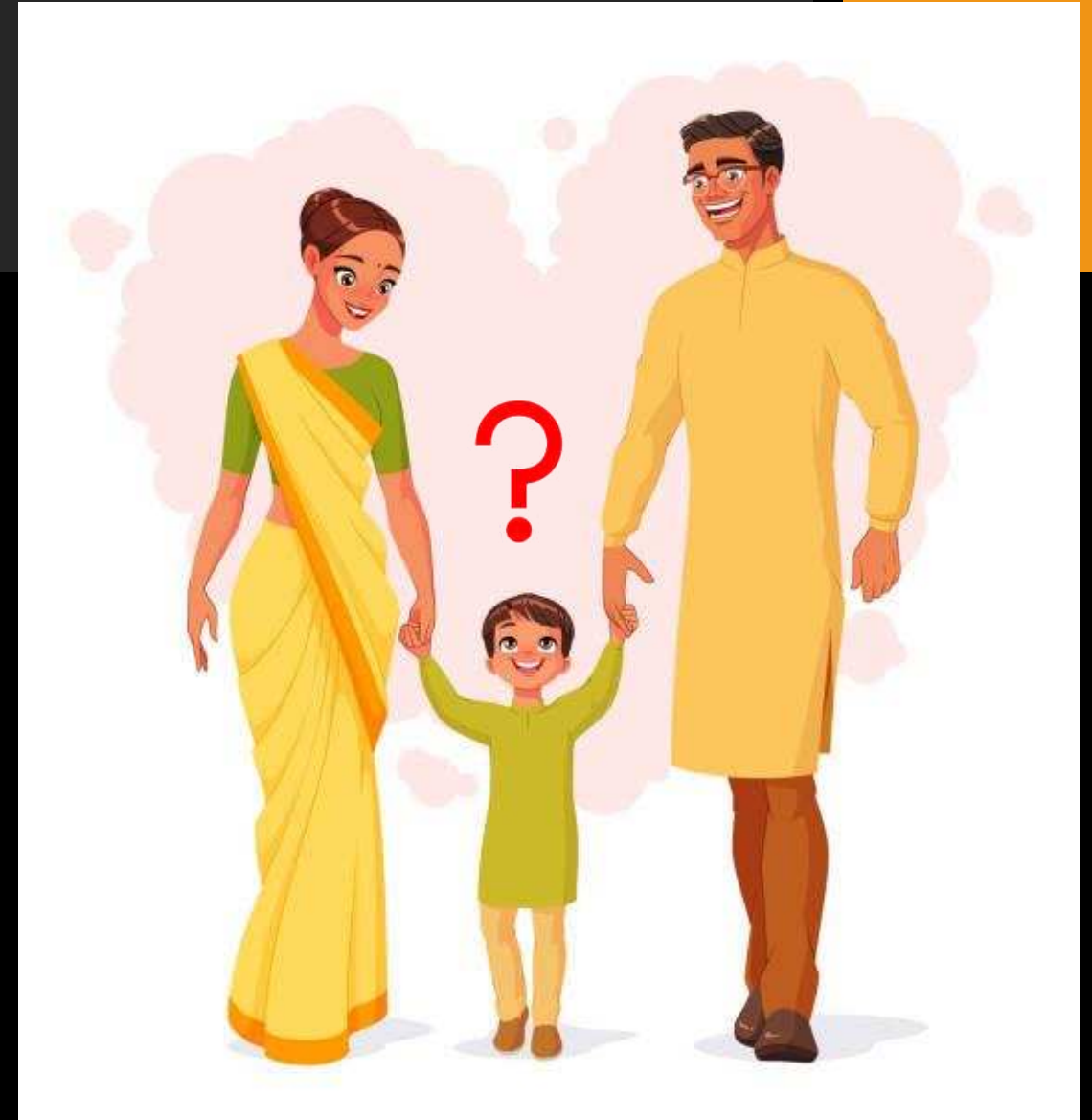
DNA: Famous Cases (contd.)



- ▶ Neeraj Grover – a television executive
- ▶ Stabbed to death
- ▶ Body parts - burnt in the forest
- ▶ Recovery of wiped blood stains from the door latch in the suspect's house – DNA profile
- ▶ Recovery of few tooth, charred bones - DNA profiles
- ▶ DNA profiles - matched against that of his parents to establish identity

“Validating Your Existence”

- Swapped at birth
- Approached by an old couple.
- Scientific validation of his association with the people who had raised him



► DNA Profiling.

► Matching alleles - parents.

► Biological child of the people
who raised him.



“Two Toasted Bodies”



- ▶ Durgachak P.S., Medinipur, WB
- ▶ Two corpses along a brick wall
- ▶ Burning of the bodies.
- ▶ Facial recognition - impossible

- ▶ Autopsy - preserved bones and partially burnt tissue
- ▶ Victims - women, aged 18-20 years old and 30-35 years old
- ▶ Physical description



- ▶ Partially burnt bones and tissues of the victims along with the alleged family member's blood for DNA profiling
- ▶ Poor preservation - covered with larvae, maggots and green-bottleflies
- ▶ DNA analysis

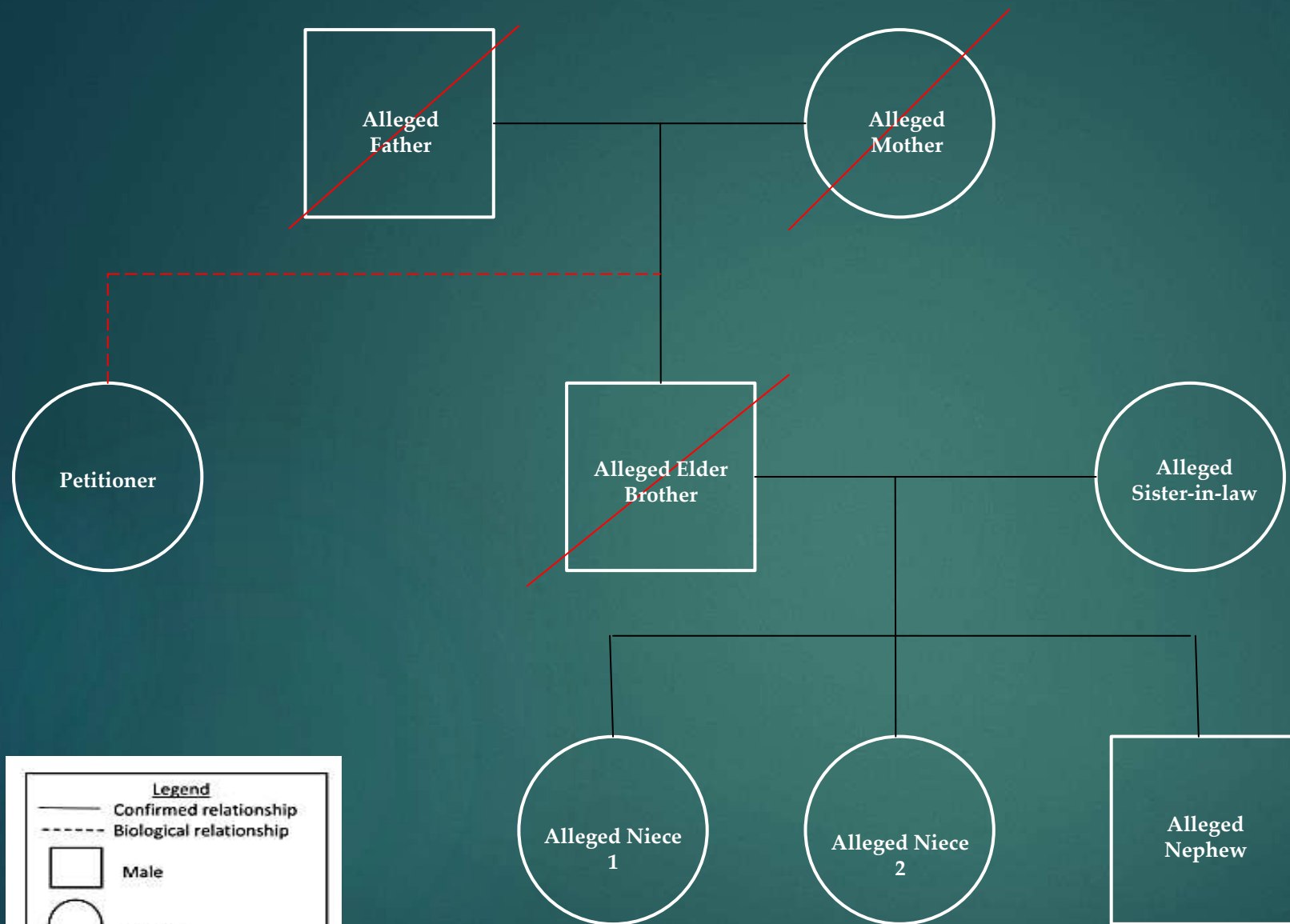


- ▶ Two victims - women & they were parent-offspring (mother-daughter)
- ▶ Victims - individual's sister and niece

Marker Names	Victim 1 (18–20-year-old)	Victim 2 (30–35-year-old)	Alleged Brother & Uncle
Marker 1	10, 10	10, 12	10, 12
Marker 2	8, 13	8, 8	8, 11
Marker 3	26, 30	15.3, 26	21, 26
Marker 4	15, 16	16, 16	16, 17
Marker 5	8, 9	9, 9.3	9, 9.3
Marker 6	29, 30.2	28, 30.2	28, 30.2
Sex Marker	X, X	X, X	X, Y

“For the Sake of Honour”

- ▶ The ‘Thevars’ of Ramanathapuram district of TN - self-respect
- ▶ The Petitioner was socially boycotted by her sister-in-law after her elder brother’s demise
- ▶ To claim a biological relationship with her late elder brother and his children, Mrs. X had to file a civil suit.



► Samples were collected

► Kinship test

- ▶ Human trafficking
- ▶ Sale and buying of humans
- ▶ Monetary benefits.

- ▶ Complaint - an illegal prostitution business
- ▶ Four young girls were aged 3, 4, 14 & 19
- ▶ False claims



Girl – 3yrs



Girl – 4yrs



Girl – 14yrs

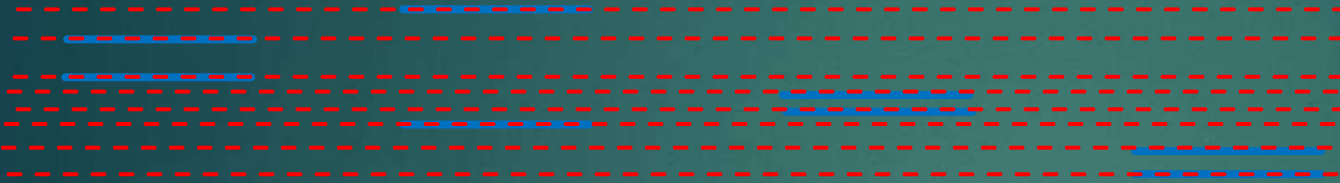


Girl – 19yrs



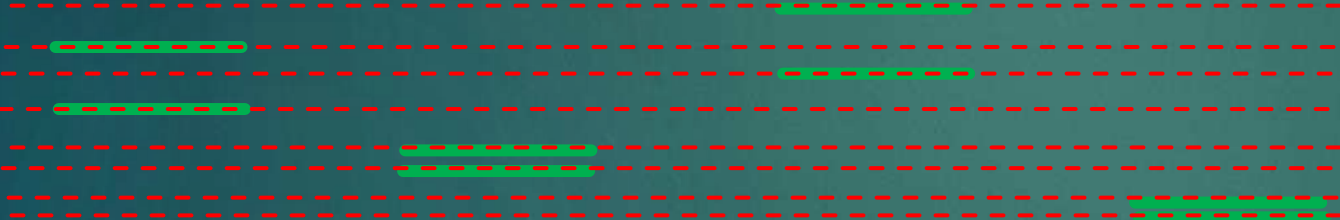
- ▶ Police approached Truth Labs for DNA profiling of the 4 young girls

Marker 1



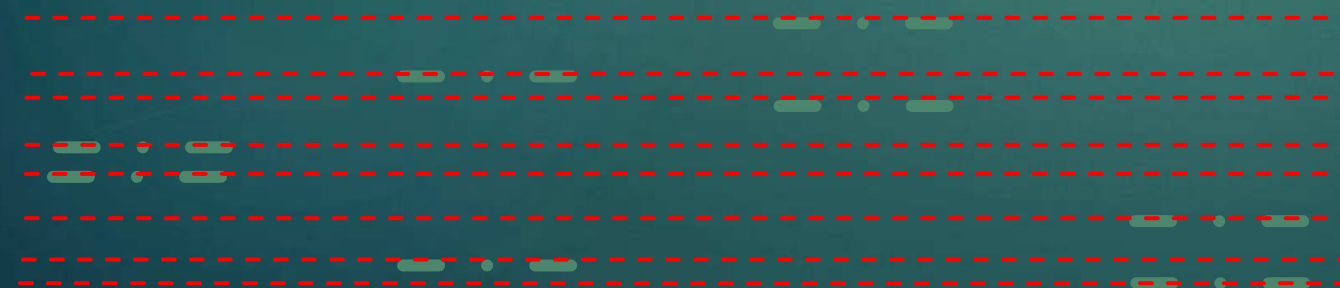
- ▶ Establishment of relationship

Marker 2



- ▶ DNA Profiling reveal - none of the 4 girls were related to each other, nor were they related to the couple and their son.

Marker 3



“Out of Control Teenager”



- ▶ Case - Juvenile Justice Board
- ▶ 7-year-old girl
- ▶ Pain in her private regions

- ▶ Sexually assaulted - her clothing and swabs from the private areas
- ▶ Filed a complaint
- ▶ The police arrested the boy and confiscated his clothing for examination.





Victim's
Reference

Victim's
clothing

Accused's
Reference

Accused's
clothing

=====

=====

=====

=====

- ▶ Clothing of victim and the accused
- DNA profiling - reference
samples

- ▶ Victim's blood and body fluids -
accused's clothing.

- ▶ The teenager had hurt and sexually
assaulted the small girl.

“Recovered from a Watery Grave”



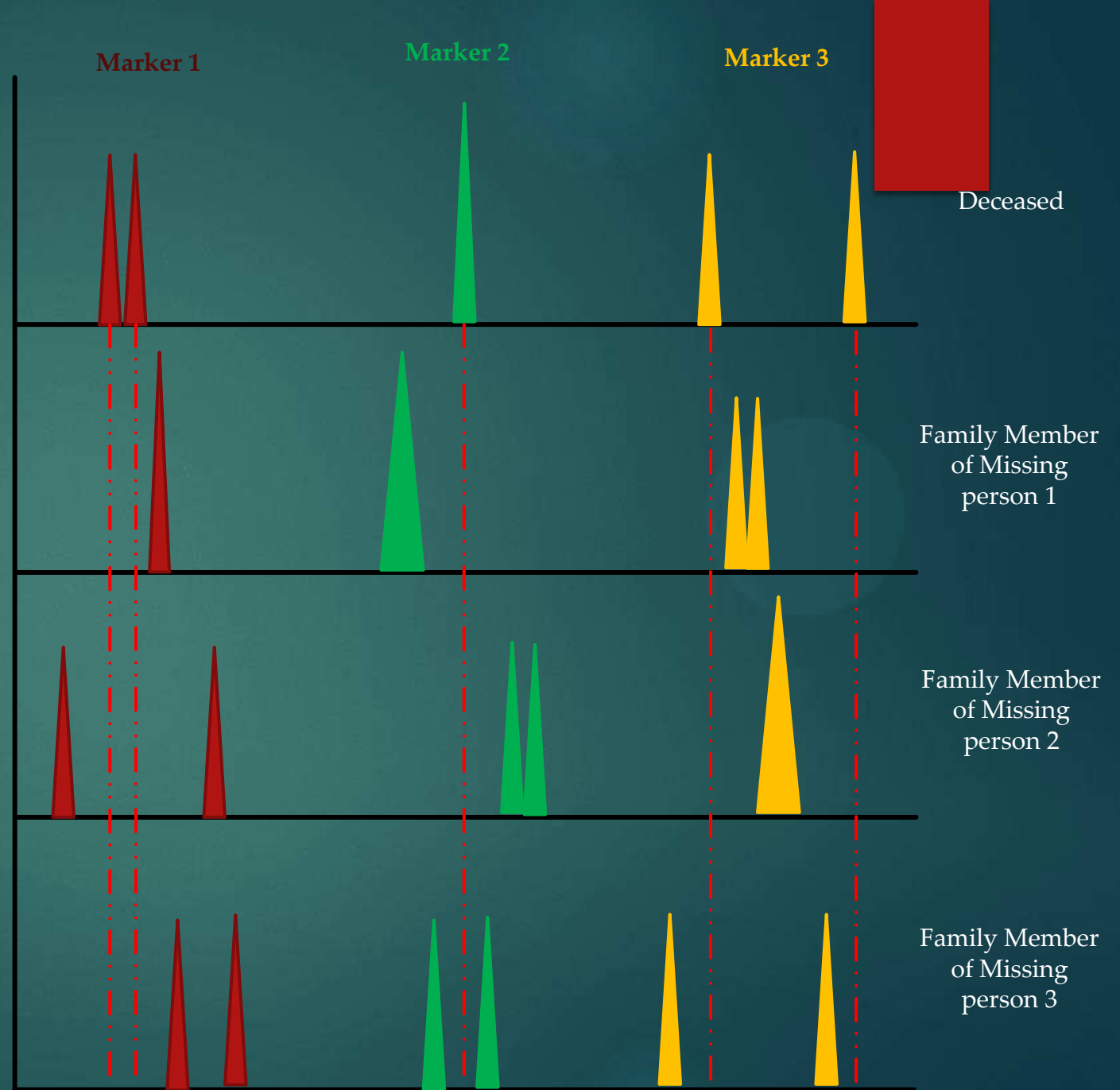
- ▶ An unidentified decomposed dead body - Andaman Police.
- ▶ Facial recognition - impossible
- ▶ Postmortem - adult male, aged about 25-40 years old, and the time of death was around 3-4 months.

- ▶ Preserved bone and tissue samples
- ▶ A case was registered by the Andaman Police
- ▶ Missing person's register – 3 missing males



- ▶ Blood samples of the family members of the 3 missing men

- ▶ DNA Profiling - did not match



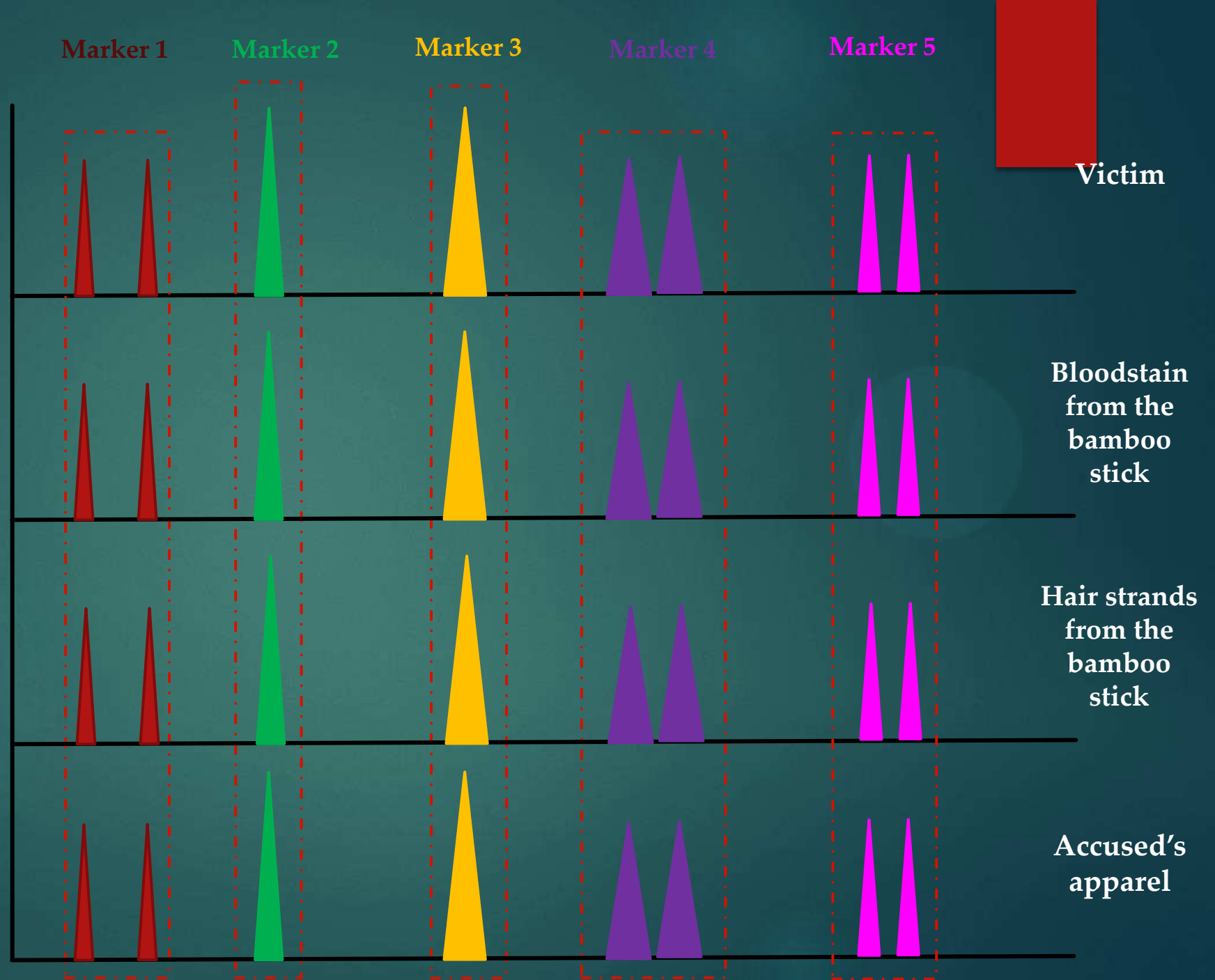
“Bludgeoned With Bamboo”



- ▶ Homicide
- ▶ Bludgeoned his wife to death using a spear-like bamboo stick.
- ▶ Force and angle of impact of the bamboo stick - splattered bloodstains
- ▶ Accused's apparel, the spear-like bamboo stick and the victim's blood for DNA analysis.

► The bamboo stick -
hair strands &
bloodstains

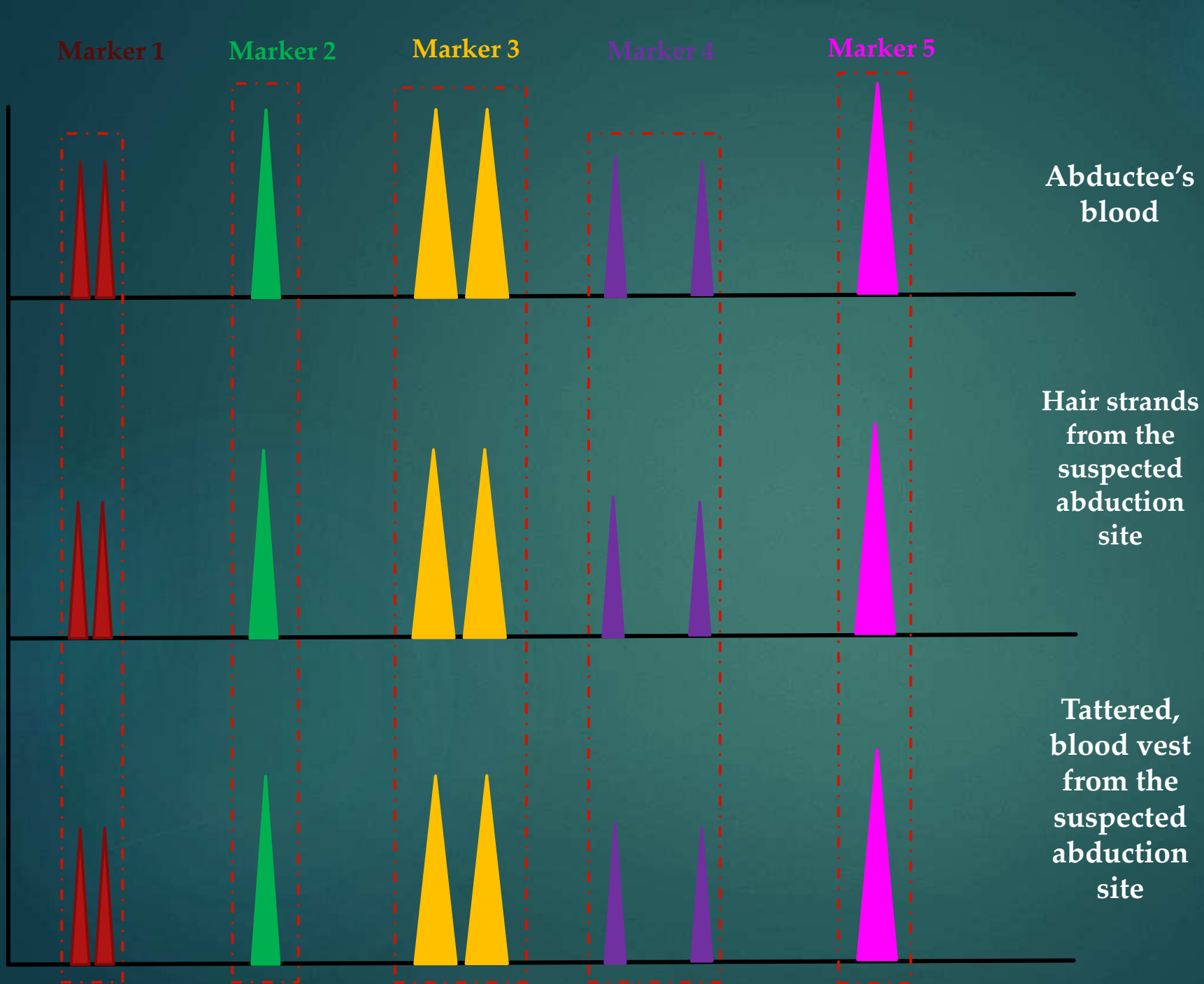
► Blood and hair on the
bamboo stick and the
bloodstains on the
accused's apparel -
belonged to the victim.



“Abduction Site Identified”

- ▶ Abducted by a gang and kept in captivity for 33 days
- ▶ Released after a ransom of 2.6 crores was paid
- ▶ Bad physical and mental conditions
- ▶ Identification of a possible location as the place where the captives were held, as well as the gang that had carried out the abduction

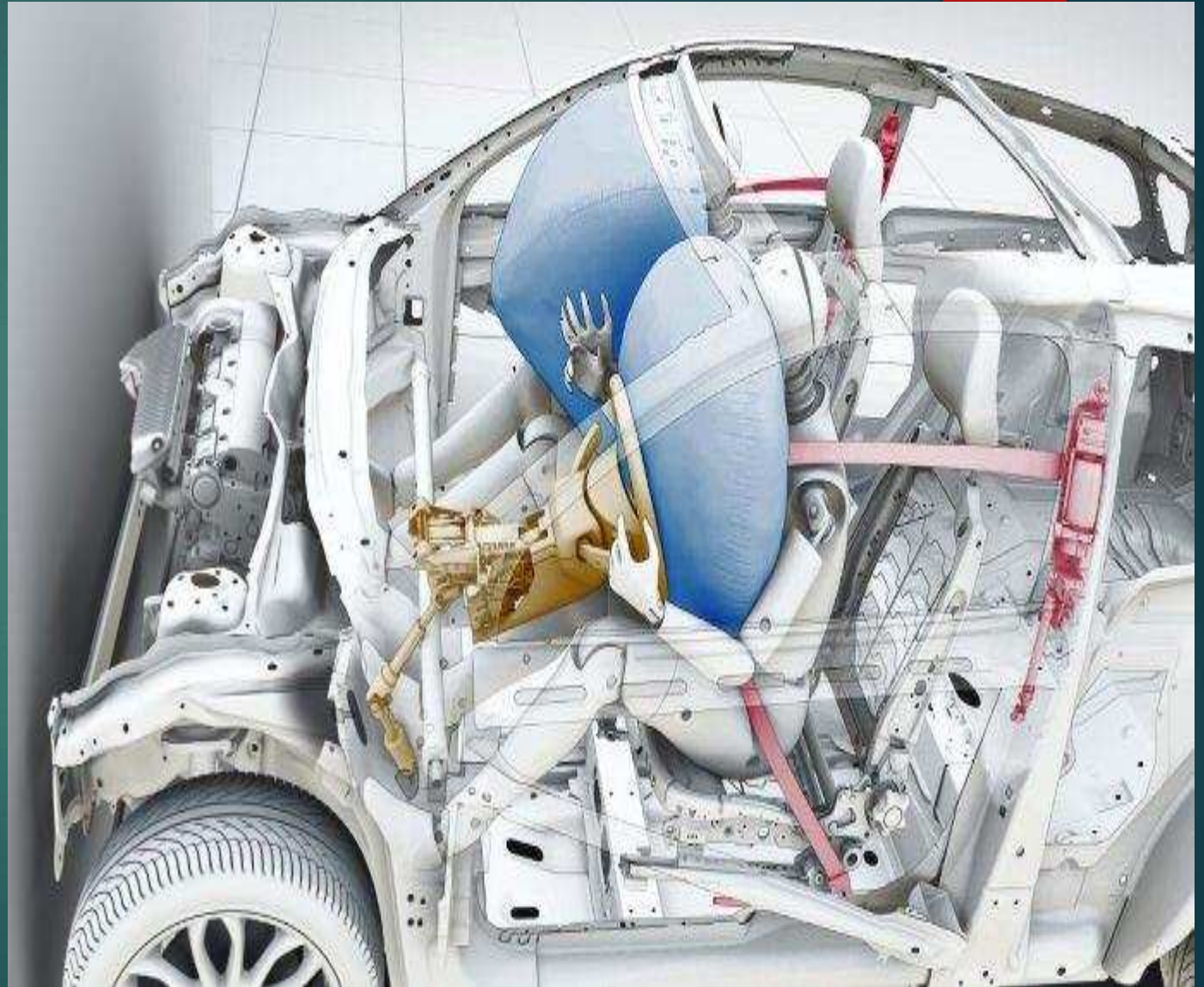


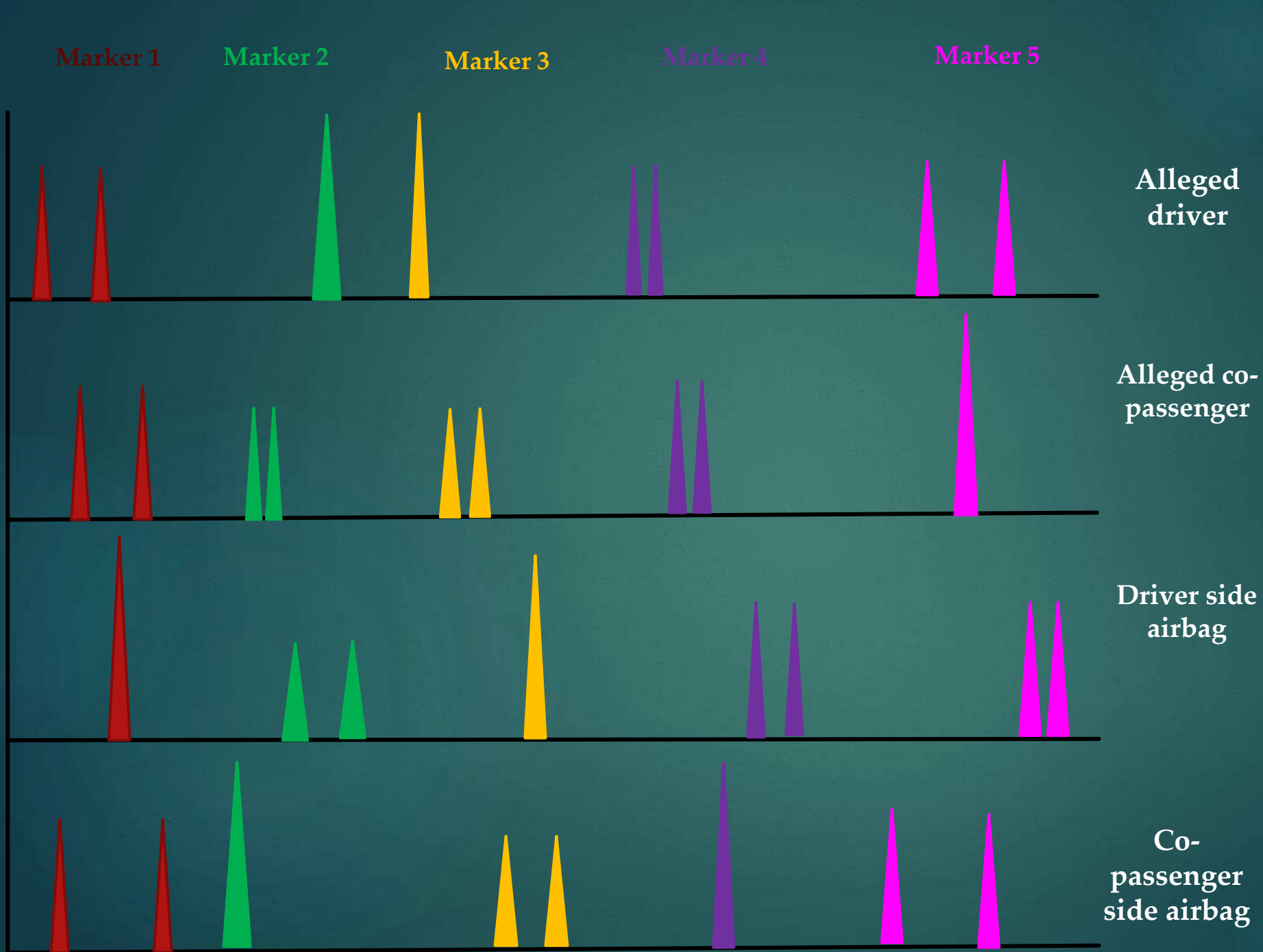


- ▶ Recovered a bloody, tattered vest and some clumps of hair from the suspected abduction site
- ▶ DNA profiling of all the exhibits matched at all the markers

“Counterfeit Passengers”

- ▶ Case of motor vehicle accident – confirmation of presence of the occupants in the vehicle at the time of the incident
- ▶ The cuttings of the airbags - the passenger and driver side were taken
- ▶ Blood samples





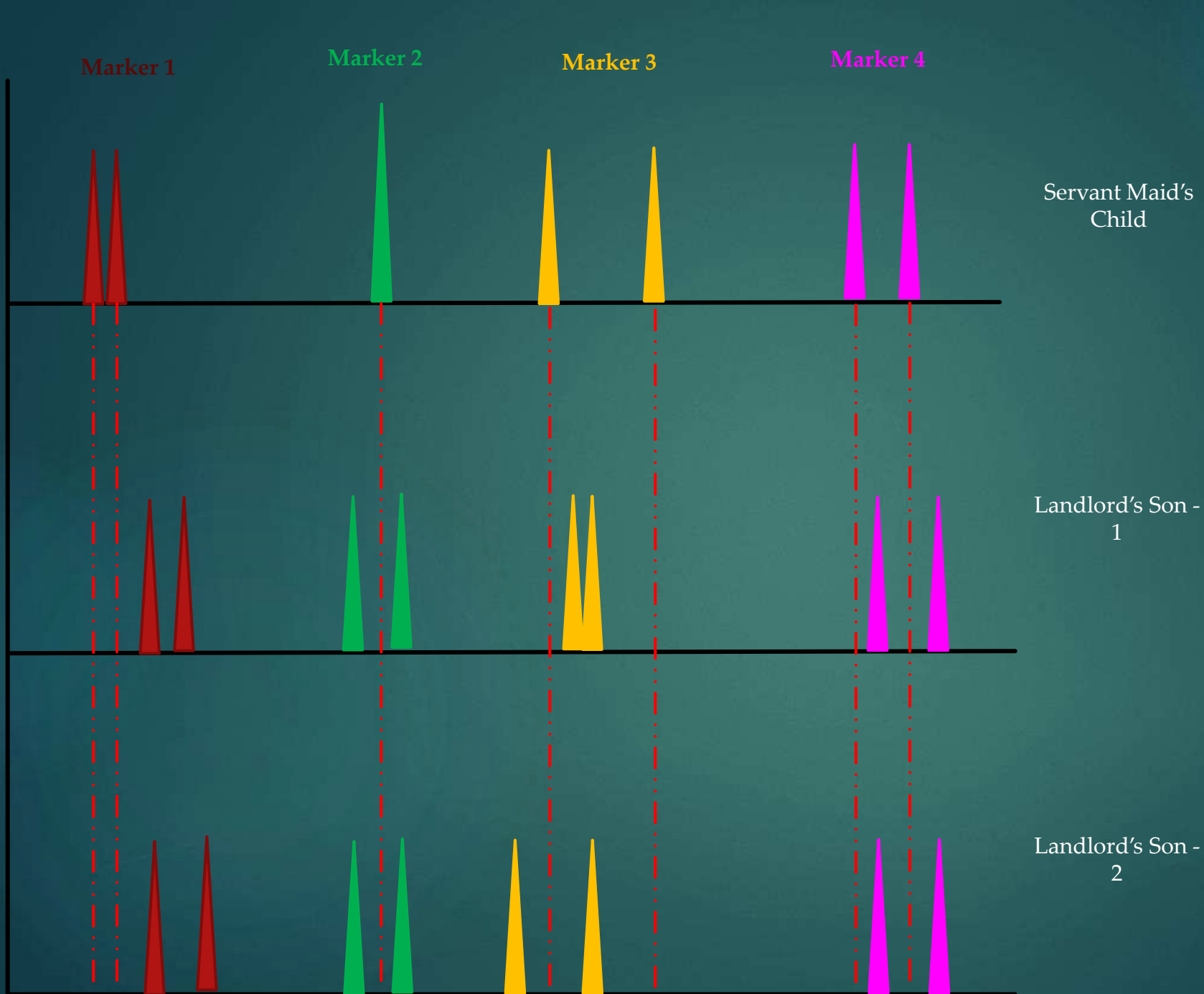
► The DNA profiles - unrelated males

► The DNA profiles of the alleged driver and co-passenger were different from those obtained from the incident vehicle

“Exploiting The Rich”

- ▶ A servant - assaulted by the sons of the rich landlord
- ▶ Father - either of the landlord's sons
- ▶ Identification of the father





► DNA profiling - neither
of the landlord's sons

► False allegations to extort
money from the landlord

“Negligence at Manufacturing”

- ▶ A pharmaceutical company
- ▶ Traces of blood at the crimp - unopened injection vial
- ▶ To trace the source of this blood



- ▶ The blood was found to be human in origin
- ▶ An unidentified male
- ▶ Further examination can be done to identify the source of blood by comparing against the employees on the production line

STR Markers	STR profile of the blood recovered from the crimp of the vial
STR Marker 1	6, 8
STR Marker 2	10, 11.3
STR Marker 3	16, 18
STR Marker 3	24.2, 31
STR Marker 4	9, 13
STR Marker 5	16, 16
STR Marker	X, Y

Thanks! Questions?

