

Forensic Genetics

Module 15 – Section 7 & 8 Exercises

Section 7 Group Work

Y-STR

Y-STR Exercise

Go to <https://yhrd.org/search> and manually enter the following 12-locus profile with the Y-filer option, building it up one locus at a time:

DYS456: 15; DYS389I: 12; DYS390: 25; DYS389II: 28;
DYS458: 28; DYS393: 13; DYS391: 10; DYS635: 22;
DYS392: 11; YGATAH4: 11; DYS438: 11; DYS448

i.e. find 12 separate counts in the Worldwide database. Any comments on your results?

Section 8 Group Work

Relatives

Exercise 1a: LR – Relatives

Consider a simple single-source crime scene sample with genotype $G_C = AA$, and a suspect that matches at that locus. Calculate the LR, using $p_A = 4\%$, and alternative hypotheses:

- The DNA in the sample came from a brother of the suspect;

Exercise 1b: LR – Relatives

Consider a simple single-source crime scene sample with genotype $G_C = AA$, and a suspect that matches at that locus. Calculate the LR, using $p_A = 4\%$, and alternative hypotheses:

- The DNA in the sample came from a brother of the suspect;
- The DNA in the sample came from an identical twin of the suspect.

Exercise 2a: Paternity Index

Suppose a child has genotype $G_C = AB$. What are the LR values when:

- $G_M = AA$ and $G_{AF} = BB$;

Exercise 2a: Paternity Index

Suppose a child has genotype $G_C = AB$. What are the LR values when:

- $G_M = AA$ and $G_{AF} = BB$;
- $G_M = AA$ and $G_{AF} = CD$;

Exercise 2b: Paternity Index

Calculate the weight of the evidence for the following data:

Locus	G_C	G_M	G_{AF}
TPOX	(6,9)	(6,12)	(8,9)
vWA	(17,17)	(17,16)	(17,17)
TH01	(7,9)	(9,10)	(7,9)

Locus	Allele	Frequency
TPOX	6	0.006
	8	0.506
	9	0.094
	12	0.038
vWA	16	0.276
	17	0.300
TH01	7	0.147
	9	0.232
	10	0.116

Source: Introduction to Statistics for Forensic Scientist (Lucy, 2005).