

The “Mama Mia” Paternity Test

Sophia, a cheerful young woman preparing for her wedding, grew up without knowing who her real father was. Her mother, **Donna**, a free-spirited Filipina who is a manager of a resort in Boracay island, had three close relationships around the same period when Sophia was conceived.

1. **Sam** – an **American architect** who often traveled abroad for work.
2. **Harry** – a **British banker** who visited the Philippines for a development project.
3. **Bill** – a **Norwegian travel writer and adventurer** who frequently sailed around Southeast Asia.

When Sophia found her mother’s old journal, she realized that any of the three men could be her father. She secretly invited all of them to her wedding, hoping to discover the truth.

During the joyous reunion, confusion arose as all three men felt a genuine paternal bond with her. To end the uncertainty, Sophia and Donna agreed to undergo a **paternity test** with the three possible fathers. Blood samples were collected for **ABO blood typing** and **DNA profiling (13 STR loci)**.

Person	ABO Type
Mother – Donna	A
Child – Sophia	AB
PF1 – Sam (Architect)	AB
PF2 – Harry (Banker)	B
PF3 – Bill (Writer/Adventurer)	O

Locus	Sophia	Donna	PF1 – Sam	PF2 – Harry	PF3 – Bill	Allele Frequencies (Observed)	Paternity Index
D3S1358	15,16	15,18	14,16	16,17	14,15	14:0.18; 15:0.29; 16:0.27; 17:0.12; 18:0.14	
vWA	16,18	14,16	15,18	16,18	14,15	14:0.20; 15:0.21; 16:0.28; 18:0.19	
FGA	21,24	24,25	20,24	21,23	22,24	20:0.10; 21:0.17; 22:0.15; 23:0.12; 24:0.24; 25:0.11	
D8S1179	12,14	10,12	12,13	14,15	13,14	10:0.09; 12:0.26; 13:0.19; 14:0.23; 15:0.11	
D21S11	29,32	30,32	29,31	29,30	28,31	28:0.07; 29:0.18; 30:0.15; 31:0.16; 32:0.20	
D18S51	13,15	12,13	14,15	15,17	13,14	12:0.12; 13:0.22; 14:0.19; 15:0.21; 17:0.08	
D5S818	11,12	11,12	10,12	12,13	10,11	10:0.13; 11:0.28; 12:0.31; 13:0.07	
D13S317	8,11	8,11	8,12	9,11	8,10	8:0.30; 9:0.10; 10:0.12; 11:0.27; 12:0.09	
D7S820	9,10	8,10	8,9	9,11	8,10	8:0.24; 9:0.26; 10:0.25; 11:0.08	
TH01	6,9.3	6,7	7,9.3	6,9.3	6,7	6:0.33; 7:0.20; 9.3:0.21	
TPOX	8,11	8,11	8,9	8,11	11,12	8:0.32; 9:0.10; 11:0.29; 12:0.07	
CSF1PO	10,12	10,11	8,11	11,12	10,12	10:0.25; 11:0.18; 12:0.31	

D16S539	11,12	11,11	9,12	12,13	11,12	9:0.09; 11:0.29; 12:0.30; 13:0.08	—
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1. Who is/are the possible fathers based on the blood types? Why?
2. Who is/are excluded? why?
3. Encircle the obligate paternal allele in the column of Sophia's DNA profile.
4. Encircle the obligate alleles present in each putative father's profile.
 - a. What does it mean if the putative father does not have all or some of the obligate paternal allele? Why?
 - b. What does it mean if a putative father has all the obligate paternal allele? Why?
5. Compute the Paternity Index (PI).
 - a. How is this computed?
 - b. What does the PI signify?
6. Compute the Combined Paternity Index (CPI).
 - a. How is this computed?
 - b. What does CPI signify?
7. Derive the Probability of Paternity and convert it into a percentage format.
 - a. How is this computed?
 - b. What does PoP signify?
8. Prepare a Legal Memorandum based on the facts and results of the paternity test.