

XVIII JORNADAS DEL GHEP-ISFG

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Análisis de resultados en muestras con mezcla de fluidos, M4 y M7

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Estudio práctico forense. Nivel básico

- **M4:** muestra forense para análisis genético.
- “ ¿Podría la muestra forense M4 corresponderse con una mezcla de fluidos? Establezca la naturaleza del componente o de los posibles componentes de la misma.
- “ ¿Podría haber contribuido a la muestra M4 alguno de los donantes de las muestras de referencia M1, M2, M3?

Estudio práctico forense. Nivel avanzado

- **M7:** muestra forense para identificación de fluidos y análisis genético
- “ Indique la naturaleza de los componentes y el número mínimo de contribuyentes detectados en las muestras M6, M7 y M8.
- “ ¿Podría haber contribuido a la muestra M7 alguno de los donantes de las muestras de referencia M1, M2, M3?

Módulo forense nivel básico

- **M4:** mezcla 2:1 (v/v) de sangre y semen de dos varones: sangre del donante DP + semen (del donante de la muestra M4 del ejercicio del GHEP ISFG del 2010)

Módulo forense nivel avanzado

- **M7:** mezcla 5:1 (v/v) de saliva de mujer (donante DS) y saliva de varón (del donante de la muestra M5 en el ejercicio del GHEP ISFG 2007) en una colilla

Interpretación de mezclas

1. Detección de la mezcla (descartar artefactos)
2. Identificación del número de contribuyentes
3. Estimar la contribución de cada componente
4. Comparación con muestras de referencia
5. Estima de la fuerza de la evidencia

Módulo forense nivel básico

Todos los laboratorios identifican M4 como una mezcla

Todos excepto uno coinciden en atribuir un mínimo de dos contribuyentes (la excepción atribuye tres)

Todos coinciden en no descartar a M1 como posible contribuyente a la mezcla

Estudio práctico forense. Nivel básico. Participación

Laboratorios inscritos: 75

Envían resultados: 71





Módulo forense nivel básico

M1

M2

M3

LT

F1

F2

23400

AMELOGENINA	X/Y	X	X/Y	X/Y
D8S1179	10/16	12/14	11/15	10/13/16
D21S11	28/32	30/31.2	28/29	28/31.2/32
D7S820	11/12	11/12	9/10	11/12
CSF1PO	12	11/12	11	12
D3S1358	13/18	17	18	13/18
TH01	6/9	7/9.3	9.3	6/9
D13S317	8	11/12	11/12	8/12
D16S539	12	10/12	9/10	12/13
D2S1338	18/23	19/20	17/18	17/18/23/23
D19S433	15/15.2	13/14	13/15	12/13/15/15.2
VWA	14/16	15/16	16/18	14/15/16
TPOX	8	8/11	9/12	8/11
D18S51	13/15	15/20	12/15	13/14/14
D5S818	11	12/13	11/13	11
FGA	19/27	21/23	22.2/23	19/27



Módulo forense nivel básico

M1

M2

M3

LT

F1

F2

23405

AMELOGENINA	X/Y	X	X/Y	X/Y	X/Y
D8S1179	10/16	12/14	11/15	10/13/16	13
D21S11	28/32	30/31.2	28/29	28/31.2/32	31.2
D7S820	11/12	11/12	9/10	10/11/12	10/12
CSF1PO	12	11/12	11	11/12	11/12
D3S1358	13/18	17	18	13/17/18/20	18/20
TH01	6/9	7/9.3	9.3	6/9/9.3	6/9.3
D13S317	8	11/12	11/12	8/12	8/12
D16S539	12	10/12	9/10	9/12/13	12/13
D2S1338	18/23	19/20	17/18	17/18/23/25/26	17/26
D19S433	15/15.2	13/14	13/15	12/13/14/14.2/15/*	12/13
VWA	14/16	15/16	16/18	14/15/16	15
TPOX	8	8/11	9/12	8/11	8/11
D18S51	13/15	15/20	12/15	13/14/15/18	14/18
D5S818	11	12/13	11/13	10/11	11
FGA	19/27	21/23	22.2/23	19/21/27	19/21
Penta_D	9/11	9/12	10/12	9/11	9
Penta_E	10/11	15/16	10/12	8/10/11/12	8/12
D10S1248	14	15	14	13/14/16	13/16
D22S1045	11/16	15/16	16	11/15/16	15/16
D2S441	10/11	11/12	11/14	10/11/15	11/15
D1S1656	15/15.3	16	14/16	15/15.3/17	16/17
D12S391	19/25	17/18	18/21	18/19/20/21/24/25	20/21
SE33_ACTBP2	15	14/17	17/20	14/14.2/15/28.2/32.2	28.2/32.2



Módulo forense nivel básico

M1

M2

M3

LT

F1

F2

23167

AMELOGENINA	X/Y	X/X	X/Y	X/Y	Y	X/Y
D8S1179	10/16	12/14	11/15	10/13/16	10/13/16	13
D21S11	28/32	30/31.2	28/29	28/31.3		31.2
D3S1358	13/18	17	18	13/17/18/19/20	18/20	18/20
TH01	6/9	7/9.3	9.3	6/9/9.3	6/8/9/9.3	6/9.3
D16S539	12	10/12	9/10	11/12/13	12/13	12/13
D2S1338	18/23	19/20	17/18	17/23/25/26	17/18/23/26	17/26
D19S433	15/15.2	13/14	13/15	12/13/15.2		12/13
VWA	14/16	15/16	16/18	14/15/16		15
D18S51	13/15	15/20	12/15	13/14/15/17/18	13/14/15/18	14/18
FGA	19/27	21/23	22.2/23	19/21/27	19/21	19/21
D10S1248	14	15	14	13/14/15/16		13/16
D22S1045	11/16	15/16	16	11/14/15/16	11/15/16	15/16
D2S441	10/11	11/12	11/14	10/11/15	10/11	11/15
D1S1656	15/15.3	16	14/16	15/16/17		16/17
D12S391	19/25	17/18	18/21	18/19/20/21/25		20/21
SE33_ACTBP2	15	14/17	17/20	15/28.2/32.2	15	28.2



Módulo forense nivel básico

AMELOGENINA	X/Y	X	XY	XY	XY	XY
D8S1179	10/16	12/14	11/15	10/13/16	10/13/16	10/13/16
D21S11	28/32	30/31.2	28/29	28/31.2/32	28/31.2/32	28/31.2/32
D7S820	11/12	11/12	9/10	10/11/12	10/11/12	10/11/12
CSF1PO	12	11/12	11	11/12	11/12	11/12
D3S1358	13/18	17	18	13/18/20	13/18/20	13/18/20
TH01	6/9	7/9.3	9.3	6/9/9.3	6/9/9.3	6/9/9.3
D13S317	8	11/12	11/12	8/12	8/12	8/12
D16S539	12	10/12	9/10	12/13	12/13	12/13
D2S1338	18/23	19/20	17/18	17/18/23/26	18/23/26	17/18/23/26
D19S433	15/15.2	13/14	13/15	12/13/15/15.2	12/13/15/15.2	12/13/15/15.2
VWA	14/16	15/16	16/18	14/15/16	14/15/16	14/15/16
TPOX	8	8/11	9/12	8/11	8/11	8/11
D18S51	13/15	15/20	12/15	13/14/15/18	13/14/15/18	13/14/15/18
D5S818	11	12/13	11/13	11	11	11
FGA	19/27	21/23	22.2/23	19/21/27	19/21/27	19/21/27
Penta_D	9/11	9/12	10/12	9/11	9/11	9/11
Penta_E	10/11	15/16	10/12	8/10/11/12	8/10/11/12	8/11/12
D10S1248	14	15	14	13/14/16	13/14/16	13/14/16
D22S1045	11/16	15/16	16	11/15/16	11/15/16	11/15/16
D2S441	10/11	11/12	11/14	10/11/15	10/11/15	10/11/15
D1S1656	15/15.3	16	14/16	15/15.3/16/17	15/15.3/17	15/16/17
D12S391	19/25	17/18	18/21	19/20/21/25	19/20/21/25	19/20/21/25
D6S1043	12/14	11/21	11/19	11/12/14	11/12/14	11/12/14



Módulo forense nivel básico

20299

AMELOGENINA	X/Y	X	X/Y	X/Y	X/Y	X/Y
D8S1179	10/16	12/14	11/15	10/13/16	10/16	13
D21S11	28/32	30/31.2	28/29	20/31.2/32	28/32	31.2
D7S820	11/12	11/12	9/10	10/11/12	11/12	10/12
CSF1PO	12	11/12	11	11/12	12	11/12
D3S1358	13/18	17	18	13/18/20	13/18	18/20
TH01	6/9	7/9.3	9.3	6/9/9.3	6/9	6/9.3
D13S317	8	11/12	11/12	8/12	8	8/12
D16S539	12	10/12	9/10	12/13	12	12/13
D2S1338	18/23	19/20	17/18	17/18/23/26	18/23	17/26
D19S433	15/15.2	13/14	13/15	12/13/15/15.2	15/15.2	12/13
VWA	14/16	15/16	16/18	14/15/16	14/16	15
D18S51	13/15	15/20	12/15	13/14/15/18	13/15	14/18
FGA	19/27	21/23	22.2/23	19/21/27	19/27	19/21
D10S1248	14	15	14	13/14/16	14	13/16
D22S1045	11/16	15/16	16	11/15/16	11/16	15/16
D2S441	10/11	11/12	11/14	10/11/15	10/11	11/15
D1S1656	15/16	16	14/16	15/16/17	15/16	16/17
D12S391	19/25	17/18	18/21	19/20/21/25	19/25	20/21



Módulo forense nivel básico

20287

AMELOGENINA	X/Y	X	X/Y	X/Y	X/Y	X/Y
D8S1179	10/16	12/14	11/15	10/13/16	10/16	13
D21S11	28/32	30/31.2	28/29	28/31.2/32	28/32	31.2
D7S820	11/12	11/12	9/10	10/11/12	11/12	10/12
CSF1PO	12	11/12	11	11/12	12	11/12
D3S1358	13/18	17	18	13/18/20	13/18	18/20
TH01	6/9	7/9.3	9.3	6/9/9.3	6/9	6/9.3
D13S317	8	11/12	11/12	8/12	8	8/12
D16S539	12	10/12	9/10	12/13	12	12/13
D2S1338	18/23	19/20	17/18	17/18/23/26	18/23	17/26
D19S433	15/15.2	13/14	13/15	12/13/15/15.2	15/15.2	12/13
VWA	14/16	15/16	16/18	14/15/16	14/16	15
TPOX	8	8/11	9/12	8/11	8	8/11
D18S51	13/15	15/20	12/15	13/14/15/18	13/15	14/18
D5S818	11	12/13	11/13	11	11	11
FGA	19/27	21/23	22.2/23	19/21/27	19/27	19/21
Penta_D	9/11	9/12	10/12	9/11	9/11	9
Penta_E	10/11	15/16	10/12	8/10/11/12	10/11	8/12
D10S1248	14	15	14	13/14/16	14	13/16
D22S1045	11/16	15/16	16	11/15/16	11/16	15/16
D2S441	10/11	11/12	11/14	10/11/15	10/11	11/15
D1S1656	15/15.3	16	14/16	15/15.3/16/17	15/15.3	16/17
D12S391	19/25	17/18	18/21	19/20/21/25	19/25	20/21
SE33_ACTBP2	15	14/17	17/20	15/28.2/A	15	28.2/A

M4. STRs autosómicos. LISIS TOTAL

Resultados de 69 laboratorios

29 marcadores consensuados

1402 resultados totales

7 errores de nomenclatura

(5) X/Y	XY
(2) 11	11/11

33 resultados discrepantes (2.35%)

3 laboratorios concentran 24 discrepancias (73%)



Módulo forense nivel básico. Lisis Total

N		n	RESULTADO	CONSENSO	Resultados discrepantes		
69	AMELOGENINA	64	X/Y	100%	(5) XY		
69	D8S1179	69	10/13/16	100%			
69	D21S11	67	28/31,2/32	97,10%	28/31,1/32	28/31,3	
61	D7S820	60	10/11/12	98,36%	11/12		
61	CSF1PO	60	11/12	98,36%	12		
69	D3S1358	63	13/18/20	91,30%	(3) 13/18/19/20		
69	TH01	67	6/9/9,3	97,10%	6/8/9/9,3	6/9	
61	D13S317	61	8/12	100%			
69	D16S539	67	12/13	97,10%	11/12/13	9/12/13	
67	D2S1338	63	17/18/23/26	94,03%	17/23/25/26	17/18/23	17/18/23/23
67	D19S433	65	12/13/15/15,2	97,01%	12/13/15,2	12/13/14/14,2/15	
69	VWA	69	14/15/16	100%			
60	TPOX	59	8/11	98,33%	8		
69	D18S51	67	13/14/15/18	97,10%	13/14/15/17/18	13/14/14	
61	D5S818	58	11	98,36	(2) 11/11	10/11	
69	FGA	68	19/21/27	98,55%	19/27		
42	D10S1248	41	13/14/16	97,62%	13/14/15/16		
42	D22S1045	41	11/15/16	97,62%	11/14/15/16		
42	D2S441	41	10/11/15	97,62%	11/15		
47	D1S1656	42	15/15,3/16/17	89,36%	(3) 15/15,3/17	(2) 15/16/17	
47	D12S391	44	19/20/21/25	93,62%	19/21/25	18/19/20/21/25	18/19/20/21/24/25
37	Penta_D	37	9/11	100%			
36	Penta_E	36	8/10/11/12	100%			
9	FES_FPS	9	11/12	100%			
10	F13A01	10	3,2/6/7/13	100%			
9	F13B	9	8/10	100%			
8	LPL	8	9/10/11	100%			
7	PENTA C	7	11	100%			
7	D6S1043	7	11/12/14	100%			
28	SE33	12	15/28,2/32,1	42,86%	18/28,2/32,2	14/14,2/15/28,2/32,2	15/28/463,64pb
							15/28,2/A



Módulo forense nivel básico. Lisis diferencial, 1ª fracción

N		n	RESULTADO	CONSENSO	n	RESULTADO	Resultados discrepantes	
44	AMELOGENINA	40	X/Y	97,73%	3	XY	Y	
45	D8S1179	31	10/13/16	68,89%	14	10/16		
44	D21S11	31	28/31,2/32	70,45%	13	28/32		
39	D7S820	27	10/11/12	69,23%	12	11/12		
39	CSF1PO	27	11/12	69,23%	12	12		
45	D3S1358	28	13/18/20	62,22%	16	13/18	13/18/19/20	
45	TH01	30	6/9/9,3	66,67%	14	6/9		
39	D13S317	28	8/12	71,79%	11	8		
45	D16S539	30	12/13	66,67%	15	12		
41	D2S1338	26	17/18/23/26	63,41%	13	18/23	18/23/26	17/18/23
40	D19S433	26	12/13/15/15,2	65%	12	15/15,2	12/13/15,2	12/15/15,2
44	VWA	31	14/15/16	70,45%	13	14/16		
38	TPOX	26	8/11	68,42%	12	8		
45	D18S51	31	13/14/15/18	68,89%	14	13/15		
38	D5S818	37	11	100%	1	11/11		
45	FGA	29	19/21/27	64,44%	14	19/27	(2) 19/21	
27	D10S1248	20	13/14/16	74,07%	7	14		
28	D22S1045	20	11/15/16	71,43%	8	11/16		
28	D2S441	19	10/11/15	67,86%	8	10/11	11/15	
29	D1S1656	18	15/15,3/16/17	62,07%	8	15/15,3	(2) 15/15,3/17	15/16
29	D12S391	19	19/20/21/25	65,52%	8	19/25	19/20/25	19/21/25
23	Penta_D	21	9/11	91,30%	2	9		
22	Penta_E	15	8/10/11/12	68,18%	6	10/11	8/12	
5	FES_FPS	5	11/12	100%				
5	F13A01	4	3,2/6/7/13	80%	1	3,2/6		
5	F13B	4	8/10	80%	1	10		
5	LPL	4	9/10/11	80%	1	11		
5	PENTA C	5	11	100%				
4	D6S1043	4	11/12/14					
18	SE33	5	15/28,2/32,1	27,78%	5	15/28,2/32,2	(7) 15	15/28,2



Módulo forense nivel básico. Lisis diferencial, 2ª fracción

N		n	RESULTADO	CONSENSO	n	Resultados discrepantes			
46	AMELOGENINA	43	X/Y	100%	3	XY			
46	D8S1179	41	13	93,48%	3	10/13/16	(2) 13/13		
46	D21S11	41	31,2	93,48%	3	28/31,2/32	(2) 31,2/31,2		
40	D7S820	38	10/12	95%	2	10/11/12			
40	CSF1PO	40	11/12	100%					
46	D3S1358	44	18/20	95,65%	2	13/18/20			
46	TH01	43	6/9,3	93,48%	3	6/9/9,3			
40	D13S317	40	8/12	100%					
46	D16S539	46	12/13	100%					
42	D2S1338	40	17/26	95,24%	2	17/18/23/26			
42	D19S433	41	12/13	97,62%	1	12/13/15/15,2			
45	VWA	40	15	93,33%	3	14/15/16	(2) 15/15		
39	TPOX	39	8/11	100%					
46	D18S51	44	14/18	95,65%	2	13/14/15/18			
39	D5S818	37	11	100%	2	11/11			
46	FGA	43	19/21	93,48%	3	19/21/27			
29	D10S1248	27	13/16	93,10%	2	13/14/16			
29	D22S1045	28	15/16	96,55%	1	11/15/16			
29	D2S441	28	11/15	96,55%	1	10/11/15			
31	D1S1656	29	16/17	93,55%	1	15/16/17	15,3/16/17		
31	D12S391	29	20/21	93,55%	1	19/20/21	19/20/21/25		
22	Penta_D	19	9	90,90%	2	9/11	9/9		
23	Penta_E	21	8/12	91,30%	1	8/11/12	8/10/11/12		
6	FES_FPS	6	11/12	100%					
6	F13A01	6	7/13	100%					
6	F13B	6	8/10	100%					
6	LPL	6	9/10	100%					
6	PENTA C	6	11	100%					
4	D6S1043	3	11		1	11/12/14			
19	SE33	8	28,2/32,2	42,11%	7	28,2/32,1	28,2/A	28,2/463,64pb	28,2 15/28,2/32,1



Módulo forense nivel básico. Lisis total, cromosoma Y

n LT	MARCADOR	n	RESULTADO	CONSENSO	Resultados discrepantes		
63	DYS19	63	14	100%			
62	DYS385	61	11/14	98,39%	11/14,2		
63	DYS389_I	61	12/13	96,83%	12	13	
63	DYS389_II	60	28/29	95,24%	28	29	13
63	DYS390	61	23/24	96,83%	24	23	
64	DYS391	62	10/11	96,88%	11	10	
63	DYS392	61	13	96,83%	10/13	12/13/14	
63	DYS393	61	13/14	96,83%	13	14	
63	DYS437	63	14	100%			
63	DYS438	62	12	98,41%	11/12		
63	DYS439 GATAA4	62	12	98,41%	12/13		
58	DYS448	58	18	100%			
58	DYS456	55	16	94,83%	(2) 15/16	15/16/17	
58	DYS458	56	17	96,55%	16/17	15/16/17	
11	DYS481	9	21/22	81,82%	21/26	21	
11	DYS533	11	12	100%			
11	DYS549	11	13	100%			
11	DYS570	10	17/19	90,91%	17		
11	DYS576	10	17/18	90,91%	18		
60	DYS635 GATAC4	60	23	100%			
11	DYS643	11	10	100%			
60	GATAH4	57	11/12	95%	11	12	20/21

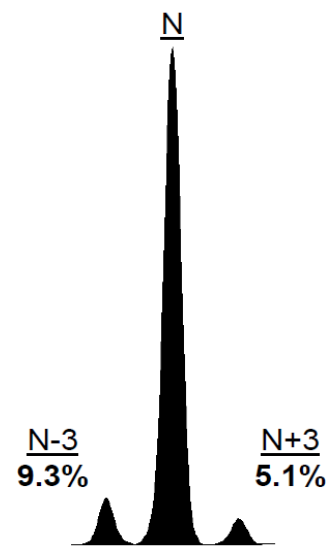
1053 determinaciones. 27 discrepancias (2,56%)



Módulo forense nivel básico. Lisis total, cromosoma Y

n LT	MARCADOR	n	RESULTADO	CONSENSO	Resultados discrepantes		
63	DYS19	63	14	100%			
62	DYS385	61	11/14	98,39%	11/14,2		
63	DYS389_I	61	12/13	96,83%	12	13	
63	DYS389_II	60	28/29	95,24%	28	29	13
63	DYS390	61	23/24	96,83%	24	23	
64	DYS391	62	10/11	96,88%	11	10	
63	DYS392	61	13	96,83%	10/13	12/13/14	
63	DYS393	61	13/14	96,83%	13	14	
63	DYS437	63	14	100%			
63	DYS438	62	12	98,41%			
63	DYS439 GATAA4	62	12	98,41%			
58	DYS448	58	18	100%			
58	DYS456	55	16	94,83%			
58	DYS458	56	17	96,55%			
11	DYS481	9	21/22	81,82%			
11	DYS533	11	12	100%			
11	DYS549	11	13	100%			
11	DYS570	10	17/19	90,91%			
11	DYS576	10	17/18	90,91%			
60	DYS635 GATAC4	60	23	100%			
11	DYS643	11	10	100%			
60	GATAH4	57	11/12	95%			

Electropherogram of the DYS392 Locus



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1053 determinaciones. 27 discrepancias (2,56%)



Módulo forense nivel básico. 1ª Fracción, cromosoma Y

n 1ª F	MARCADOR	n	RESULTADO	CONSENSO	n	RESULTADO	Discrepantes
41	DYS19	41	14	100%			
40	DYS385	40	11/14	100%			
40	DYS389_I	26	12/13	65%	14	12	
41	DYS389_II	25	28/29	60,98%	16	28	
41	DYS390	26	23/24	63,41%	15	23	
43	DYS391	29	10/11	67,44%	14	10	
41	DYS392	41	13	100%			
42	DYS393	27	13/14	64,29%	14	13	11/13
42	DYS437	42	14	100%			
41	DYS438	41	12	100%			
40	DYS439 GATAA4	40	12	100%			
39	DYS448	39	18	100%			
38	DYS456	37	16	97,37%	1	15/16	
39	DYS458	39	17	100%			
6	DYS481	4	21/22	66,67%	2	22	
6	DYS533	6	12	100%			
6	DYS549	6	13	100%			
6	DYS570	5	17/19	83,33%	1	19	
6	DYS576	5	17/18	83,33%	1	17	
39	DYS635 GATAC4	39	23	100%			
6	DYS643	6	10	100%			
38	GATAH4	27	11/12	71,05%	11	11	

681 determinaciones. 2 discrepancias



Módulo forense nivel básico. 2ª Fracción, cromosoma Y

n L2	MARCADOR	n	RESULTADO	CONSENSO	n	RESULTADO	
45	DYS19	45	14	100%			
44	DYS385	44	11/14	100%			
45	DYS389_I	40	13	88,89%	4	12/13	12/13/13
45	DYS389_II	41	29	91,11%	4	28/29	
45	DYS390	39	24	86,67%	6	23/24	
45	DYS391	41	11	91,11%	4	10/11	
43	DYS392	43	13	100%			
45	DYS393	40	14	88,89%	5	13/14	
43	DYS437	43	14	100%			
45	DYS438	45	12	100%			
44	DYS439 GATAA4	44	12	100%			
42	DYS448	42	18	100%			
42	DYS456	41	16	97,62%	1	15/16	
42	DYS458	41	17	97,62%	1	16,3	
7	DYS481	5	21	71,43%	2	21/22	
7	DYS533	7	12	100%			
7	DYS549	7	13	100%			
7	DYS570	5	17	71,43%	2	17/19	
7	DYS576	6	18	85,71%	1	17/18	
43	DYS635 GATAC4	43	23	100%			
7	DYS643	7	10	100%			
42	GATAH4	38	12	83,33%	4	11/12	

742 determinaciones. 3 discrepancias



Módulo forense nivel básico. Lisis total, cromosoma X

n LT	MARCADOR	n	RESULTADO	CONSENSO	Resultados discrepantes	
21	DXS8378	20	10/11	95,24%	11/13	
17	DXS9898	15	8,3	88,24%	8,3/11	8,3/12
16	DXS7133	15	9	93,75%	9/11	
16	GATA31E08	16	11/13	100%		
17	GATA172D05	17	6/8	100%		
22	DXS7423	21	15	95,45%	15/17	
16	DXS6809	16	31/33	100%		
22	DXS7132	22	12/13	100%		
16	DXS9902	16	12/13	100%		
16	DXS6789	16	20/22	100%		
6	DXS10103	6	16/20	100%		
6	DXS10134	4	37/37,1	66,67%	(2) 37	
6	DXS10074	6	8/18	100%		
6	DXS10101	6	32/33	100%		
7	DXS10135	7	20/29	100%		
6	DXS10146	6	23/26	100%		
6	DXS10079	6	19/21	100%		
6	DXS10148	6	18/24,1	100%		
6	HPRTB	6	15/16	100%		

234 determinaciones totales para 19 marcadores

5 discrepancias (2,14%)



Módulo forense nivel básico. 1ª Fracción, cromosoma X

n L1	MARCADOR	n	RESULTADO	CONSENSO	n	RESULTADO
10	DXS8378	7	10/11	70%	3	10
7	DXS9898	7	8,3	100%		
7	DXS7133	7	9	100%		
7	GATA31E08	4	11/13	57,14%	3	13
7	GATA172D05	4	6/8	57,14%	3	6
10	DXS7423	10	15	100%		
7	DXS6809	4	31/33	57,14%	3	31
10	DXS7132	7	12/13	70%	3	13
7	DXS9902	4	12/13	57,14%	3	13
7	DXS6789	4	20/22	57,14%	3	22
3	DXS10103					
3	DXS10134					
3	DXS10074					
3	DXS10101					
3	DXS10135					
3	DXS10146					
3	DXS10079					
2	DXS10148					
3	HPRTB					

79 determinaciones, 10 marcadores



Módulo forense nivel básico. 2ª Fracción, cromosoma X

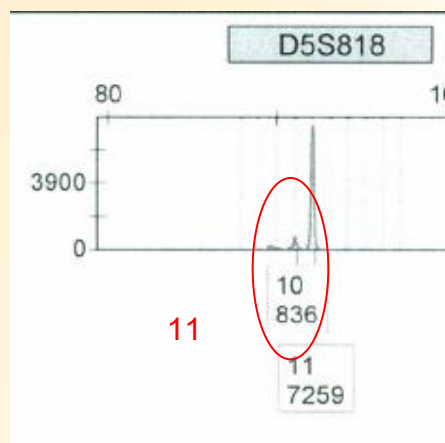
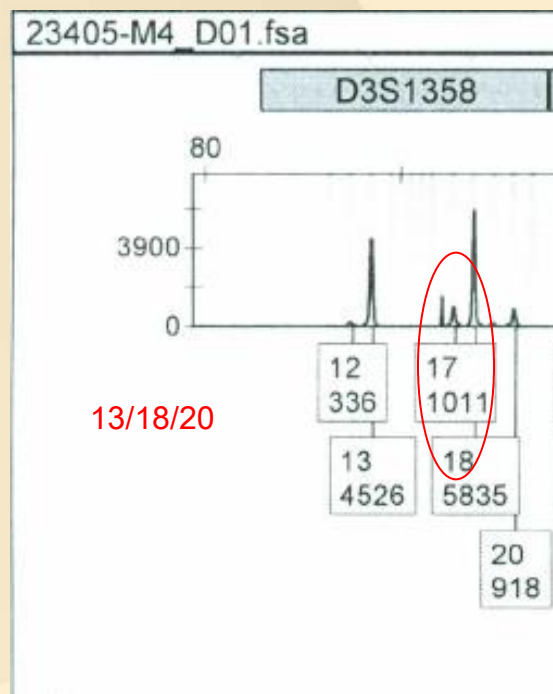
n L2	MARCADOR	n	RESULTADO	CONSENSO	RESULTADO
10	DXS8378	9	11	90%	10/11
7	DXS9898	7	8,3	100%	
7	DXS7133	7	9	100%	
7	GATA31E08	7	11	100%	
7	GATA172D05	7	8	100%	
10	DXS7423	10	15	100%	
7	DXS6809	7	33	100%	
10	DXS7132	10	12	100%	
7	DXS9902	7	12	100%	
7	DXS6789	7	20	100%	
3	DXS10103				
3	DXS10134				
3	DXS10074				
3	DXS10101				
3	DXS10135				
3	DXS10146				
2	DXS10079				
3	DXS10148				
3	HPRTB				

79 determinaciones, 10 marcadores

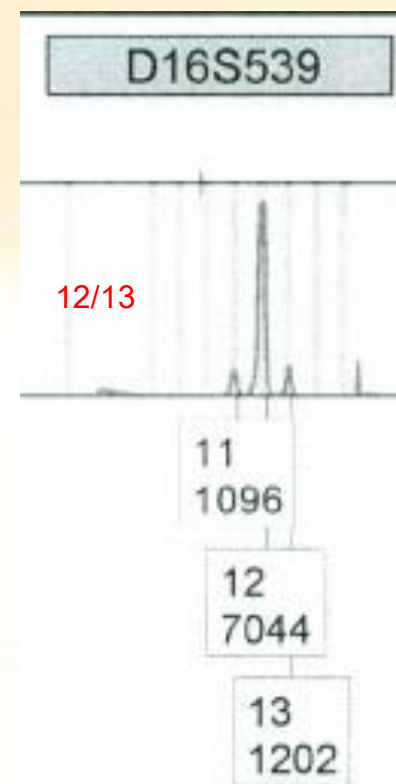


Módulo forense nivel básico

AMELOGENINA	X/Y
D8S1179	10/13/16
D21S11	28/31.2/32
D7S820	10/11/12
CSF1PO	11/12
D3S1358	13/17/18/20
TH01	6/9/9.3
D13S317	8/12
D16S539	9/12/13
D2S1338	17/18/23/25/26
D19S433	12/13/14/14.2/15/*
VWA	14/15/16
TPOX	8/11
D18S51	13/14/15/18
D5S818	10/11
FGA	19/21/27
Penta_D	9/11
Penta_E	8/10/11/12
D10S1248	13/14/16
D22S1045	11/15/16
D2S441	10/11/15
D1S1656	15/15.3/17
D12S391	18/19/20/21/24/25
SE33_ACTBP2	14/14.2/15/28.2/32.2



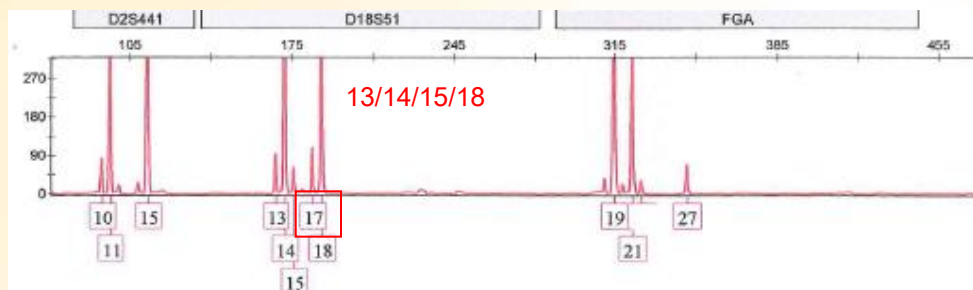
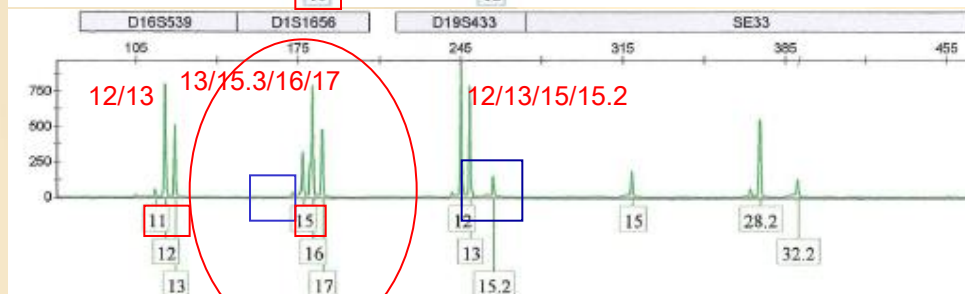
7discrepancias





Módulo forense nivel básico

AMELOGENINA	X/Y
D8S1179	10/13/16
D21S11	28/31.3
D3S1358	13/17/18/19/20
TH01	6/9/9.3
D16S539	11/12/13
D2S1338	17/23/25/26
D19S433	12/13/15.2
VWA	14/15/16
D18S51	13/14/15/17/18
FGA	19/21/27
D10S1248	13/14/15/16
D22S1045	11/14/15/16
D2S441	10/11/15
D1S1656	15/16/17
D12S391	18/19/20/21/25
SE33_ACTBP2	15/28.2/32.2



10 discrepancias

Sangre componente minoritario



Módulo forense nivel básico

AMELOGENINA X/Y

D8S1179 10/13/16

D21S11 28/31.2/32

D7S820 11/12

CSF1PO 12

D3S1358 13/18

TH01 6/9

D13S317 8/12

D16S539 12/13

D2S1338 17/18/23/26

D19S433 12/13/15/15.2

VWA 14/15/16

TPOX 8/11

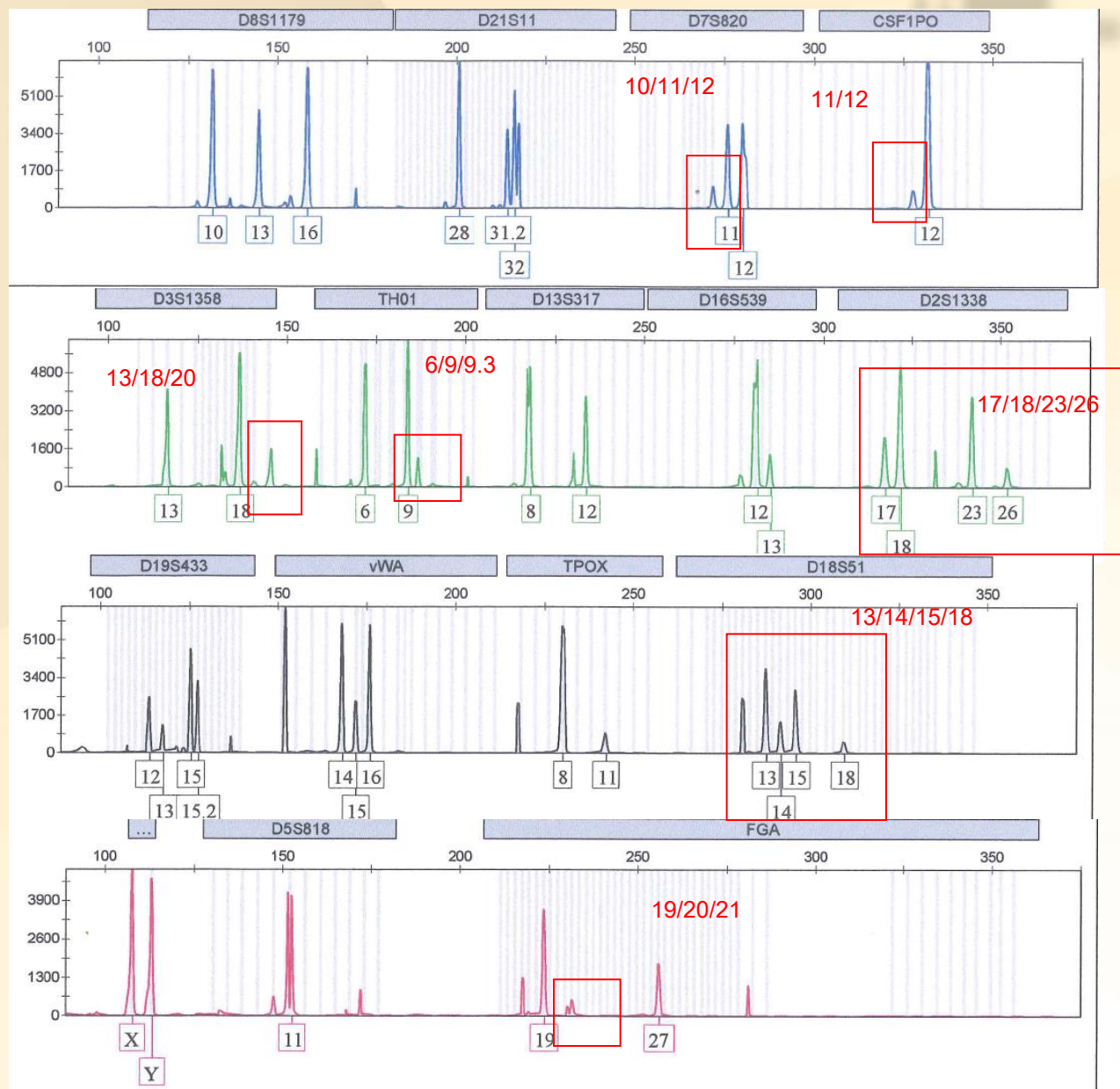
D18S51 13/14/14

D5S818 11

FGA 19/27

7 discrepancias

Componente mayoritario sangre

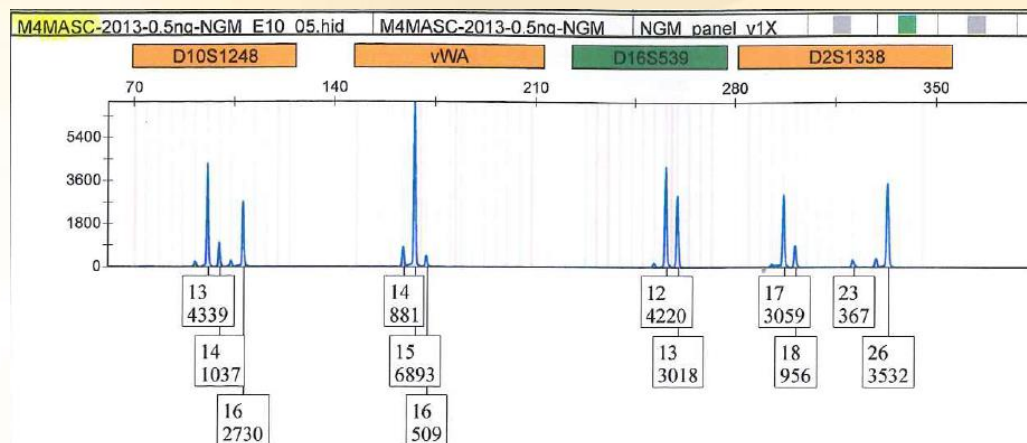
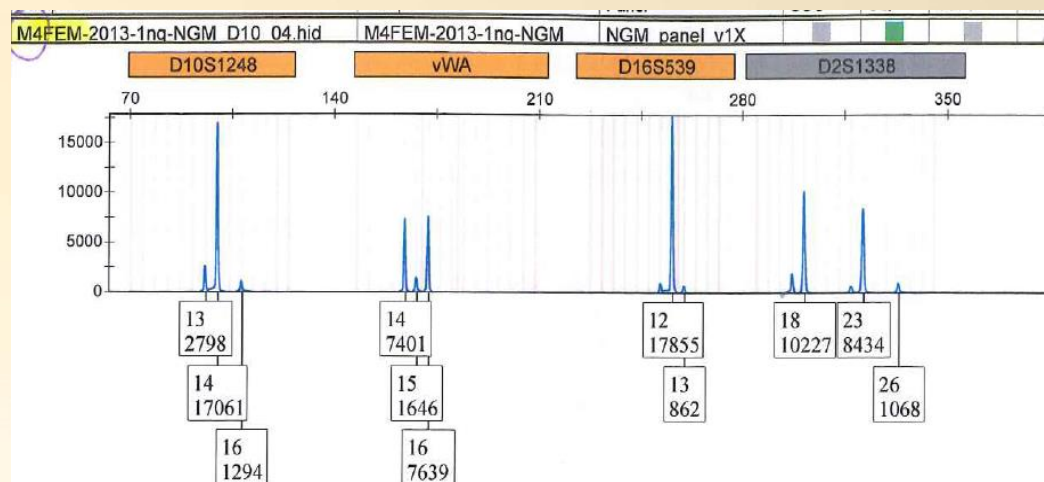




Módulo forense nivel básico. Interpretación mezcla 1ª Fracción

D2S1338 17/18/23/26 18/23/26 17/18/23/26

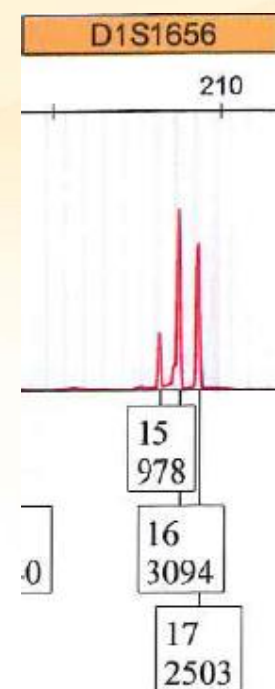
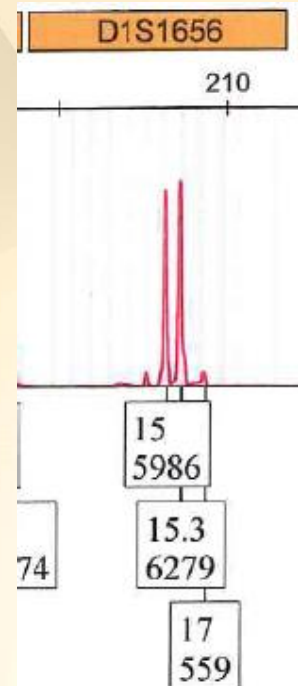
D1S1656



15/15.3/16/17

15/15.3/17

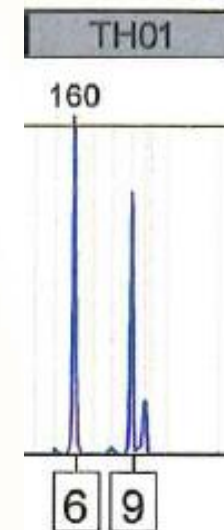
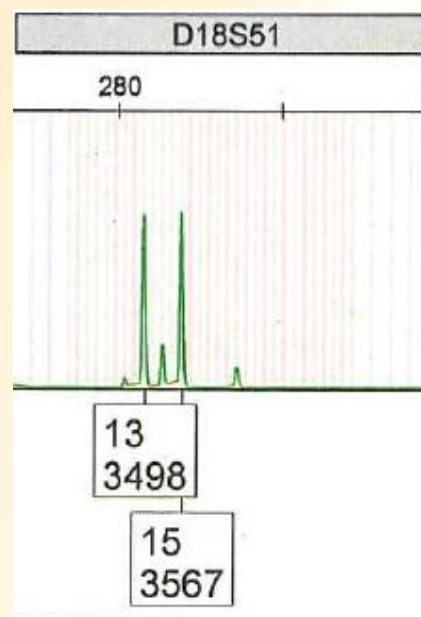
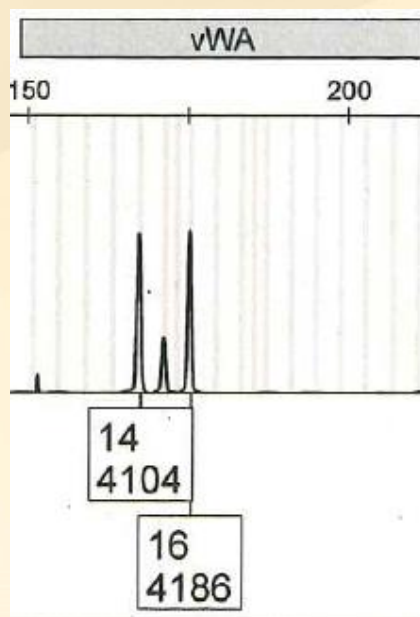
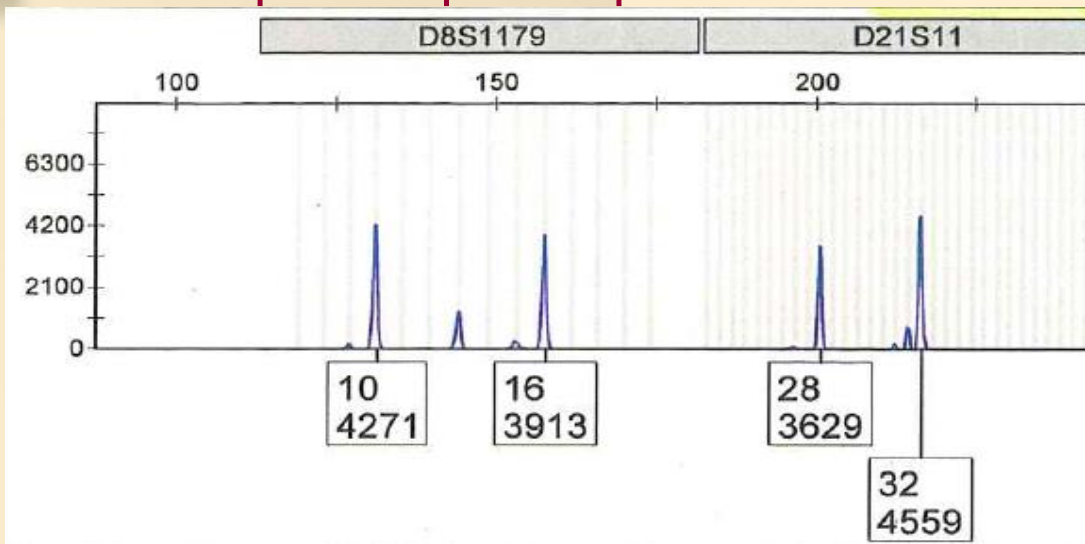
15/16/17





Módulo forense nivel básico. Interpretación perfil simple. 1ª Fracción

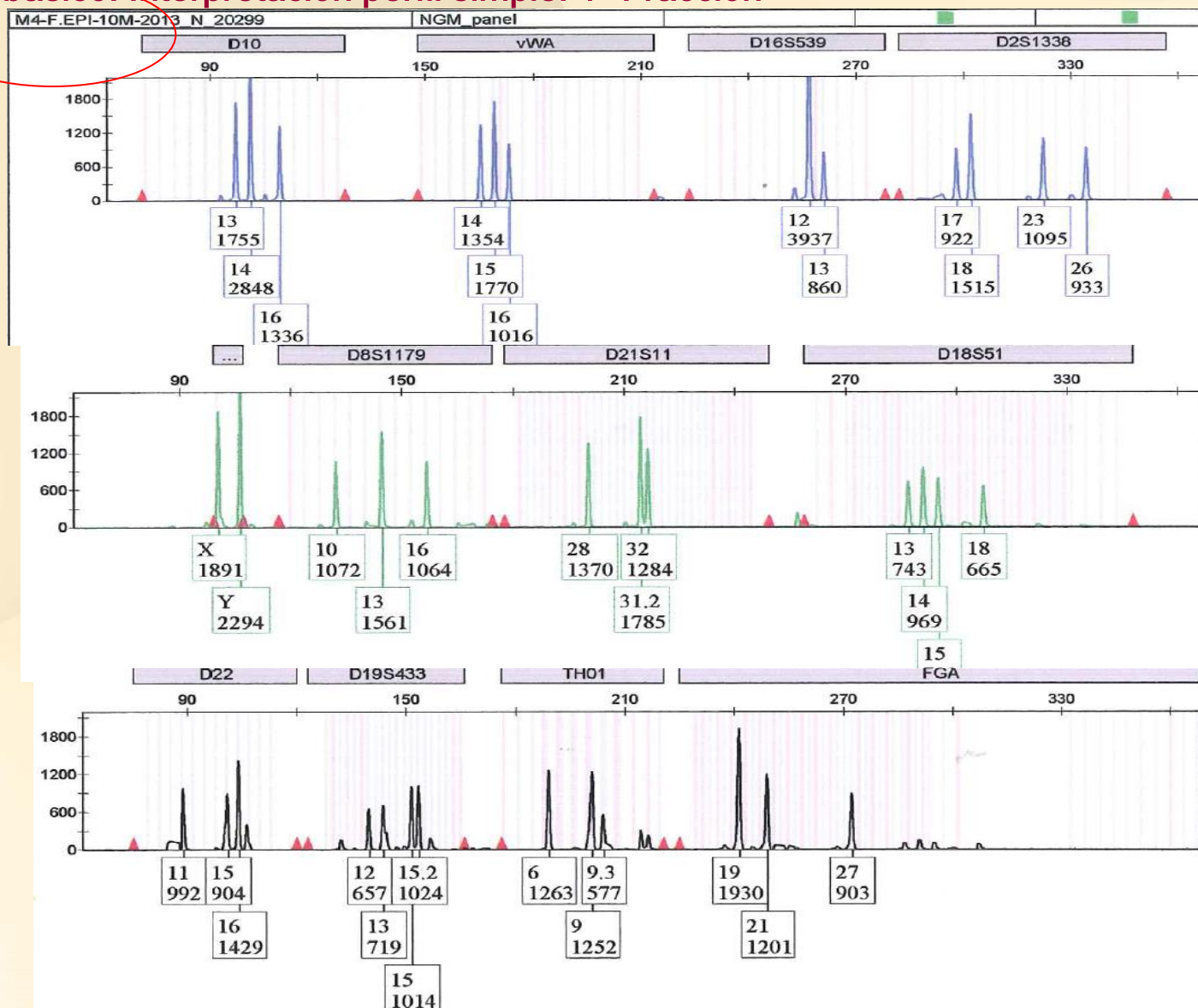
AMELOGENINA	X/Y
D8S1179	10/16
D21S11	28/32
D7S820	11/12
CSF1PO	12
D3S1358	13/18
TH01	6/9
D13S317	8
D16S539	12
D2S1338	18/23
D19S433	15/15.2
VWA	14/16
TPOX	8
D18S51	13/15
D5S818	11
FGA	19/27
Penta_D	9/11
Penta_E	10/11
D10S1248	14
D22S1045	11/16
D2S441	10/11
D1S1656	15/15.3
D12S391	19/25
SE33_ACTBP2	15





Módulo forense nivel básico. Interpretación perfil simple. 1ª Fracción

AMELOGENINA	X/Y
D8S1179	10/16
D21S11	28/32
D7S820	11/12
CSF1PO	12
D3S1358	13/18
TH01	6/9
D13S317	8
D16S539	12
D2S1338	18/23
D19S433	15/15.2
VWA	14/16
D18S51	13/15
FGA	19/27
D10S1248	14
D22S1045	11/16
D2S441	10/11
D1S1656	15/16
D12S391	19/25





Módulo forense nivel básico

15th ISFH, octubre 1993

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ANOMALOUS ELECTROPHORETIC BEHAVIOUR OF HUMACTBP2 (SE33)

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INTRODUCTION

The microsatellite tetrameric tandem repeat sequence in the 5' flanking region of the human ACTBP2 (SE33) locus (Polymeropoulos et al. 1982) was one of the first STRs evaluated for forensic applications. Because it is highly polymorphic, population studies in caucasians and forensic validation studies have recently been carried out (Polymeropoulos et al. 1992, Weigand et al. 1993).

The sequence variability of this tetranucleotide repeat has recently been reported (Urquhart et al. In Press) and it has been found that it is an AT rich sequence, with at least 30 alleles, some of which may vary by as little as 1 base.

In the course of the last EDNAP exercise (Gill et al. submitted for publication) anomalous electrophoretic mobility was observed in some samples which showed different SE33 patterns in agarose and polyacrylamide. Because of this, a study of the electrophoretic mobility in SE33 fragments was carried out using agarose and polyacrylamide at various T and C values--in some of which denaturing conditions were employed.

Módulo forense nivel avanzado. M7

Estudio práctico forense. Nivel avanzado. Participación

Laboratorios inscritos: 53

Envían resultados: 46

938 resultados de los que:

536 reportan el resultado de la mezcla

309 reportan el perfil mayoritario

93 resultados discrepantes (9.8%)



Módulo forense nivel avanzado. M7

N		n	RESULTADO	CONSENSO	n	RESULTADO	Resultados discrepantes			
46	AMELOGENINA	35	X/Y	71,74%	11	X				
46	D8S1179	32	12/13/14	69,57%	11	12/14	11/12/13/14	12/13/14/16	10/12/13/14/16	
46	D21S11	25	28/30/31,2	54,35%	15	30/31,2	(4) 28/29/30/31,2	28/30/31/31,2	27/28/29/30/31,2	
39	D7S820	25	10/11/12	64,10%	13	11/12	12			
39	CSF1PO	19	11/12	48,72%	16	9/11/12	(3) 9/10/11/12	9/10/11/12/14		
46	D3S1358	26	15/17	56,52%	12	17	(6) 15/16/17	10/12/15/17	14/15/16/17	
46	TH01	24	7/9,3	52,17%	20	6/7/9,3	6/7/9/9,3	6/7/8/9,3		
39	D13S317	28	11/12/13	71,79%	9	11/12	(2) 10/11/12/13			
46	D16S539	22	9/10/12	47,83%	19	10/12	(5) 9/10/11/12			
44	D2S1338	23	17/19/20	52,57%	17	19/20	(4) 17/18/19/20			
44	D19S433	25	12/13/14	56,82%	19	13/14				
45	VWA	20	15/16/17/20	44,44%	13	15/16	(6) 15/16/17	(3) 15/16/20	15/16/17/18	14/15/16
38	TPOX	18	8/9/11	47,37%	18	8/11	(2) 8/9/10/11			14/15/16/17/18/20
44	D18S51	21	15/17/20	47,73%	16	15/20	(3) 15/17/19/20	(2) 15/19/20	12/15/17/20	11/15/16/17/19/20
37	D5S818	27	11/12/13	72,97%	10	12/13				
43	FGA	23	20/21/23/25	53,49%	12	21/23	(4) 20/21/23	(3) 21/23/25	19/20/21/23/24/2	
27	D10S1248	11	14/15/16	40,74%	7	15	(4) 14/15	(3) 15/16	(2) 13/14/15/16	
28	D22S1045	19	15/16/17	67,86%	8	15/16	11/15/16/17			
28	D2S441	23	11/12	82,14%	2	10/11/12	10/11/12/14	11/12/15,1	10/11/12/13	
31	D1S1656	14	16/17	45,16%	10	16	(6) 15/16/17	15/16/17,3		
31	D12S391	15	17/18/20	48,38%	14	17/18	16/17/18	17/18/18,3/20/24		
19	SE33	10	14/17	52,63%	9	14/17/29,2				
25	Penta_D	14	9/10/12	56%	11	9/12				
24	Penta_E	10	11/15/16/18	41,66%	10	15/16	(3) 11/15/16	12/13/15/16		
7	FES FPS	4	10/11	57,14%	3	10/11/12				
7	F13A01	4	6/7	57,14%	3	3,2/6/7				
6	F13B	6	6/8	100%						
6	LPL	6	11/13	100%						
6	PENTA C	4	11/12	66,67%	1	9/12	10/11/12			
5	D6S1043	3	11/12/21	60%	1	11/21	11/12/20/21			



Módulo forense nivel avanzado. M7

	n	RESULTADO	CONSENSO	n	RESULTADO	Valores de referencia	
AMELOGENINA	35	X/Y	71,74%	11	X	X	X/Y
D8S1179	32	12/13/14	69,57%	11	12/14	12/14	13
D21S11	25	28/30/31,2	54,35%	15	30/31,2	30/31.2	28/30
D7S820	25	10/11/12	64,10%	13	11/12	11/12	10/12
CSF1PO	19	11/12	48,72%	16	9/11/12	11/12	9/11
D3S1358	26	15/17	56,52%	12	17	17	15/17
TH01	24	7/9,3	52,17%	20	6/7/9,3	7/9.3	6/9.3
D13S317	28	11/12/13	71,79%	9	11/12	11/12	13
D16S539	22	9/10/12	47,83%	19	10/12	10/12	9/12
D2S1338	23	17/19/20	52,57%	17	19/20	19/20	17/20
D19S433	25	12/13/14	56,82%	19	13/14	13/14	12/14
VWA	20	15/16/17/20	44,44%	13	15/16	15/16	17/20
TPOX	18	8/9/11	47,37%	18	8/11	8/11	8/9
D18S51	21	15/17/20	47,73%	16	15/20	15/20	15/17
D5S818	27	11/12/13	72,97%	10	12/13	12/13	11
FGA	23	20/21/23/25	53,49%	12	21/23	21/23	20/25
D10S1248	11	14/15/16	40,74%	7	15	15	14/16
D22S1045	19	15/16/17	67,86%	8	15/16	15/16	16/17
D2S441	23	11/12	82,14%	2	10/11/12	11/12	11
D1S1656	14	16/17	45,16%	10	16	16	16/17
D12S391	15	17/18/20	48,38%	14	17/18	17/18	18/20
SE33	10	14/17	52,63%	9	14/17/29,2	14/17	29,2
Penta_D	14	9/10/12	56%	11	9/12	9/12	9/10
Penta_E	10	11/15/16/18	41,66%	10	15/16	15/16	11/18
FES_FPS	4	10/11	57,14%	3	10/11/12	10/11	12
F13A01	4	6/7	57,14%	3	3,2/6/7	6/7	3.2
F13B	6	6/8	100%			6/8	8/9
LPL	6	11/13	100%			11/13	11
PENTA C	4	11/12	66,67%	1	9/12		
D6S1043	3	11/12/21	60%	1	11/21		



Módulo forense nivel avanzado. M7, cromosoma Y

n	MARCADOR	n	RESULTADO	CONSENSO	RESULTADO
36	DYS19	36	14	100%	
38	DYS385	38	12/14	100%	
38	DYS389 I	37	14	97%	13,3
34	DYS389 II	34	30	100%	
35	DYS390	35	24	100%	
37	DYS391	37	11	100%	
35	DYS392	35	13	100%	
38	DYS393	38	13	100%	
36	DYS437	36	14	100%	
36	DYS438	36	14	100%	
35	DYS439 GATAA4	35	12	100%	
36	DYS448	36	18	100%	
36	DYS456	36	15	100%	
38	DYS458	38	16	100%	
9	DYS481	9	22	100%	
9	DYS533	9	12	100%	
9	DYS549	9	13	100%	
9	DYS570	9	17	100%	
9	DYS576	9	18	100%	
37	DYS635 GATAC4	37	24	100%	
8	DYS643	8	10	100%	
36	GATAH4	35	11	100%	20

634 determinaciones. 1 discrepancia (0,16 %)



Módulo forense nivel avanzado. M7, cromosoma X

n	MARCADOR	n	RESULTADO	CONSENSO	n	RESULTADO	RESULTADO	teorico mezcla
14	DXS8378	14	12/13	100%				12/13
9	DXS9898	6	8,3/13	66,67%	3	8,3/13/14		8,3/13/14
9	DXS7133	8	10/11	88,89%	1	9/10/11		9/10/11
9	GATA31E08	9	11/13	100%				9/11/13
9	GATA172D05	5	10/11	55,56%	4	8/10/11		8/10/11
14	DXS7423	14	15	100%				15
9	DXS6809	7	33/34	77,78%	2	31/33/34		31/33/34
14	DXS7132	10	11/14	71,43%	3	11/14/15	11/12/14	11/14/15
9	DXS9902	9	12/13	100%				11/12/13
9	DXS6789	9	20	100%				20
6	DXS10103	6	17/19	100%				17/19
6	DXS10134	6	34/36	100%				34/34,1/36
6	DXS10074	6	17/18	100%				17/18
6	DXS10101	5	29,2/31	83,33%	1	29,2/31/31,2		29,2/31/31,2
6	DXS10135	4	20/26	66,67%	2	20/25/26		20/25/26
6	DXS10146	6	28/30	100%				28/30
6	DXS10079	4	17/21	66,67%	2	17/18/21		17/18/21
6	DXS10148	6	24.1/26.1	100%				23,1/24,1/26,1
6	HPRTB	6	12/14	100%				12/14

159 determinaciones

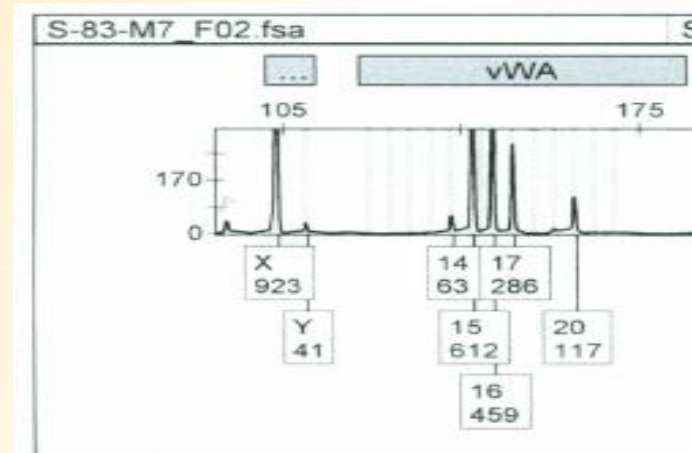
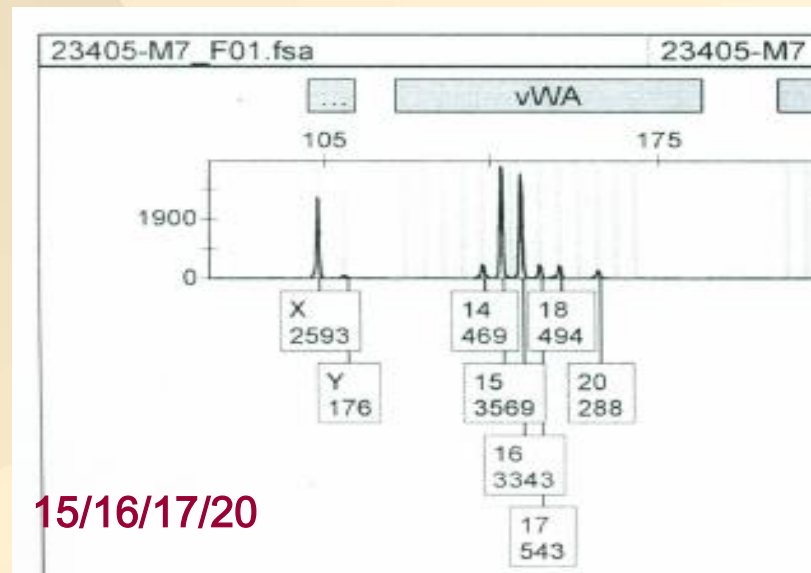


Módulo forense nivel avanzado. M7

23405. 16 discrepancias

M7	AMELOGENINA	X/Y
	D8S1179	10/12/13/14/15
	D21S11	27/28/29/30/31.2
	D7S820	10/11/12
	CSF1PO	9/10/11/12/14
	D3S1358	14/15/16/17
	TH01	6/7/8/9.3
	D13S317	11/12/13
	D16S539	9/10/11/12
	D2S1338	17/18/19/20
	D19S433	12/13/14
	vWA	14/15/16/17/18/20
	TPOX	8/9/11
	D18S51	11/15/16/17/19/20
	D5S818	11/12/13
	FGA	19/20/21/23/24/25
	Penta_D	9/10/12
	Penta_E	12/13/15/16
	D10S1248	13/14/15/16
	D22S1045	11/15/16/17
	D2S441	10/11/12/13
	D1S1656	15/16/17.3
	D12S391	17/18/18.3/20/24
	SE33_ACTBP2	14/17/29.2

Posible contaminación

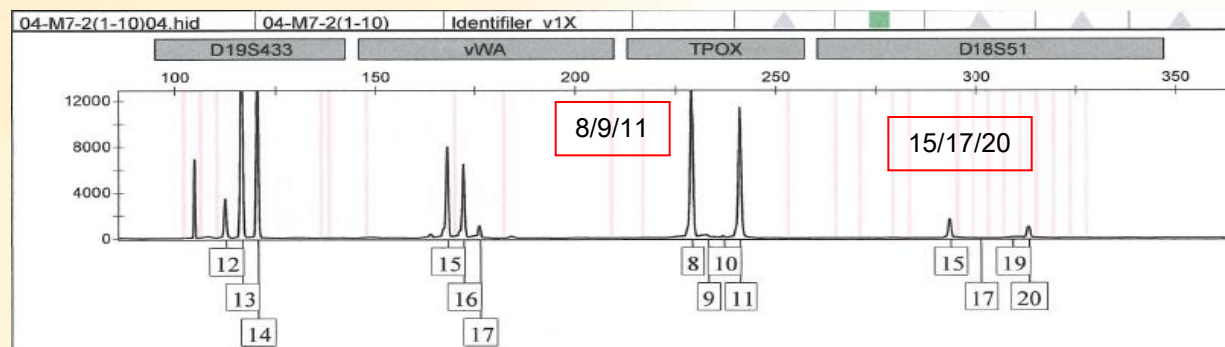
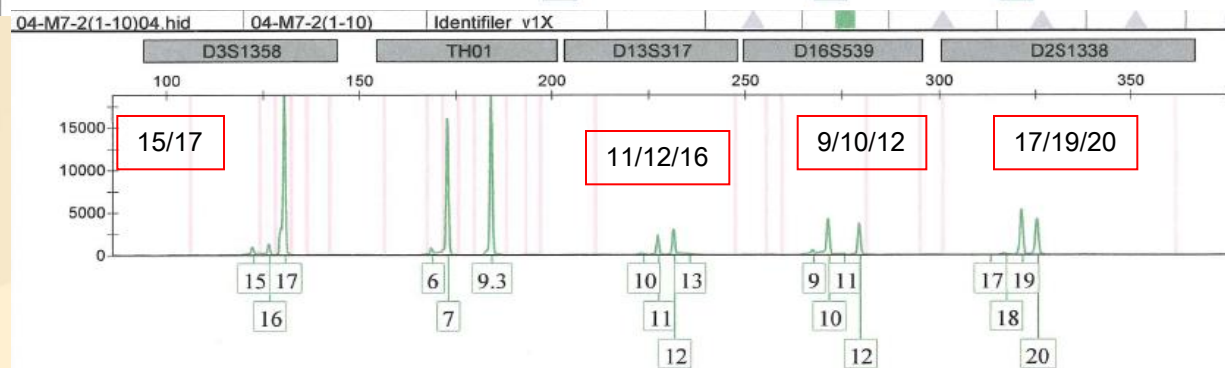
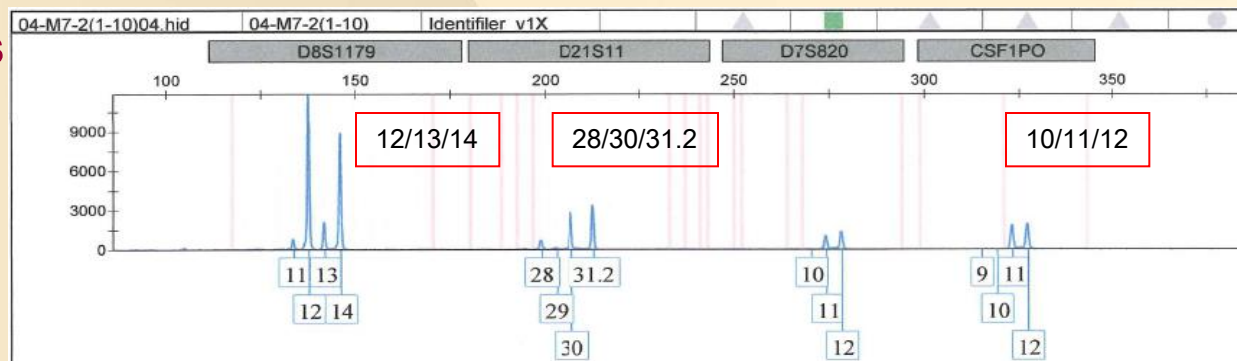




Módulo forense nivel avanzado. M7

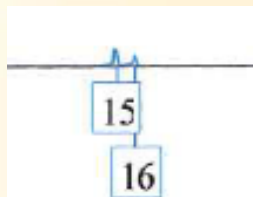
20324. 10 discrepancias

AMELOGENINA	X/Y
D8S1179	11/12/13/14
D21S11	28/29/30/31
D7S820	10/11/12
CSF1PO	9/10/11/12
D3S1358	15/16/17
TH01	6/7/9.3
D13S317	10/11/12/13
D16S539	9/10/11/12
D2S1338	17/18/19/20
D19S433	12/13/14
vWA	15/16/17/20
TPOX	8/9/10/11
D18S51	15/17/19/20
D5S818	11/12/13
FGA	20/21/23/25
Penta_D	9/10/12
Penta_E	15/16



PENTA E

11/15/16/18

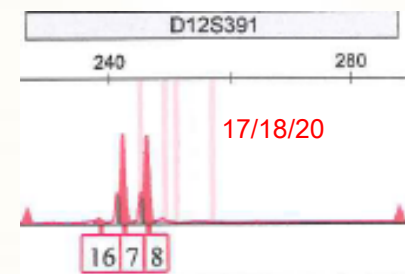
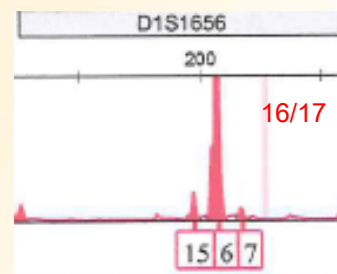
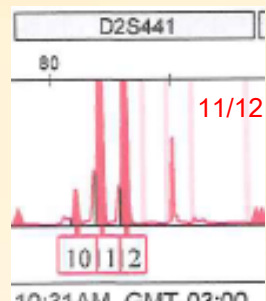
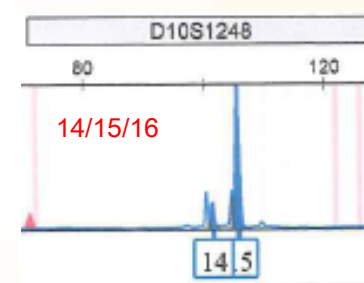
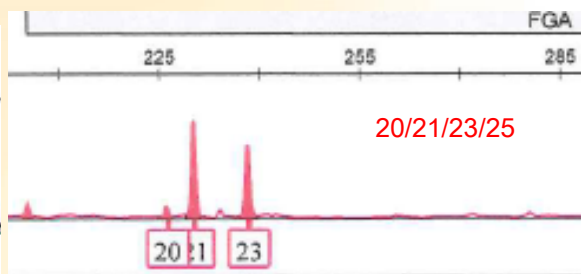
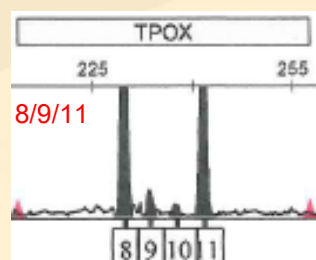
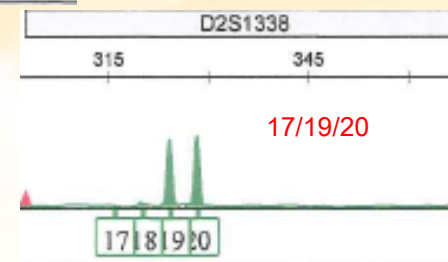
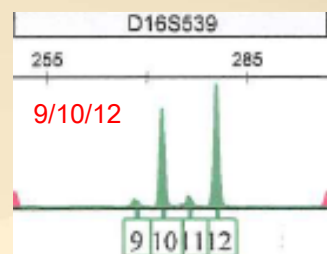
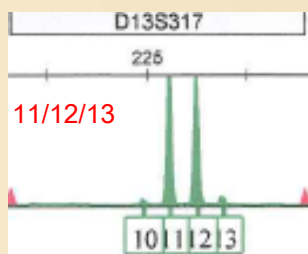
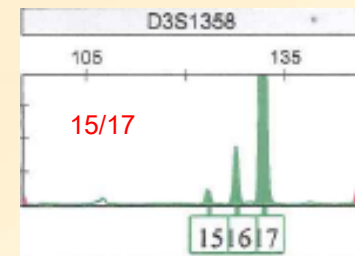
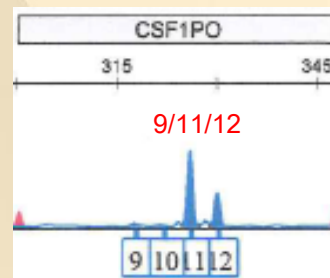
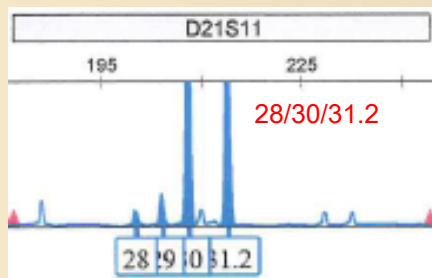




Módulo forense nivel avanzado. M7

20346. 12 discrepancias

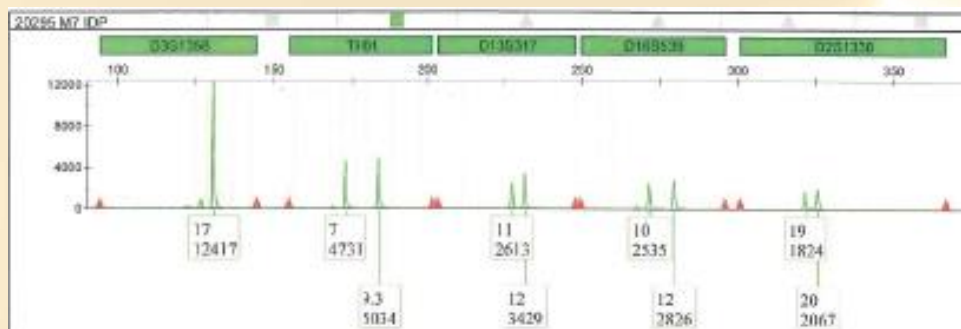
AMELOGENINA	X/Y
D8S1179	12/13/14
D21S11	28/29/30/31.2
D7S820	10/11/12
CSF1PO	9/10/11/12
D3S1358	15/16/17
TH01	6/7/9.3
D13S317	10/11/12/13
D16S539	9/10/11/12
D2S1338	17/18/19/20
D19S433	12/13/14
vWA	15/16/17/20
TPOX	8/9/10/11
D18S51	15/17/20
D5S818	11/12/13
FGA	20/21/23
D10S1248	14/15
D22S1045	15/16/17
D2S441	10/11/12
D1S1656	15/16/17
D12S391	16/17/18





Módulo forense nivel avanzado. M7

20295



***MUCHAS GRACIAS A TODOS POR VUESTRA
INFINITA PACIENCIA***