

## The Nursery Mix-Up: The Three Mothers Case

At St. Gabriel's Medical Center, three women gave birth within hours of each other during a power outage that temporarily disabled the hospital's labeling system.

Weeks later, **Claire**, a marketing executive, began to suspect something was wrong when her daughter **Ella** looked strikingly different—dark-haired and brown-eyed while she and her husband were both fair.

Around the same time, **Tessa**, a working student, claimed her own baby's complexion was too light to resemble her family.

A third mother, **Maria**, a nurse at the same hospital, also expressed doubts when her child's blood type didn't match hers.

Hospital administrators ordered an investigation, and all three women with their infants and **Noah**, identified as **Ella's biological father** for comparison in the investigation.

underwent **ABO blood typing** and **DNA profiling (13 STR loci)** to determine the true biological mothers.

Person	ABO Type
Child 1 – Ella	AB
Alleged Mother 1 – Claire	A
Alleged Mother 2 – Tessa	B
Alleged Mother 3 – Maria	AB
Child 2 – Baby Milo	A
Child 3 – Baby Rina	O
Noah	AB

<b>Locus</b>	<b>Child – Ella</b>	<b>Biological Father – Noah</b>	<b>Mother 1 – Claire</b>	<b>Mother 2 – Tessa</b>	<b>Mother 3 – Maria</b>	<b>Allele Frequencies (Observed)</b>	<b>Maternity Index</b>
D3S1358	15,16	16,17	14,15	15,16	16,17	14:0.18; 15:0.29; 16:0.27; 17:0.12	
vWA	16,18	16,18	14,16	16,18	15,18	14:0.20; 15:0.21; 16:0.28; 18:0.19	
FGA	21,24	21,23	24,25	21,24	22,24	20:0.10; 21:0.17; 22:0.15; 23:0.12; 24:0.24; 25:0.11	
D8S1179	12,14	14,15	10,12	12,14	13,14	10:0.09; 12:0.26; 13:0.19; 14:0.23; 15:0.11	
D21S11	29,32	29,30	30,32	29,32	28,31	28:0.07; 29:0.18; 30:0.15; 31:0.16; 32:0.20	
D18S51	13,15	15,17	12,13	13,15	13,14	12:0.12; 13:0.22; 14:0.19; 15:0.21; 17:0.08	
D5S818	11,12	12,13	11,12	11,12	10,11	10:0.13; 11:0.28; 12:0.31; 13:0.07	

D13S317	8,11	9,11	8,11	8,11	8,10	8:0.30; 9:0.10; 10:0.12; 11:0.27	
D7S820	9,10	9,11	8,10	9,10	8,9	8:0.24; 9:0.26; 10:0.25; 11:0.08	
TH01	6,9.3	6,9.3	6,7	6,9.3	6,9.3	6:0.33; 7:0.20; 9.3:0.21	
TPOX	8,11	8,11	8,11	8,11	11,12	8:0.32; 11:0.29; 12:0.07	
CSF1PO	10,12	11,12	12,11	10,12	11,12	10:0.25; 11:0.18; 12:0.31	
D16S539	11,12	12,13	15,12	11,12	12,13	9:0.09; 11:0.29; 12:0.30; 13:0.08	

1. Who is/are the possible mothers based on the blood types? Why?
2. Who is/are excluded as mother? why?
3. Encircle the obligate maternal allele in the column of Ella's DNA profile.
4. Encircle the obligate alleles present in each putative mother's profile.
  - a. What does it mean if the putative mother does not have all or some of the obligate maternal allele? Why?
  - b. What does it mean if a putative mother has all the obligate maternal allele? Why?
5. Compute the Maternity Index (MI).
  - a. How is this computed?
  - b. What does the MI signify?
6. Compute the Combined Paternity Index (CMI).
  - a. How is this computed?
  - b. What does CMI signify?
7. Derive the Probability of Maternity and convert it into a percentage format.

- a. How is this computed?
  - b. What does PoM signify?
8. Prepare a Legal Memorandum based on the facts and results of the Maternity test.