

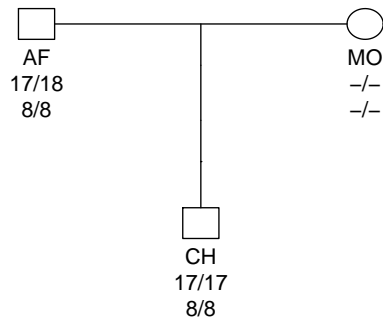
Basics of Relationship Inference

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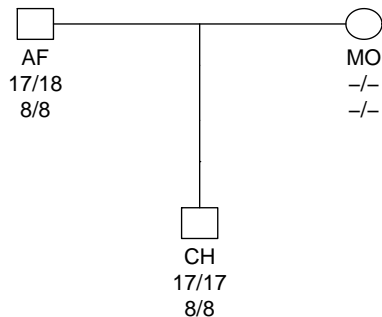
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Hypotheses



- ▶ H_1 : AF biological father of CH.
- ▶ H_2 : AF and CH unrelated.

LR

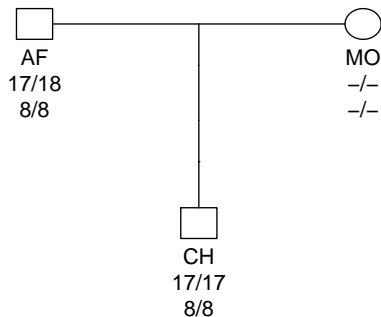


$$LR_1 = \frac{\frac{1}{2}p_{17}}{p_{17}^2} = \frac{1}{2 \times 0.204} = 2.45$$

$$LR_2 = \frac{p_8}{p_8^2} = \frac{1}{0.554} = 1.81$$

$$LR = LR_1 \times LR_2 = 2.45 \times 1.81 = 4.4.$$

Interpretation and assumptions



- ▶ Interpretation LR=4.4: The data is 4.4 times likely if AF is assumed to be the father compared to the unrelated alternative.
- ▶ Assumptions
 - Hardy–Weinberg Equilibrium (HWE).
 - Independent markers.
 - No artefacts (mutation, silent alleles, drop-out/in, error).