



GRUPO DE HABLA ESPAÑOLA Y PORTUGUESA DE LA ISFG

GRUPO DE LÍNGUAS ESPANHOLA E PORTUGUESA DA ISFG


 Ministerio de Justicia
 INSTITUTO NACIONAL DE TOXICOLOGÍA Y CIENCIAS FORENSES

 SERVICIO DE GARANTÍA DE CALIDAD
 DEPARTAMENTO DE MADRID
 C/ José Echegaray nº 4 - 28232 Las Rozas de Madrid (Madrid)
 Tf.+34 91 768 88 74 Fax +34 91 563 6924
 e-mail: j.gomez@mju.es

INTERCOMPARISON PROGRAM

“ANALYSIS OF DNA POLYMORPHISMS IN BLOODSTAINS AND OTHER BIOLOGICAL SAMPLES”

BASIC LEVEL**EXERCISE Nr 20 (2012)****DEADLINE: 27-04-2012****Theoretical Forensic study**

Participants are asked to solve the proposed theoretical study.

4. Theoretical studies**4.1 Kinship theoretical study****4.1.1 Approach**

- The aim is to calculate the maternity index (MI) of the Alleged Mother with respect to the Child.
- Use the allele frequencies provided in the Appendix.
- One step mutation rate= 1×10^{-3}
- Null allele frequency= 5×10^{-3}

	Child	Alleged Mother
D8S1179	8/12	11/12
D21S11	28/29	28/31
D7S820	8/9	8/12
CSF1PO	10/11	10/11
D3S1358	14/16	14/16
TH01	7/10	6/10
D13S317	11/13	13
D16S539	10	10/13
D2S1338	17/24	24/25
D19S433	14/15	13/15
vWA	14/16	14/15
TPOX	9	9
D18S51	12/16	16/20
D5S818	11/13	11/13
FGA	21/26	18/21

4.1.2 Report the partial and the total Maternity Indexes (MI).**TABLE 8**

Report the values with four decimal places using comma as the decimal separator, round off the obtained values and report them in scientific notation (Excel format). Ex. 4,5674421 should be reported as 4,5674E+00; 0,1234567 should be reported as 1,2346E-01.

	MI
D8S1179	
D21S11	
D7S820	
CSF1PO	
D3S1358	
TH01	
D13S317	
D16S539	
D2S1338	
D19S433	
vWA	
TPOX	
D18S51	
D5S818	
FGA	
Total MI	

4.1.3 Indicate the software you used to carry out the statistical calculations.

Please, remember that a paper copy of the records generated by the software used for statistical calculations must be submitted.

4.1.4 In the case of hand-made calculations, report the used formulas.

TABLE 9

	MI
D8S1179	
D21S11	
D7S820	
CSF1PO	
D3S1358	
TH01	
D13S317	
D16S539	
D2S1338	

	MI
D19S433	
vWA	
TPOX	
D18S51	
D5S818	
FGA	

4.1.5 Conclusions and remarks about the kinship theoretical study.

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4.2 Forensic theoretical study

4.2.1 Approach

The genetic profile shown in the table was obtained after having analyzed the traces of blood recovered from the fingernails of a homicide suspect. Assuming autosomal, entirely codominant alleles at STR loci and taking into account the allele frequencies shown in the Appendix:

- Calculate the genotype frequencies and the expected frequency of that DNA profile, in the population where the allele frequencies were estimated.
- Assuming that the obtained profile matches the victim's profile, calculate the likelihood ratio (LR) and specify the formulated hypotheses.
- Choose the correct conclusion among the different options.

4.2.2 Report the genotype and the profile frequencies.

TABLE 10

Report all the values with four decimal places using comma as the decimal separator, round off the obtained values and show them in scientific notation (Excel format). Ex. 4,5674421 should be reported as 4,5674E+00; 0,1234567 should be reported as 1,2346E-01.

	Genotype	Genotype frequency
D8S1179	11/12	
D21S11	30/33.2	
D7S820	9/12	
CSF1PO	11/12	
D3S1358	16/17	
TH01	9/9.3	
D13S317	13	
D16S539	9/13	
D2S1338	23	
D19S433	14/15	
vWA	16/17	
TPOX	8	
D18S51	13/15	
D5S818	9/12	
FGA	21/22	
DNA profile frequency		

4.2.3 Indicate the software you used to carry out the statistical calculations.

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Please, remember that a paper copy of the records generated by the software used for statistical calculations must be submitted.

4.2.4 Formulate the appropriate hypotheses and report the corresponding LR value.

Hypothesis 1	
Hypothesis 2	
Total LR	

Report the LR value with four decimal places using comma as the decimal separator, round off the obtained values and show them in scientific notation (Excel format). Ex. 4,5674421 should be reported as 4,5674E+00; 0,1234567 should be reported as 1,2346E-01.

4.2.5 Choose the correct conclusion among the different options given below.

a)	b)	c)	d)	e)
☐	☐	☐	☐	☐

- a) It is X (=LR value) times more likely that the traces of blood found in the fingernails came from the victim than from a randomly chosen individual from the population (who is unrelated to the victim).
- b) It is X (=LR value) times more likely to observe the genetic profile found in the traces of blood recovered from the fingernails if these traces of blood came from the suspect than if they came from a randomly chosen individual from the population (who is unrelated to the suspect).
- c) The suspect committed the homicide.
- d) It is X (= LR value) times more likely to observe the genetic profile found in the traces of blood recovered from the fingernails if these traces of blood came from the victim than if they came from a randomly chosen individual from the population (who is unrelated to the victim).
- e) The traces of blood recovered from the fingernails of the suspect came from the victim.

5. Remarks about this exercise

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6. Suggestions for subsequent exercises

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The analyses, the generated results and their statistical evaluation have been performed in the facilities of the participating laboratory and by its own staff, following working protocols used in routine casework together with safety precautions. In accordance with the donors' consent, these samples will be processed anonymously and used exclusively for the Intercomparison Exercise GHEP-ISFG 2012.

Name of the person in charge

Date and signature

WOULD YOU LIKE TO RECEIVE A CERTIFICATE OF PARTICIPATION?

Kinship Module (Basic level) (Yes/No)	Forensic Module (Basic level) (Yes/No)

Note.- In order to receive the certificate of participation you must return this authorization duly signed.