Collaborative Testing Services, Inc
FORENSIC TESTING PROGRAM

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DNA Interpretation Test No. 19-588
Summary Report

Each participant received a sample pack consisting of a digital download packet through the CTS portal containing electropherograms and raw data files which they were requested to evaluate using their existing protocols. Data were returned from 28 participants and are compiled into the following tables:

This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample pack contained digital files consisting of electropherograms from DNA profiles of two known samples (Items 1 & 2) and two questioned samples (Items 3 & 4). Participants were requested to evaluate the electropherograms and interpret the data using their existing protocols.

SAMPLE PREPARATION: Item 1 was created using blood collected from a female donor. Item 2 was created using blood collected from a male donor. The Item 3 mixture was created by combining four parts of blood from the Item 1 female donor, two parts of blood from a 3rd party male donor, and one part of blood from the Item 2 male donor. The Item 4 mixture was created by combining four parts of blood from the Item 2 male donor and one part of blood from the Item 1 female donor.

SAMPLE SET ASSEMBLY: Once sample preparation and verification was completed, the digital upload was checked to ensure all items were accessible.

VERIFICATION: Laboratories that conducted predistribution testing of the electropherograms reported consistent results for all loci. All associations were consistent amongst the predistribution laboratories.

Consensus data on the following pages was determined by reviewing the results, ensuring at least 10 participants returned results for the locus, and identifying the alleles that were reported by at least 75% of the participants of whom returned results for that specific locus and item.

Amelogenin and STR Results

Results compiled by predistribution laboratories and a consensus of participants.

Item	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		
1	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	15,23.2	9.3,10	8,9	15,15
	NM	NM	NM	NM		
2	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14	14,21	7,9	8,8	16,18
	10	*	*	*		
3	14,15†	23,25†	10,11,14†	14,17,18†	11,13	8,9,10
	12,16†	14†	18,20†	11,12†	9,11†	16,18,19†
	13,13.2,17†	29†	15,16†	X,Y	10†	19,24,25†
	10,12†	5,10†	14,15,21,23.2,26.2	9,9.3,10†	8,9	15,16†
	10,11	*	*	*		
3Major	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
	13.2,17	29	15,16	X,X	10,10	19,25
	10,12	*	15,23.2	9.3,10	8,9	15,15
	*	*	*	*		
4	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
	13,13.2,17	29,29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	14,15,21,23.2†	7,9,9.3,10	8,9	15,16,18
	10	*	*	*		

NM - Non-Male profile, YSTR results not expected.

* Results were not received from a minimum of 10 participants for the loci indicated.

† Additional alleles may be present depending on laboratory thresholds and/or amplification kit used.

YSTR Results

Results compiled from predistribution laboratories and a consensus of participants.

Item	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
2	14	11,15	13	29	24	10	13	13
	14	12	11	19	16	17	*	*
	*	*	*	24	*	12		
3	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
	14,15	11,12	11	19	15,16	17	*	*
	*	*	*	21,24	*	11,12		
4	14	11,15	13	29	24	10	13	13
	14	12	11	19	16	17	*	*
	*	*	*	24	*	12		

* Results were not received from a minimum of 10 participants for the loci indicated.

Summary Comments

This test was designed to allow participants to assess their proficiency in evaluating electropherograms (EPGs) and interpreting data. Each participant received electropherograms (in FSA, HID, and PDF formats, as available) of two reference items and two evidence items. The EPG data included were produced from the following amplification kits: GlobalFiler™, Investigator® 24plex, PowerPlex® Fusion 5C, PowerPlex® Fusion 6C, YFiler™, PowerPlex® Y23.

Item 1 was the female victim's reference sample. Item 2 was the male suspect's reference sample. Item 3 was a mixture of samples from three individuals, the female victim, the male suspect, and a male contributor for whom no reference sample was provided (4:1:2 ratio respectively). Item 4 was a mixture of samples from two individuals including the male suspect and the female victim (4:1 ratio respectively).

Consensus results for each item were determined per allele for each locus. Allele determinations were identified by ensuring that at least 10 participants reported results for the locus and that of these participants, 75% of them reported the same allele(s). Results that differed from the consensus were further compared to the participant's reported interpretation guidelines.

STR Data
Twenty-eight participants evaluated the provided STR data. The most frequently reported amplification kit utilized was GlobalFiler™. Twenty-six participants reported data that were concordant with the consensus for reference Item 1. Twenty-seven participants reported data that were concordant with the consensus for reference Item 2. One participant's results were inconsistent with the consensus for both Item 1 and Item 2 and did not provide interpretation guidelines.

For questioned Item 3, 18 participants attempted the deconvolution of this mixture, with 11 attempting only a major profile and seven attempting both a major and a minor profile. A consensus was only formed for the major profile. Thirteen participants reported major profiles concordant with the consensus. Two participants reported inconsistent results in comparison to consensus data, one at D21S11 and the other at TPOX. One participant reported more than two alleles at D19S433 and SE33 and also reported "X,Y" at Amelogenin whereas the consensus was "X,X". A consensus was achieved for Item 3, with a number of participants reporting additional alleles when utilizing differing analytical thresholds and/or amplification kits for interpretation. Twenty-one participants reported results in line with the consensus and their reported interpretation guidelines. Four participants reported "X" at Amelogenin whereas the consensus was "X,Y". Three participants reported an inconsistency at one or more loci, two of which did not provide interpretation guidelines.

For questioned Item 4, 13 participants attempted the deconvolution of this mixture, with 12 reporting major and minor profiles and 1 reporting only a major profile. When using their indicated interpretation guidelines and amplification kit data, one participant reported an inconsistent result in comparison to the consensus data at FGA. Two participants had results that were inconsistent with the consensus results and did not provide interpretation guidelines.

YSTR Data
Fourteen participants reported YSTR results.

For reference Item 2, all participants reported allelic responses that were concordant with the consensus.

For questioned Item 3, most participants reported allelic responses that were concordant with the consensus with the exception of two participants whose results were inconsistent with the consensus results and neither provided interpretation guidelines. Three participants attempted the deconvolution of this mixture, however a consensus was not formed for major or minor profiles.

For questioned Item 4, all respondents reported results that were concordant with the consensus except for three participants. One participant reported an inconsistent result at Y GATA H4. Two participants reported results that were inconsistent with the consensus results and neither provided interpretation guidelines.

Conclusions
For Item 3, 20 participants reported three (or at least three) contributors and six participants reported at least two contributors. Two participants reported 2 contributors which was inconsistent with the consensus. When comparing the Item 3 mixture profile with the Item 1 (victim) reference profile, 27 participants reported that the victim was included as a component of the mixture and one participant reported inconclusive. When comparing the Item 3 mixture profile with the Item 2 (suspect) reference profile, 19 participants reported that the suspect was included as a component of the mixture and nine participants reported inconclusive.

For Item 4, all participants reported that two (or at least two) individuals contributed to the mixture. In addition, all participants included both Item 1 (victim) and Item 2 (suspect) as components of this mixture.

Interpretation Guidelines

TABLE 1

WebCode	Analytical Threshold (rfu)	Peak Height Ratio (%)	Stochastic Threshold (rfu)
2MQP2Q	75 rfu	60%	100 rfu
3AVV6M	80	60	250
3KEA8P	75	60	100
42ZD4J	Globalfiler - 75, Y-Filer - 50	60	Globalfiler - 125, Y-Filer - 100
6ANJH3	230	60	75
8ZC7D4	190	50	1160
A2HB4X	120 rfu	60% PHR above 750 rfu and 35% PHR below 750 rfu	400 rfu
BJDZX7	150 RFU	70%	600 RFU
CFDCU4	70 RFU	STRmix is used for analysis	600RFU for manual interpretation. STRmix is used for analysis
CPEYL2	190	50	1160
DC6MND	STR - 60 rfu, YSTR - 60 rfu	STR - 50%, YSTR - N/A	STR - 800 rfu, YSTR - 800 rfu
EMKRGU	75	60	230
FQ37KU	190 rfu	50%	1160 rfu
GW469P	120rfu	60% PHR above 750 rfu and 35% PHR below 750 rfu	400 rfu
HKQ6CW	190 rfu	50	1160 rfu
HNPG8V	190 rfu	50%	1160 rfu
K3KKPR	190	50	1160
LDVA3M	120 rfu	Equal or above 750 rfu = 60%; Below 750 rfu 35%	400 rfu
LFZ764	75 rfu GlobalFiler & YFiler	60% GlobalFiler; 50% YFiler	100 rfu GlobalFiler; 75 rfu YFiler
M9F4XZ	[Participant did not provide interpretation guidelines]		
MB3Z7R	STR Analysis: 130 rfu, YSTR Analysis: 75 rfu	STR Analysis: 60%, YSTR Analysis: 50%	STR Analysis: 130 rfu, YSTR Analysis: 75 rfu
P28G6N	190 rfu	50%	1160 rfu
PNJJWX	75	60	100
ULHZ3L	120rfu	≥ 750 rfu=60%; <750rfu=35%	400rfu
UZ4F7L	190	50%	1160
V7YYEU	75,50	70,60	200,150
XGR2WT	75	60	100
XMHC7R	[Participant did not provide interpretation guidelines]		

STR & Amelogenin Results

TABLE 2

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		
Item 1 - STR Results						
2MQP2Q	GlobalFiler™ (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
3AVV6M	GlobalFiler™ (PDF Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
			15,23.2	9.3,10	8,9	15,15
3KEA8P	GlobalFiler™ (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
	-	-	15,23.2	9.3,10	8,9	15
	-	-	-	-		
42ZD4J	GlobalFiler™ (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X	10	19,25
			15,23.2	9.3,10	8,9	15
6ANJH3	PowerPlex® Fusion 6C (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X	10	19,25
	10,12	5,10	15,23.2	9.3,10	8,9	15
	NA	NA	NA			
8ZC7D4	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 1 - STR Results

A2HB4X	Investigator® 24plex (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
	No Results					
BJDZX7	GlobalFiler™					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
CFDCU4	PowerPlex® Fusion 6C (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	15,23.2	9.3,10	8,9	15,15
CPEYL2	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	Not tested	9.3,10	8,9	15,15
	ND	Not tested	Not tested	Not tested		
DC6MND	GlobalFiler™ (PDF Format)					
	14,15	23,25	10,11	14,17		
	12,16	14,14	18,20		9,11	16,19
1	13.2,17	29,29	15,16	X,X		19,25
			15,23.2	9.3,10		15,15
EMKRGU	PowerPlex® Fusion 6C (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X	10	19,25
	10,12	5,10	15,23.2	9.3,10	8,9	15
FQ37KU	PowerPlex® Fusion 5C					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 1 - STR Results

GW469P	Investigator® 24plex (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
	Not Tested	Not Tested	15,23.2	9.3,10	8,9	15
	No Results	Not Tested	Not Tested	Not Tested		
HKQ6CW	PowerPlex® Fusion 5C					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
HNPG8V	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	NT	9.3,10	8,9	15,15
	ND	NT	NT	NT		
K3KKPR	PowerPlex® Fusion 5C					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	not applicable	9.3,10	8,9	15,15
	not detected	not applicable	not applicable	not applicable		
LDVA3M	Investigator® 24plex (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
	No Results					
LFZ764	GlobalFiler™ (PDF Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	N/A	N/A	15,23.2	9.3,10	8,9	15,15
	NSD	N/A	N/A	NSD		
M9F4XZ	GlobalFiler™ (PDF Format)					
	14,15,(19.3)	23,25	10,11	14,17,OL	11,13	8,9
	12,16	14,OL	18,20	11,OL	(4),9,11	16,19
1	13.2,17	29	15,16	X	10	(13),19,25,(44.2)
			15,23.2	9.3,10	8.9	15,OL

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 1 - STR Results

MB3Z7R	GlobalFiler™ (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	-	-	15,23.2	9.3,10	8,9	15,15
	-	-	-	-		
P28G6N	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	Not tested	9.3,10	8,9	15,15
	Not detected	Not tested	Not tested	Not tested		
PNJJWX	PowerPlex® Fusion 5C					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
ULHZ3L	Investigator® 24plex (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
	No Results					
UZ4F7L	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
1	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
V7YYEU	PowerPlex® Fusion 6C (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X	10	19,25
	10,12	5,10	15,23.2	9.3,10	8,9	15
XGR2WT	GlobalFiler™ (HID Format)					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
	-	-	15,23.2	9.3,10	8,9	15
	-	-	-	-		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 1 - STR Results

XMHC7R (PDF Format)

	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	10	9,11	16,19
1	13.2,17	29	15,16	X,X	10	19,25
	10,12	5,10	15,23.2	9.3,10	8,9	15
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WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 2 - STR Results

2MQP2Q	GlobalFiler™ (HID Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
			14,21	7,9	8	16,18
	10			2		
3AVV6M	GlobalFiler™ (PDF Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
			14,21	7,9	8,8	16,18
	10			2		
3KEA8P	GlobalFiler™ (HID Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	-	-	14,21	7,9	8	16,18
	10	-	-	2		
42ZD4J	GlobalFiler™ (HID Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
			14,21	7,9	8	16,18
	10			2		
6ANJH3	PowerPlex® Fusion 6C (HID Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	10,15	7,14	14,21	7,9	8	16,18
	10	17	18			
8ZC7D4	PowerPlex® Fusion 5C (FSA Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
A2HB4X	Investigator® 24plex (HID Format)						
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
			14,21	7,9	8	16,18
	10					

Item 2 - STR Results

WebCode / Item	Amplification Kits (File Format)					
	D1S1656	**D2S1338**	**D2S441**	**D3S1358**	**D5S818**	**D7S820**
	D8S1179	**D10S1248**	**D12S391**	**D13S317**	**D16S539**	**D18S51**
	D19S433	**D21S11**	**D22S1045**	**Amelogenin**	**CSF1PO**	**FGA**
	Penta D	**Penta E**	**SE33**	**TH01**	**TPOX**	**vWA**
	DYS391	**DYS570**	**DYS576**	**Y Indel**		
BJDZX7	GlobalFiler™					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
			14,21	7,9	8	16,18
	10			2		
CFDCU4	PowerPlex® Fusion 6C					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14	14,21	7,9	8,8	16,18
	10	17	18			
CPEYL2	PowerPlex® Fusion 5C (FSA Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14	Not tested	7,9	8,8	16,18
	10	Not tested	Not tested	Not tested		
DC6MND	GlobalFiler™ (PDF Format)					
	12,18.3	17,20	11,14	15,18		
	13,14	13,14	17,22		10,12	15,18
2	13,13	29,29	14,15	X,Y		24,24
			14,21	7,9		16,18
EMKRGU	PowerPlex® Fusion 6C (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	10,15	7,14	14,21	7,9	8	16,18
	10	17	18			
FQ37KU	PowerPlex® Fusion 5C					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
GW469P	Investigator® 24plex (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	Not Tested	Not Tested	14,21	7,9	8	16,18
	10	Not Tested	Not Tested	Not Tested		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 2 - STR Results

HKQ6CW	PowerPlex® Fusion 5C					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
HNPG8V	PowerPlex® Fusion 5C (FSA Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14	NT	7,9	8,8	16,18
	10	NT	NT	NT		
K3KKPR	PowerPlex® Fusion 5C					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14	not applicable	7,9	8,8	16,18
	10	not applicable	not applicable	not applicable		
LDVA3M	Investigator® 24plex (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
			14,21	7,9	8	16,18
	10					
LFZ764	GlobalFiler™ (PDF Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	N/A	N/A	14,21	7,9	8,8	16,18
	10	N/A	N/A	2		
M9F4XZ	GlobalFiler™ (PDF Format)					
	12,18.3	(10),17,20	11,14	15,18,OL	11.13	9,10
	(5),13,14	13,14	17,22	12,13	(5),(6),10,12,OL	15,18
2	(11),13	29	14,15	X,Y	13,OL	24
			14,21	7,9	8,OL	16,18
	10			2		
MB3Z7R	GlobalFiler™ (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	-	-	14,21	7,9	8,8	16,18
	10	-	-	2		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 2 - STR Results

P28G6N	PowerPlex® Fusion 5C (FSA Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14	Not tested	7,9	8,8	16,18
	10	Not tested	Not tested	Not tested		
PNJJWX	PowerPlex® Fusion 5C					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
ULHZ3L	Investigator® 24plex (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
			14,21	7,9	8	16,18
	10					
UZ4F7L	PowerPlex® Fusion 5C (FSA Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
V7YYEU	PowerPlex® Fusion 6C (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	10,15	7,14	14,21	7,9	8	16,18
	10	17	18			
XGR2WT	GlobalFiler™ (HID Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	-	-	14,21	7,9	8	16,18
	10	-	-	2		
XMHC7R	(PDF Format)					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
2	13	29	14,15	X,Y	13	24
	10,15	7,14	14,21	7,9	8	16,18
	10	17	18	Y		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 3 - STR Results

2MQP2Q	GlobalFiler™ (HID Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
			14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11			2		
3AVV6M	GlobalFiler™ (PDF Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
			14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11			2		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
			15,23.2	9.3,10	8,9	15,15
3KEA8P	GlobalFiler™ (HID Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
	-	-	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	-	-	2		
42ZD4J	GlobalFiler™ (HID Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
			14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11			2		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 3 - STR Results

6ANJH3 PowerPlex® Fusion 6C (HID Format)

	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	17,18,20,22	11,12,13	9,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X,Y	10,12,13	19,21,24,25
	9,10,12,15	5,7,10,14	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	17,18	15,18			
	14,15	23,25			11,13	8,9
	12,16	14		11	9,11	
3major		29	15,16	X	10	19,25
	10,12		15,23.2		8,9	15
	11,12,18.3	17,19,20				10
	13,14,15	13,15		12,13	12,13	
3minor		31.2	11,17	X,Y	12,13	21,24
	9,15		14,21,26.2			16,17,18

8ZC7D4 PowerPlex® Fusion 5C (FSA Format)

	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10		9,9.3,10	8,9	15,16
	ND					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13,inc./13.2,inc./17,inc.	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9,inc./9.3,inc./10,inc.	8,9	15,15
	ND					

A2HB4X Investigator® 24plex (HID Format)

	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	18,20,22	11,12,13	9,10,11,12,13	14,15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X	10,12,13	19,21,24,25
			15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
3major	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
	No Major Component					

Item 3 - STR Results

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		
BJDZX7	GlobalFiler™					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
			14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11			2		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
3major	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
CFDCU4	PowerPlex® Fusion 6C					
	11,12,14,15,18.3	17,19,20,23,24,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X,Y	10,12,13	19,21,24,25
	9,10,12,15	5,7,10,14	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	17,18	15,18			
CPEYL2	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10	Not tested	9,9.3,10	8,9	15,16
	ND	Not tested	Not tested	Not tested		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,inc or 17,inc	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,inc or 10,inc	8,8	15,15
	ND					
DC6MND	GlobalFiler™ (PDF Format)					
	(11),(12),14,15,(18.3)	(17),19,20,23,25	10,11,14,(15)	14,(15),17,(18)		
	12,(13),(14),15,16	14,(15)	17,18,20,22		9,(10),11,12,(13)	(15),16,(17),18,19
3	(12),(13),13.2,17	29,(31.2)	(11),(14),15,16,(17)	X,Y		19,(21),(24),25
			14,15,21,23.2,(26.2)	(7),(9),9.3,10		15,(16),(17),(18)
	14,15	23,25	10,11	14,17		
	12,16	14,14	18,20		9,11	16,19
3major	13.2,17	29,29	15,16	X,X		19,25
			15,23.2	9.3,10		15,15
	(11),(12),(18.3)	(17),19,20	14,(15)	(15),(18)		
	(13),(14),15	(15)	17,22		(10),12,(13)	(15),(17),18
3minor	(12),(13)	(31.2)	(11),(14),(17)	Y		(21),(24)
			14,21,(26.2)	(7),(9)		(16),(17),(18)

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 3 - STR Results

EMKRGU PowerPlex® Fusion 6C (HID Format)

	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	17,18,20,22	11,12,13	9,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X,Y	8,10,12,13	19,21,24,25
	9,10,12,15	5,7,10,14	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	17,18	15,18			

FQ37KU PowerPlex® Fusion 5C

	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10		9,9.3,10	8,9	15,16
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15

GW469P Investigator® 24plex (HID Format)

	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	18,20,22	11,12,13	9,10,11,12,13	14,15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X	10,12,13	19,21,24,25
	Not Tested	Not Tested	15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	Not Tested	Not Tested	Not Tested		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
3major	13.2,17	29	15,16	X,X	10	19,25
	Not Tested	Not Tested	15,23.2	9.3,10	8,9	15
	No Major Component	Not Tested	Not Tested	Not Tested		

HKQ6CW PowerPlex® Fusion 5C

	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10		9,9.3,10	8,9	15,16
	ND					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
	ND	ND	14,inc	18,inc	ND	10,inc
	ND	ND	ND	12,inc	ND	18,inc
3minor	13,inc	ND	ND	X,Y	ND	24,inc
	ND	ND		9,inc	ND	16,inc
	ND					

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 3 - STR Results

HNPG8V PowerPlex® Fusion 5C (FSA Format)

	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10	NT	9,9.3,10	8,9	15,16
	ND	NT	NT	NT		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
	ND	ND	14,INC	18,INC	ND	10,INC
	ND	14,INC	ND	12,INC	ND	18,INC
3minor	13,INC	29,INC	ND	X,Y	ND	24,INC
	ND	ND		9,INC	ND	16,INC
	ND					

K3KKPR PowerPlex® Fusion 5C

	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10	not applicable	9,9.3,10	8,9	15,16
	not detected	not applicable	not applicable	not applicable		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	not applicable	9.3,10	8,9	15,15
	not detected	not applicable	not applicable	not applicable		
	not detected	not detected	14	18	not detected	10
	not detected	not detected	not detected	12	not detected	18
3minor	13	not detected	not detected	Y	not detected	24
	not detected	not detected	not applicable	9	not detected	16
	not detected	not applicable	not applicable	not applicable		

LDVA3M Investigator® 24plex (HID Format)

	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	18,20,22	11,12,13	9,10,11,12,13	14,15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X	10,12,13	19,21,24,25
			15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
3major	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
	No Major					

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 3 - STR Results

LFZ764	GlobalFiler™ (PDF Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
	N/A	N/A	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	N/A	N/A	2		
M9F4XZ	GlobalFiler™ (PDF Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18,OL	11,13	8,9,10
	12,13,14,15,16	14,15,OL	17,18,20,22	11,12,13,OL	4,9,10,11,12,13,OL	15,16,16.2,17,18,19
3	12,13,13.2,17	29,31.2,39	11,14,15,16,17	X,Y	10,12,13	13,19,21,24,25,44.2
			14,15,21,23.2,26.2	7,9,9.3,10	8,9,OL	15,16,17,18,OL
	10,11					
MB3Z7R	GlobalFiler™ (HID Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
	-	-	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	-	-	2		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	19,29	15,16	X,X	10,10	19,25
	-	-	15,23.2	9.3,10	8,9	15,15
	-	-	-	-		
P28G6N	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10	Not tested	9,9.3,10	8,9	15,16
	Not detected	Not tested	Not tested	Not tested		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,inconclusive	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	Not detected	Not detected	14,inconclusive	18,inconclusive	Not detected	10,inconclusive
	Not detected	Not detected	Not detected	12,inconclusive	Not detected	18,inconclusive
3minor	13,inconclusive	Not detected	Not detected	X,Y	Not detected	24,inconclusive
	Not detected	Not detected		9,inconclusive	Not detected	16,inconclusive

Item 3 - STR Results

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		
PNJJWX	PowerPlex® Fusion 5C					
	11,12,14,15	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14	17,18,20,22	11,12	9,10,11,12,13	16,17,18,19
3	12,13,13.3,17	29,31.2	11,14,15,16	X,Y	10,13	19,21,24,25
	9,10,12	5,10,14		7,9,9.3,10	8,9	15,16,17,18
	11					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
3major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
ULHZ3L	Investigator® 24plex (HID Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	13,14,15	18,20,22	11,12,13	9,10,11,12,13	14,15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X	10,12,13	19,21,24,25
			15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
3major	13.2,17	29	15,16	X,X	10	19,25
			15,23.2	9.3,10	8,9	15
	No Major Component					
UZ4F7L	PowerPlex® Fusion 5C (FSA Format)					
	14,15	23,25	10,11,14	14,17,18	11,13	8,9,10
	12,16	14	18,20	11,12	9,11	16,18,19
3	13,13.2,17	29	15,16	X,Y	10	19,24,25
	10,12	5,10		9,9.3,10	8,9	15,16
	ND					
V7YYEU	PowerPlex® Fusion 6C (HID Format)					
	11,12,14,15,18.3	17,19,20,23,24,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	5,9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,15,16,17	X,Y	8,10,12,13	19,21,24,25
	5,9,10,12,15	5,7,10,14	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	17,18	15,18			
XGR2WT	GlobalFiler™ (HID Format)					
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14,15	17,18,20,22	11,12,13	9,10,11,12,13	15,16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
	-	-	14,15,21,23.2,26.2	7,9,9.3,10	8,9	15,16,17,18
	10,11	-	-	2		

Item 3 - STR Results

XMHC7R (PDF Format)

WebCode	Amplification Kits (File Format) D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		
	11,12,14,15,18.3	17,19,20,23,25	10,11,14,15	14,15,17,18	11,13	8,9,10
	12,13,14,15,16	14	17,18,20,22	11,12,13	9,10,11,12,13	16,17,18,19
3	12,13,13.2,17	29,31.2	11,14,15,16,17	X,Y	10,12,13	19,21,24,25
	9,10,12	5,7,10,14	6,7,14,15,21,23.2,26 .2,38,39	7,9,9.3,10	8,9	15,16,17,18
	10,11	17,18	15,18	Y		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14	18,20	11	9,11	16,19
3major	13,13.2,17	29	15,16	X,Y	10	19,25
	10,12	5,10	14,15,21,23.2	9.3,10	8,9	15
	---	---	---	Y		
	11,12,18.3	17,19,20	14,15	15,18	---	10
	13,14,15	---	17,22	12,13	10,12,13	17,18
3minor	12	31.2	11,14,17	---	12,13	21,24
	9	7,14	6,7,26.2,38,39	7,9	---	16,17,18
	10,11	17,18	15,18			

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

2MQP2Q	GlobalFiler™ (HID Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10			2		
3AVV6M	GlobalFiler™ (PDF Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10			2		
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,29	14,15	X,Y	13,13	24,24
			14,21	7,9	8,8	16,18
	10			2		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
			15,23.2	9.3,10	8,9	15,15
3KEA8P	GlobalFiler™ (HID Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	-	-	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	-	-	2		
42ZD4J	GlobalFiler™ (HID Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10			2		
6ANJH3	PowerPlex® Fusion 6C (HID Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	17	18			

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

8ZC7D4	PowerPlex® Fusion 5C (FSA Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14		7,9,9.3,10	8,9	15,16,18
	10					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
	12,18.3	17,20	11,14	15,18	11,inc/13,inc.	9,10/10,10
	13,14	13,inc.	17,22	12,13	10,12	15,18
4minor	13,13	29,inc.	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
A2HB4X	Investigator® 24plex (HID Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10					
BJDZX7	GlobalFiler™					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10			2		
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,29	14,15	X,Y	13,13	24,24
			14,21	7,9	8,8	16,18
	10			2		
CFDCU4	PowerPlex® Fusion 6C (HID Format)					
	12,14,15,18.3	17,20,23,24,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29,29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	14,14.2,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	17	18			

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

CPEYL2 PowerPlex® Fusion 5C

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,14,25
	10,12,15	5,7,10,14	Not tested	7,9,9.3,10	8,9	15,16,18
	10	Not tested	Not tested	Not tested		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4minor	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					

DC6MND GlobalFiler™ (PDF Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18		
	12,13,14,16	13,14	17,18,20,22		9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y		19,24,(25)
			14,15,21,23.2	7,9,(9.3),(10)		15,16,18

EMKRGU PowerPlex® Fusion 6C (HID Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	17	18			

FQ37KU PowerPlex® Fusion 5C

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14		7,9,9.3,10	8,9	15,16,18
	10					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

GW469P Investigator® 24plex (HID Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	Not Tested	Not Tested	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	Not Tested	Not Tested	Not Tested		

HKQ6CW PowerPlex® Fusion 5C

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14		7,9,9.3,10	8,9	15,16,18
	10					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					

HNPG8V PowerPlex® Fusion 5C (FSA Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	NT	7,9,9.3,10	8,9	15,16,18
	10	NT	NT	NT		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
	12,18.3	17,20	11,14	15,18	ND	10,INC
	13,14	13,INC	17,22	12,13	10,12	15,18
4minor	13,13	ND	14,INC	X,Y	13,INC	24,24
	10,15	7,14		7,9	8,INC	16,18
	10					

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

K3KKPR	PowerPlex® Fusion 5C					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	not applicable	7,9,9.3,10	8,9	15,16,18
	10	not applicable	not applicable	not applicable		
	12,18.3	17,20	11,14	15,18	11,inc./13,inc.	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,inc.	14,inc.	X,Y	13,13	24,24
	10,15	7,14	not applicable	7,9	8,8	16,18
	10	not applicable	not applicable	not applicable		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10	not applicable	9.3,10	8,9	15,15
	not detected	not applicable	not applicable	not applicable		
LDVA3M	Investigator® 24plex (HID Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10					
LFZ764	GlobalFiler™ (PDF Format)					
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A	N/A	N/A
	N/A	N/A	N/A	N/A		
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,29	14,15	X,Y	13,13	24,24
	N/A	N/A	14,21	7,9	8,8	16,18
	10	N/A	N/A	2		
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
	N/A	N/A	15,23.2	9.3,10	8,9	15,15
	N/A	N/A	N/A	N/A		
M9F4XZ	GlobalFiler™ (PDF Format)					
	12,14,15,18.3	17,20,23,25	10,11,14	14,15,16,17,18,OL	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9,OL	15,16,18,OL
	10			2		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

MB3Z7R GlobalFiler™ (HID Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	-	-	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	-	-	2		

P28G6N PowerPlex® Fusion 5C (FSA Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	Not tested	7,9,9.3,10	8,9	15,16,18
	10	Not tested	Not tested	Not tested		
	12,18.3	17,20	11,14	15,18	11,inc 13,inc	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,inconclusive	14,inc 15,inc	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	Not detected					

PNJJWX PowerPlex® Fusion 5C

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14		7,9,9.3,10	8,9	15,16,18
	10					
	12,18.3	17,20	11,14	15,18	11,13	9,10
	13,14	13,14	17,22	12,13	10,12	15,18
4major	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4minor	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15

ULHZ3L Investigator® 24plex (HID Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
			14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10					

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

UZ4F7L PowerPlex® Fusion 5C (FSA Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14		7,9,9.3,10	8,9	15,16,18
	10					
	14,15	23,25	10,11	14,17	11,13	8,9
	12,16	14,14	18,20	11,11	9,11	16,19
4major	13.2,17	29,29	15,16	X,X	10,10	19,25
	10,12	5,10		9.3,10	8,9	15,15
	ND					
	12,18.3	17,20	11,14	15,18	11,13	10,INC.
	13,14	13,INC.	17,22	12,13	10,12	15,18
4minor	13,13	29,29	14,15	X,Y	13,13	24,24
	10,15	7,14		7,9	8,8	16,18
	10					

V7YYEU PowerPlex® Fusion 6C (HID Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	17	18			

XGR2WT GlobalFiler™ (HID Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	-	-	14,15,21,23.2	7,9,9.3,10	8,9	15,16,18
	10	-	-	2		

WebCode	Amplification Kits (File Format)					
	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
Item	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
	Penta D	Penta E	SE33	TH01	TPOX	vWA
	DYS391	DYS570	DYS576	Y Indel		

Item 4 - STR Results

XMHC7R (PDF Format)

	12,14,15,18.3	17,20,23,25	10,11,14	14,15,17,18	11,13	8,9,10
	12,13,14,16	13,14	17,18,20,22	11,12,13	9,10,11,12	15,16,18,19
4	13,13.2,17	29	14,15,16	X,Y	10,13	19,24,25
	10,12,15	5,7,10,14	7,14,14.2,15,21,23.2,38	7,9,9.3,10	8,9	15,16,18
	10	17	18	Y		
	12,18.3	17,20	11,14	15,18	11,13	9,10
	12,13,14,16	13,14	17,22	11,12,13	9,10,11,12	15,18
4major	13	29	14,15	X,Y	10,13	24
	10,15	5,7,14	14,14.2,15,21,23.2	7,9	8	15,16,18
	10	17	18	Y		
	14,15	23,25	10	14,17	---	8
	---	---	18,20	---	---	16,19
4minor	13.2,17	---	16		---	19,25
	12	10	17,38	9.3,10	9	---
	---	---	---			

YSTR Results

TABLE 3

WebCode	Amplification Kits (File Format)							
	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
Item	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
Item 2 - YSTR Results								
2MQP2Q	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17		
				24		12		
3AVV6M	Yfiler® (PDF Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17		
				24		12		
3KEA8P	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	-	-
	-	-	-	24	-	12		
42ZD4J	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17		
				24		12		
DC6MND	PowerPlex® Y23 (PDF Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
K3KKPR	PowerPlex® Y23							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
LFZ764	Yfiler® (PDF Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	N/A	N/A
	N/A	N/A	N/A	24	N/A	12		
M9F4XZ	Yfiler® (PDF Format)							
	14	11,15	13,OL	29	24	10	13	13
2	14,OL	12	11	19	16	17		
				24		12,OL		
MB3Z7R	Yfiler® (PDF Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	-	-
	-	-	-	24	-	12		

TABLE 3

WebCode	Amplification Kits (File Format)							
	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
Item	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
Item 2 - YSTR Results								
PNJJWX	Yfiler®							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17		
				24		12		
UZ4F7L	PowerPlex® Y23 (FSA Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
V7YYEU	PowerPlex® Y23 (HID Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
XGR2WT	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	-	-
	-	-	-	24	-	12		
XMHC7R	(PDF Format)							
	14	11,15	13	29	24	10	13	13
2	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		

TABLE 3

WebCode	Amplification Kits (File Format)							
	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
Item	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
Item 3 - YSTR Results								
2MQP2Q	Yfiler® (FSA Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17		
				21,24		11,12		
3AVV6M	Yfiler® (PDF Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17		
				21,24		11,12		
	14	14,15	12	28	25	11	11	13
3major	15	11	11	19	15	17		
				21		11		
	14	11,15	13	29	24	10	13	13
3minor	14	12	11	19	16	17		
				24		12		
3KEA8P	Yfiler® (FSA Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	-	-
	-	-	-	21,24	-	11,12		
42ZD4J	(FSA Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17		
				21,24		11,12		
DC6MND	PowerPlex® Y23 (PDF Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,(12)	11	19	15,16	17	22,26	12
	13	17,18	15,18	21,24	10,12	11,12		
K3KKPR	PowerPlex® Y23							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	22,26	12
	13	17,18	15,18	21,24	10,12	11,12		
	14	11,15	13	29	24	10	13	13
3major	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
	14	14,14	12	28	25	11	11	13
3minor	15	11	11	19	15	17	26	12
	13	18	15	21	12	11		

TABLE 3

WebCode	Amplification Kits (File Format)							
	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
Item	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
Item 3 - YSTR Results								
LFZ764	Yfiler® (PDF Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	N/A	N/A
	N/A	N/A	N/A	21,24	N/A	11,12		
M9F4XZ	Yfiler® (PDF Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,12,13	13
3	14,15	11,12	11	16,19	15,16	17		
				21,24,OL		11,12,OL		
MB3Z7R	Yfiler® (PDF Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	-	-
	-	-	-	21,24	-	11,12		
PNJJWX	Yfiler®							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17		
				21,24		11,12		
UZ4F7L	PowerPlex® Y23 (FSA Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	22,26	12
	13	17,18	15,18	21,24	10,12	11,12		
V7YYEU	PowerPlex® Y23 (HID Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	22,26	12
	13	17,18	15,18	21,24	10,12	11,12		
XGR2WT	Yfiler® (FSA Format)							
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3	14,15	11,12	11	19	15,16	17	-	-
	-	-	-	21,24	-	11,12		
XMHC7R	(PDF Format)							
	14	11,14,15	12,13	25,28,29	24,25	10,11	11,12,13	13
3	14,15	11,12	11	18.1,19	15,16	17	22,26	12
	13	17,18	15,18	21,24	10,12	11,12		
	14	11,14,15	12,13	28,29	24,25	10,11	11,13	13
3major	14,15	11,12	11	19	15,16	17	22,26	12
	13	17,18	15,18	21,24	10,12	11,12		
	---	---	---	25	---	---	12	---
3minor	---	---	---	18.1	---	---	---	---
	---	---	---	---	---	---		

TABLE 3

WebCode	Amplification Kits (File Format)							
	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
Item	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
Item 4 - YSTR Results								
2MQP2Q	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17		
				24		12		
3AVV6M	Yfiler® (PDF Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17		
				24		12		
3KEA8P	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	-	-
	-	-	-	24	-	12		
42ZD4J	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17		
				24		12		
DC6MND	PowerPlex® Y23 (PDF Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
K3KKPR	PowerPlex® Y23							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
LFZ764	Yfiler® (PDF Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	N/A	N/A
	N/A	N/A	N/A	24	N/A	12		
M9F4XZ	Yfiler® (PDF Format)							
	14,OL	11,15	13	29	24	10	13	13
4	14	12	11	16,19	16,(17)	17		
				24		12,OL		
MB3Z7R	Yfiler® (PDF Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	-	-
	-	-	-	24	-	12		

TABLE 3

WebCode	Amplification Kits (File Format)							
	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
Item	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
Item 4 - YSTR Results								
PNJJWX	Yfiler®							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17		
				24		12		
UZ4F7L	PowerPlex® Y23 (FSA Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	22	12
	13	17	18	24	10	22		
V7YYEU	PowerPlex® Y23 (HID Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
XGR2WT	Yfiler® (FSA Format)							
	14	11,15	13	29	24	10	13	13
4	14	12	11	19	16	17	-	-
	-	-	-	24	-	12		
XMHC7R	(PDF Format)							
	14	11,15	10,13	29	24	10	7,13	13
4	14	12	11	16.2,19	16,17	17	22	12
	13	17,18	18	24	10	12		
	14	11,15	13	29	24	10	13	13
4major	14	12	11	19	16	17	22	12
	13	17	18	24	10	12		
	---	---	10	---	---	---	7	---
4minor	---	---	---	16.2	17	---	---	---
	---	18	---	---	---	---		

DNA Conclusions

Based on the examination of the DNA profiles provided, could the Victim (Item 1) and/or the Suspect (Item 2) be included as a possible contributor to the questioned Item?

TABLE 4

	Item 3 Conclusion			Item 4 Conclusion		
WebCode	# of Contributors	Item 1	Item 2	# of Contributors	Item 1	Item 2
2MQP2Q	3	Included	Included	2	Included	Included
3AVV6M	3	Included	Included	2	Included	Included
3KEA8P	3	Included	Included	2	Included	Included
42ZD4J	3	Included	Included	2	Included	Included
6ANJH3	3	Included	Included	2	Included	Included
8ZC7D4	at least 2	Included	Inconclusive / Uninterpretable	2	Included	Included
A2HB4X	≥3	Included	Inconclusive / Uninterpretable	2	Included	Included
BJDZX7	3 or more	Included	Inconclusive / Uninterpretable	2	Included	Included
CFDCU4	3	Included	Included	2	Included	Included
CPEYL2	At least two	Included	Inconclusive / Uninterpretable	Two	Included	Included
DC6MND	at least 3	Included	Included	at least 2	Included	Included
EMKRGU	3	Included	Included	2	Included	Included
FQ37KU	At least 2	Included	Included	2	Included	Included
GW469P	≥3	Included	Inconclusive / Uninterpretable	2	Included	Included
HKQ6CW	2	Included	Included	2	Included	Included
HNPG8V	at least 2	Included	Included	2	Included	Included
K3KKPR	3	Included	Included	2	Included	Included
LDVA3M	Greater than or equal to three	Included	Inconclusive / Uninterpretable	Two	Included	Included
LFZ764	3 or more	Included	Included	2	Included	Included
M9F4XZ	At least 2	Included	Included	at least 2	Included	Included

TABLE 4

WebCode	Item 3 Conclusion # of Contributors	Item 3 Conclusion Item 1	Item 3 Conclusion Item 2	Item 4 Conclusion # of Contributors	Item 4 Conclusion Item 1	Item 4 Conclusion Item 2
MB3Z7R	3	Included	Included	2	Included	Included
P28G6N	2	Included	Included	2	Included	Included
PNJJWX	3 or more.	Included	Inconclusive / Uninterpretable	2	Included	Included
ULHZ3L	at least 3	Included	Inconclusive / Uninterpretable	2	Included	Included
UZ4F7L	Fusion: at least 2	Inconclusive / Uninterpretable	Inconclusive / Uninterpretable	Fusion: 2 contributors	Included	Included
V7YYEU	3	Included	Included	2	Included	Included
XGR2WT	3	Included	Included	2	Included	Included
XMHC7R	3	Included	Included	2	Included	Included

Conclusions Response Summary

Participants reporting conclusions: 28

Based on the examination of the DNA profiles provided, could the Victim (Item 1) and/or the Suspect (Item 2) be included as a possible contributor to the questioned Item?

Responses	Item 3 Item 1	Item 3 Item 2	Item 4 Item 1	Item 4 Item 2
Included	**27**	**19**	**28**	**28**
Excluded	**0**	**0**	**0**	**0**
Inconclusive	**1**	**9**	**0**	**0**
No Response	**0**	**0**	**0**	**0**
Total	**28**	**28**	**28**	**28**

Statistical Analysis for Item 3

TABLE 5

WebCode	Item 3 Methods & Results
2MQP2Q	**Method(s)**: Likelihood Ratio **Stats Analysis:** The mixed DNA profile are 170 quadrillion (170 x 10e15), 1.4 quintillion (1.4 x 10e18) and 2.6 quintillion (2.6 x 10e18) TIMES more likely; IF they originated from the Male Suspect (Item 2), the Female Victim (Item 1) and one unknown unrelated individual RATHER THAN; IF they originated from the Male Suspect (Item 2) and two unknown unrelated individuals as calculated based on the [Location-identifying population databases].
3AW6M	**Method(s)**: Likelihood Ratio **Stats Analysis:** LR = Item1 + 2 unknowns / 3 unknowns = 1.27E12, LR = Item2 + 2 unknowns / 3 unknowns = 5.92E7, LR = Item1 + Item2 + 1 unknown / 3 unknowns = 1.29E24
3KEA8P	**Method(s)**: Likelihood Ratio **Stats Analysis:** The mixed DNA profile are 170 quadrillion, 1.4 quintillion and 2.6 quintillion TIMES are more likely; IF they originated from "Item 1", "Item 2" and one unknown RATHER THAN; IF the originated from "Item 2" and two unknown unrelated individual as calculated (at 20 loci) based on the [Location-identifying population databases].
42ZD4J	**Method(s)**: Likelihood Ratio **Stats Analysis:** The genetic profile obtained from Item 3 is interpreted as a mixture of DNA from three contributors. Item 1 (victim) cannot be excluded as a contributor to this mixture. Given this genetic profile, assuming three contributors and assuming Item K2 (suspect) to be one of those contributors, it is 3.4 billion times more likely to observe this genetic profile if Item K1 (victim), Item K2 (suspect) and one unknown individual are the contributors than if Item K2 (suspect) and two unknown individuals are the contributors. No statistical analysis was performed on the Y-STR results as they were not interpretable.
6ANJH3	**Method(s)**: Combined Probability of Exclusion/Inclusion, Random Match Probability **Stats Analysis:** RMP = Caucasian = 1 in 100 sextillion (1xE23), African American = 1 in 20 sextillion (2xE22). CPI = Caucasian = 1 in 80, African American = 1 in 30
8ZC7D4	**Method(s)**: Random Match Probability **Stats Analysis:** A mixture of human DNA profiles was identified in Item 3 which was interpreted as a mixture of at least two people. A major DNA profile was deduced from which Victim cannot be excluded (is included). The expected frequency of occurrence for this DNA profile was calculated for the African-American, Caucasian and Hispanic population groups and was found to be no more common than approximately 1 in 1.5 octillion individuals.
A2HB4X	**Method(s)**: Random Match Probability **Stats Analysis:** The probability of selecting a random, unrelated individual with the same DNA profile as the major component of the mixed DNA profile obtained from Item 3 is: 1 in 1.055 decillion from the US Caucasian population, 1 in 31.99 nonillion from the US African American population, 1 in 132.7 nonillion from the US Hispanic population
BJDZX7	**Method(s)**: Random Match Probability **Stats Analysis:** Using 21 of 21 loci, the probabilities of selecting an unrelated individual at random having a DNA profile consistent with the primary DNA profile obtained from item 3 are approximately: 1 in 1.78 Decillion for Caucasians, 1 in 74.5 Nonillion for African Americans, 1 in 271 Nonillion for Hispanics

TABLE 5

WebCode	Item 3 Methods & Results
CFDCU4	**Method(s)**: Likelihood Ratio **Stats Analysis:** The DNA profile obtained from the suspect's shirt (item 3) is of mixed origin consistent with having originated from at least 3 individuals and is suitable for comparison. The victim (item 1) is included as a possible contributor. Assuming three contributors and one of those contributors is the suspect (item 2), it is 380 nonillion times more likely to observe this DNA profile if it originated from the victim, the suspect and one unknown contributor rather than the suspect and two unrelated individual(s) selected at random from the U.S. population. The suspect (item 4) is also included as a possible contributor. Assuming three contributors, it is 19 quadrillion times more likely to observe this DNA profile if it originated from the suspect and two unknown contributors rather than three unrelated individual(s) selected at random from the U.S. population.
CPEYL2	**Method(s)**: Random Match Probability **Stats Analysis:** A mixture of DNA profiles was identified in Item 3 that has been interpreted as a mixture of at least 2 people. A major human female DNA profile was identified from which the victim cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated for the African American, Caucasian, and Hispanic population groups and was found to be no more common than approximately 20 octillion unrelated individuals. The minor contribution to this mixture is potentially incomplete and not suitable for comparisons.
DC6MND	**Method(s)**: Likelihood Ratio, Subjective evaluation **Stats Analysis:** [Laboratory]'s Autosomal STR kit (NGM SElect) not available for comparison. Therefore used NGM-SE loci from GlobalFiler. In relation to the autosomal profiling results, this is as might expect if the victim was a major/prominent contributor. This would be suitable for statistical analysis used STRMix. The results matching the suspect are as I might expect if he was a minor contributor. Given it was his shirt then a statistic is unlikely to be required. However if needed this would be suitable for statistical analysis using LikeLTD or STRMix. Given the nature of the Y-STR mixture this was considered unsuitable for statistical evaluation and if reported in isolation at [Laboratory] a subjective evaluation would be offered. However as the shirt belonged to the suspect it is unlikely that evaluation of the results matching him would be required. Therefore, unless it becomes necessary to evaluate the significance of the results not attributable to the suspect it is unlikely that any further evaluation would be carried out.
EMKRGU	**Method(s)**: Combined Probability of Exclusion/Inclusion, Random Match Probability **Stats Analysis:** CPI - African American Population Propability - 1 in 36, CPI - Caucasian Population Probability - 1 in 83, RMP - African American Population Probability - 1 in 21,050,000,000,000,000,000,000. RMP - Caucasian Population Probability - 1 in 136,000,000,000,000,000,000,000
FQ37KU	**Method(s)**: Random Match Probability **Stats Analysis:** Caucasian 1 in 4.5E33 (4.5 Decillion), Black 1 in 5.2E32 (520 Nonillion), SE Hispanic 1 in 1.4E33 (1.4 Decillion), SW Hispanic 1 in 9.1E34 (91 Decillion)
GW469P	**Method(s)**: Random Match Probability **Stats Analysis:** The probability of selecting a random, unrelated individual with the same DNA profile obtained from Item 3 major is: 1 in 1.055 decillion from the US Caucasian population, 1 in 31.99 nonillion from the US African American population, 1 in 132.7 nonillion from the US Hispanic population
HKQ6CW	**Method(s)**: Random Match Probability **Stats Analysis:** A major female human DNA profile was identified in Item 3 from which the victim cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated at 22 loci for the African American, Caucasian, and Hispanic population groups and was found to be no more common than approximately 1 in 520 nonillion unrelated individuals.

TABLE 5

WebCode	Item 3 Methods & Results
HNPG8V	**Method(s)**: Random Match Probability **Stats Analysis:** Statistical frequency: 1 in 1.1E33 (1.1 Decillion) at 22 loci. Statistics are calculated for the African-American, Caucasian, and Hispanic population groups: the most common frequency is reported as random match probability.
K3KKPR	**Method(s)**: Random Match Probability **Stats Analysis:** A mixture of DNA profiles was identified in Item 3 (suspect's shirt) that has been interpreted as a mixture of 2 people. Assuming this is mixture of the suspect (Item 2) and one additional contributor, a female DNA profile was identified from which the victim (Item 1) cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated for the African American, Caucasian and Hispanic population groups and was found to be no more common than approximately 1 in 520 nonillion.
LDVA3M	**Method(s)**: Random Match Probability **Stats Analysis:** The probability* of selecting a random, unrelated individual with the same DNA profile obtained from the major component of Item 3 is: 1 in 1.055 decillion from the US Caucasian population, 1 in 31.99 nonillion from the US African American population, 1 in 132.7 nonillion from the US Hispanic population
LFZ764	**Method(s)**: [Participant did not report a Method] **Stats Analysis:** I am a forensic consultant that reviews DNA case files that are submitted to me as evidence. I review the analyst allele calls and evidence to reference sample comparisons so I can understand how the original analyst arrived at their opinions and conclusions. I accept that the population calculations are correct. N/A = Not Applicable, NSD = No Size Data.
MB3Z7R	**Method(s)**: Likelihood Ratio, Random Match Probability **Stats Analysis:** Major contributor (victim) : RMP : 7.1E+30, Males contributors (suspects in mixture, item 3), LR : 3.2E+13
P28G6N	**Method(s)**: Random Match Probability **Stats Analysis:** A mixture of DNA profiles was identified in Item 3 that has been interpreted as a mixture of 2 people. A major human female profile was identified in Item 3 from which the victim (Item 1) cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated for the African American, Caucasian, and Hispanic population groups and was found to be more common than approximately 1 in 75 Nonillion unrelated individuals.
PNJJWX	**Method(s)**: Random Match Probability **Stats Analysis:** Autosomal- A mixture of DNA profiles was identified in Item 3 was interpreted as a mixture of 3 or more people. A major female DNA profile was identified from which the victim cannot be excluded. The expected frequency of occurrence for this profile was calculated for the African-American, Caucasian, and Hispanic population groups and was found to be no more common that approximately 1 in XXXXX unrelated individuals. The DNA results for the minor contributors are potentially incomplete and not suitable for interpretation. YSTR- A mixture of human YSTR DNA haplotypes was identified in Item 3 that was interpreted as a mixture of 2 males. This mixture is an indistinguishable mixture, and thus no further interpretation of this evidence is possible.
ULHZ3L	**Method(s)**: Random Match Probability **Stats Analysis:** The probability of selecting a random, unrelated individual with the same DNA profile as the major component of the mixed DNA profile obtained from Item 3 is: 1 in 1.055 decillion from the US Caucasian population 1 in 31.99 nonillion from the US African American population 1 in 132.7 nonillion from the US Hispanic population

TABLE 5

WebCode	Item 3 Methods & Results
UZ4F7L	**Method(s)**: Y23:counting method **Stats Analysis:** Item 3 Fusion: A mixture of human DNA profiles was identified in Item 3 which was interpreted as a mixture of at least two people. This mixture of DNA profiles is potentially incomplete and not suitable for comparisons. Item 3 Y23: A mixture of Y-STR haplotypes was identified in Item 3 which was interpreted as a mixture of two males. The suspect (Item 2) cannot be excluded (is included) as having contributed to the mixture of Y-STR haplotypes identified in Item 3. This mixture of Y-STR haplotypes was searched against a pooled known database consisting of unrelated African American, Caucasian and Hispanic males and would be expected to occur in approximately 1 in 230 unrelated males based on a 95% confidence limit.
V7YYEU	**Method(s)**: Likelihood Ratio **Stats Analysis:** The observed mixture profile is approximately 7.41x10^11 times more likely to occur under the scenario that it is a mixture of DNA from the victim, the suspect, and an unknown individual, as opposed to the scenario that it originated from a mixture of DNA from the victim, and two unrelated unknown individual, in the African American population. The observed mixture profile is approximately 8.68x10^10 times more likely to occur under the scenario that it is a mixture of DNA from the victim, the suspect, and an unknown individual, as opposed to the scenario that it originated from a mixture of DNA from the victim, and two unrelated unknown individual, in the Caucasian population. The observed mixture profile is approximately 2.21x10^11 times more likely to occur under the scenario that it is a mixture of DNA from the victim, the suspect, and an unknown individual, as opposed to the scenario that it originated from a mixture of DNA from the victim, and two unrelated unknown individual, in the Hispanic population.
XGR2WT	**Method(s)**: Likelihood Ratio **Stats Analysis:** The mixed DNA profile are 170 quadrillion, 1.4 quintillion and 2.6 quintillion TIMES more likely; IF they originated from "Item 1", “Item 2” and an unknown individual RATHER THAN; IF they originated from “Item 2” and two unknown unrelated individual as calculated (at 20 loci) based on the [Location-identifying population databases].
XMHC7R	**Method(s)**: Likelihood Ratio

Statistical Analysis for Item 4

TABLE 6

WebCode	Item 4 Methods & Results
2MQP2Q	**Method(s)**: Likelihood Ratio **Stats Analysis**: The mixed DNA profile are 12 octillion (12 x 10e27), 14 octillion (14 x 10e27) and 19 octillion (19 x 10e27) TIMES more likely; IF they originated from the Female Victim (Item 1) and the Male Suspect (Item 2) RATHER THAN; IF they originated from the Female Victim (Item 1) and one unknown unrelated individual as calculated based on the [Location-identifying population databases].
3AVV6M	**Method(s)**: Likelihood Ratio **Stats Analysis**: LR = Item1 + 1 unknown / 2 unknowns = 1.60E16, LR = Item2 + 1 unknown / 2 unknowns = 2.89E12, LR = Item1 + Item2 / 2 unknowns = 1.41E39
3KEA8P	**Method(s)**: Likelihood Ratio **Stats Analysis**: The mixed DNA profile are 12 octillion, 14 octillion and 19 octillion TIMES are more likely; IF they originated from "Item 1" and "Item 2" RATHER THAN; IF they originated from "Item 1" and one unknown unrelated individual as calculated based on the [Location-identifying population databases].
42ZD4J	**Method(s)**: Likelihood Ratio **Stats Analysis**: The genetic profile obtained from Item 4 is interpreted as a mixture of DNA from two contributors. Item 2 (suspect) cannot be excluded as a contributor to this mixture. Given this genetic profile, assuming two contributors and assuming Item K1 (victim) to be one of those contributors, it is 1.0 septillion times more likely to observe this genetic profile if Item K1 (victim) and Item K2 (suspect) are the contributors than if Item K1 (victim) and one unknown individual are the contributors.
6ANJH3	**Method(s)**: Likelihood Ratio **Stats Analysis**: Caucasian = 1 in 10 octillion (1xE28). African American = 1 in 600 octillion (6xE29)
8ZC7D4	**Method(s)**: Random Match Probability **Stats Analysis**: A mixture of human DNA profiles was identified in Item 4 which was interpreted as a mixture of two people. Assuming this is a mixture of Victim and one additional contributor, a DNA profile was identified from which Suspect cannot be excluded (is included). The expected frequency of occurrence for this DNA profile was calculated for the African-American, Caucasian and Hispanic population groups and was found to be no more common than approximately 1 in 340 septillion individuals.
A2HB4X	**Method(s)**: Combined Probability of Exclusion/Inclusion **Stats Analysis**: The estimated portion of the population that cannot be excluded from the mixed DNA profile obtained from Item 4 is: 1 in 49.29 trillion from the US Caucasian population, 1 in 33.24 trillion from the US African American population, 1 in 85.44 trillion from the US Hispanic population
BJDZX7	**Method(s)**: Random Match Probability **Stats Analysis**: The victim is assumed to be a contributor of DNA to the item 4, intimate sample (fingernail scrapings). The "major" alleles reported above constitute a deduced profile from item 4. Using 21 of 21 loci, the probabilities of selecting an unrelated individual at random having a DNA profile consistent with the deduced DNA profile from item 4 are approximately: 1 in 22.6 Octillion for Caucasians, 1 in 181 Octillion for African Americans, 1 in 427 Octillion for Hispanics

TABLE 6

WebCode	Item 4 Methods & Results
CFDCU4	**Method(s)**: Likelihood Ratio **Stats Analysis**: The DNA profile obtained from the victim's fingernail scrapings (item 4) is of mixed origin consistent with having originated from 2 individuals and is suitable for comparison. The suspect (item 2) is included as a possible contributor. Assuming two contributors, and one of those contributors being the victim, it is 940 octillion times more likely to observe this DNA profile if it originated from the victim and the suspect rather than the victim and one unrelated individual selected at random from the U.S. population.
CPEYL2	**Method(s)**: Random Match Probability **Stats Analysis**: A mixture of DNA profiles was identified in Item 4 that has been interpreted as a mixture of 2 people. Assuming this is a mixture of the victim (Item 1) and one additional contributor, a male DNA profile was identified from which the suspect cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated for the African American, Caucasian, and Hispanic population groups was found to be no more common than approximately 1 in 210 octillion unrelated individuals.
DC6MND	**Method(s)**: Estimation of haplotype population frequency **Stats Analysis**: [Laboratory]'s Autosomal STR profiling kit not available for comparison. Therefore used NGM-SE loci in GlobalFiler results. In relation to the autosomal DNA, results are as I might expect if as a result of a mixture of DNA from victim and suspect. This result is suitable for statistical analysis using STRMix. As an indication of how common the Y-STR profile is, I have used a global database (YHRD) of Y-STR profiles and estimate that the full Y-STR profile obtained is observed in approximately 1 in 6600 unrelated Western European males.
EMKRGU	**Method(s)**: Likelihood Ratio **Stats Analysis**: African American Population Probability - 6E29, Caucasian Population Probability - 1E28
FQ37KU	**Method(s)**: Random Match Probability **Stats Analysis**: Caucasian 1 in 2.1E29 (210 Octillion), Black 1 in 2.0E31 (20 Nonillion), SE Hispanic 1 in 5.7E29 (570 Octillion), SW Hispanic 1 in 4.3E31 (43 Nonillion)
GW469P	**Method(s)**: Combined Probability of Exclusion/Inclusion **Stats Analysis**: The estimated portion of the population that cannot be excluded from the mixed DNA profile is 1 in 49.29 trillion from the US Caucasian population, 1 in 33.24 trillion from the US African American population, 1 in 85.44 trillion from the US Hispanic population
HKQ6CW	**Method(s)**: Random Match Probability **Stats Analysis**: Assuming this is a mixture of the female victim and one other individual, a male DNA profile was identified from which the male suspect cannot be excluded (is included). The expected frequency of occurrence for the male DNA profile was calculated at 23 loci for the African American, Caucasian, and Hispanic population groups and was found to be no more common than approximately 1 in 210 octillion unrelated individuals.
HNPG8V	**Method(s)**: Random Match Probability **Stats Analysis**: Statistical frequency: 1 in 160E21 (160 sextillion) at 21 loci. Statistics are calculated for the African-American, Caucasian, and Hispanic population groups: the most common frequency is reported as random match probability.

TABLE 6

WebCode	Item 4 Methods & Results
K3KKPR	**Method(s)**: Random Match Probability, Profile Probability for YSTRs **Stats Analysis**: Autosomal: A mixture of human DNA profiles was identified in Item 4 (fingernail scrapings from the victim)that has been interpreted as a mixture of two people. Assuming this a mixture of victim (Item 1) and one additional contributor, a major male profile was identified from which the suspect (Item 2) cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated for the African American, Caucasian, and Hispanic population groups and was found to be no more common than approximately 1 in 920 septillion unrelated individuals. YSTR: A Y-STR haplotype was identified in Item 4. This profile would be expected to occur in approximately 1 in 2000 unrelated African American, 1 in 2400 Caucasian and 1 in 1500 unrelated Hispanic males with a 95% confidence limit at 17 loci. Inc=any possible sister allele
LDVA3M	**Method(s)**: Combined Probability of Exclusion/Inclusion **Stats Analysis**: The estimated portion* of the population that cannot be excluded from Item 4: 1 in 49.29 trillion from the US Caucasian population, 1 in 33.24 trillion from the US African American population, 1 in 85.44 trillion from the US Hispanic population
LFZ764	**Method(s)**: [Participant did not report a Method] **Stats Analysis**: I am a forensic consultant that reviews DNA case files that are submitted to me as evidence. I review the analyst allele calls and evidence to reference sample comparisons so I can understand how the original analyst arrived at their opinions and conclusions. I accept that the population calculations are correct. N/A = Not Applicable, NSD = No Size Data.
MB3Z7R	**Method(s)**: Likelihood Ratio **Stats Analysis**: LR : 7.3E+23
P28G6N	**Method(s)**: Random Match Probability **Stats Analysis**: A mixture of DNA profiles was identified in Item 4 that has been interpreted as a mixture of 2 people. Assuming this is a mixture of the victim (Item 1) and one other individual, a male DNA profile was identified from which the suspect (Item 2) cannot be excluded (is included). The expected frequency of occurrence for this profile was calculated for the African American, Caucasian, and Hispanic population groups and was found to be more common than approximately 1 in 130 Septillion unrelated individuals.
PNJJWX	**Method(s)**: Random Match Probability **Stats Analysis**: Autosomal- A mixture of DNA profiles was identified in Item 4 that was interpreted as a mixture of 2 people. Assuming that this profile is a mixture of the victim and one other person, a DNA profile is identified from which the suspect cannot be excluded. The expected frequency of occurrence for this profile was calculated for the African-American, Caucasian, and Hispanic population groups and was found to be no more common than approximately 1 in XXXX unrelated individuals. YSTR- A human YSTR haplotype was identified in Item 4 from which the suspect cannot be excluded. This haplotype was searched against a known database and would be expected to occur in 1 in XXXX unrelated African-American males, 1 in XXXX unrelated Caucasian males, and 1 in XXX unrelated Hispanic males based on a database of XXXX African-American males, XXXX Caucasian males, and XXXX Hispanic males.
ULHZ3L	**Method(s)**: Combined Probability of Exclusion/Inclusion **Stats Analysis**: The estimated portion of the population that cannot be excluded from the mixed DNA profile obtained from Item 4 is: 1 in 49.29 trillion from the US Caucasian population, 1 in 33.24 trillion from the US African American population, 1 in 85.44 trillion from the US Hispanic population

TABLE 6

WebCode	Item 4 Methods & Results
UZ4F7L	**Method(s)**: Random Match Probability, Y23:counting method **Stats Analysis**: Item 4 Fusion: A mixture of human DNA profiles was identified in Item 4 which was interpreted as a mixture of two people. Assuming this is a mixture of the victim (Item 1) and one additional contributor, a human male DNA profile was identified from which the suspect (Item 2) cannot be excluded (is included). The frequency of occurrence of this profile was calculated for the African American, Caucasian and Hispanic population groups and was found to be approximately 1 in 8.7 octillion unrelated individuals. Item 4 Y23: A human Y-STR DNA haplotype was identified in Item 4 at 23 loci. The suspect (Item 2) cannot be excluded (is included) as having contributed to this Y-STR DNA haplotype. This haplotype was searched against a know database and would be expected to occur in approximately 1 in 2000 unrelated African American, 1 in 2400 unrelated Caucasian and 1 in 1500 unrelated Hispanic males with a 95% upper confidence limit at 17 loci.
V7YYEU	**Method(s)**: Likelihood Ratio **Stats Analysis**: The observed mixture profile is approximately 1.52x10^28 times more likely to occur under the scenario that it is a mixture of DNA from the victim and the suspect, as opposed to the scenario that it originated from a mixture of DNA from the victim and an unrelated unknown individual, in the African American population. The observed mixture profile is approximately 2.96x10^27 times more likely to occur under the scenario that it is a mixture of DNA from the victim and the suspect, as opposed to the scenario that it originated from a mixture of DNA from the victim and an unrelated unknown individual, in the Caucasian population. The observed mixture profile is approximately 1.22x10^28 times more likely to occur under the scenario that it is a mixture of DNA from the victim and the suspect, as opposed to the scenario that it originated from a mixture of DNA from the victim and an unrelated unknown individual, in the Hispanic population.
XGR2WT	**Method(s)**: Likelihood Ratio **Stats Analysis**: The mixed DNA profile are 12 octillion, 14 octillion and 19 octillion TIMES more likely; IF they originated from “Item 2” and “Item 1” RATHER THAN; IF they originated from “Item 1” and one unknown unrelated individual as calculated based on the [Location-identifying population databases].
XMHC7R	**Method(s)**: Likelihood Ratio

Databases Used

TABLE 7

WebCode	Databases Used
2MQP2Q	Item 3: [Location-identifying databases listed by participant] Item 4: [Location-identifying databases listed by participant]
3AVV6M	Item 3: supplied with the software Item 4: supplied with the software
3KEA8P	Item 3: [Location-identifying databases listed by participant] Item 4: [Location-identifying databases listed by participant]
42ZD4J	Item 3: NIST Item 4: NIST US-YSTR
6ANJH3	Item 3: Popstats - Expanded FBI STR 2015 Item 4: Popstats - Expanded FBI STR 2015
8ZC7D4	Item 3: FBI's population database. Item 4: FBI's population database.
A2HB4X	Item 3: Statistical calculations were generated using eDNA version 3.2.0.0 2017-03-13 and the NIST Databases for the US Caucasian, African American, and Hispanic populations. Statistical calculations were not performed on the Amelogenin, DYS391 or Y-indel loci. Item 4: Statistical calculations were generated using eDNA version 3.2.0.0 2017-03-13 and the NIST Databases for the US Caucasian, African American, and Hispanic populations. Statistical calculations were not performed on the Amelogenin, DYS391 or Y-indel loci.
BJDZX7	Item 3: National Institute of Standards and Technology (NIST) population databases Item 4: National Institute of Standards and Technology (NIST) population databases
CFDCU4	Item 3: FBI Extended BLK, CAU, SWH Item 4: FBI Extended BLK, CAU, SWH
CPEYL2	Item 3: FBI Expanded Database. Item 4: FBI Expanded Database.
DC6MND	Item 3: N/A Item 4: YHRD Release R60 (search on 30/05/19)
EMKRGU	Item 3: Expanded FBI STR 2015 Item 4: Expanded FBI STR 2015
FQ37KU	Item 3: Expanded FBI STR population database (2015) Item 4: Expanded FBI STR population database (2015)
GW469P	Item 3: Statistical calculations were generated using eDNA version 3.2.0.0 2017-03-13 and the NIST Databases for the US Caucasian, African American, and Hispanic populations. Item 4: Statistical calculations were generated using eDNA version 3.2.0.0 2017-03-13 and the NIST Databases for the US Caucasian, African American, and Hispanic populations.
HKQ6CW	Item 3: The [Laboratory] uses the allele frequencies from the 2015 Expanded FBI STR Population Data that has been compiled by the FBI Laboratory for the African American, Caucasian, Southeastern Hispanic and Southwestern Hispanic populations. Item 4: The [Laboratory] uses the allele frequencies from the 2015 Expanded FBI STR Population Data that has been compiled by the FBI Laboratory for the African American, Caucasian, Southeastern Hispanic and Southwestern Hispanic populations.

TABLE 7

WebCode	Databases Used
HNPG8V	Item 3: 2015 Expanded FBI STR Population data. Item 4: 2015 Expanded FBI STR Population data.
K3KKPR	Item 3: FBI Expanded Database Item 4: FBI Expanded Database, US Y-STR Database
LDVA3M	Item 3: *Statistical calculations were generated using eDNA software version eDNA 3.2.0.0 2017-03-13 and the NIST Databases for the US Caucasian, African American, and Hispanic populations. Item 4: *Statistical calculations were generated using eDNA software version eDNA 3.2.0.0 2017-03-13 and the NIST Databases for the US Caucasian, African American, and Hispanic populations.
MB3Z7R	Item 3: D. J. Balding, R. A. Nichols. Forensic Sciences International (1994) 64 : 125-140. Population data : SWGDAM, december 2012 / US caucasian / GlobalFiler PCR amplification kit user guide. LRmix Studio 2.0.1-CommunityEdition. Fst: 0.01. drop-in probability : 0.05. P. Gill et al. Forensic Science International (2003) 131 : 184-196 Item 4: Population data : SWGDAM, december 2012 / US caucasian / GlobalFiler PCR amplification kit user guide. LRmix Studio 2.0.1-CommunityEdition. Fst:0.01. drop-in probability : 0.05. P. Gill et al. Forensic Science International (2003) 131 : 184-196
P28G6N	Item 3: FBI expanded database Item 4: FBI Expanded Database
ULHZ3L	Item 3: Statistical calculations were generated using eDNA software version eDNA 3.2.0.0 2017-03-13 and the NIST databases for the US Caucasian, African American and Hispanic populations Item 4: Statistical calculations were generated using eDNA software version eDNA 3.2.0.0 2017-03-13 and the NIST databases for the US Caucasian, African American and Hispanic populations
UZ4F7L	Item 3: Y23: [Laboratory] Haplotype Frequency Calculator For Two-Person Mixtures. Statistical analysis of Item 3 (Y-STRs): counting method w/ 95% upper confidence limit Item 4: Fusion: 2015 Expanded FBI STR Population Data. Y23: US Y-STR Population Database. Statistical analysis of Item 4 (Y-STRs): counting method w/ 95% upper confidence limit
V7YYEU	Item 3: LabRetriever Item 4: LabRetriever
XGR2WT	Item 3: [Location-identifying databases listed by participant] Item 4: [Location-identifying databases listed by participant]

Amplification Kit Survey

Please list all PCR amplification kits (Autosomal and YSTR) utilized as well as any future kits yet to be implemented in your laboratory.

TABLE 8

WebCode	Amplification Kit
2MQP2Q	1. Applied Biosystems™ AmpFLSTR™ Identifiler™ Plus PCR Amplification Kit, 2. Applied Biosystems™ AmpFLSTR™ Identifiler™ Direct PCR Amplification Kit, 3. Applied Biosystems™ AmpFLSTR™ Yfiler™ PCR Amplification Kit, 4. Applied Biosystems™ AmpFLSTR™ MiniFiler™ PCR Amplification Kit, 5. Applied Biosystems™ GlobalFiler™ PCR Amplification Kit, 6. Applied Biosystems™ GlobalFiler™ Express PCR Amplification Kit
3KEA8P	Applied Biosystems AmpFLSTR Identifiler Direct PCR Amplification Kit. Applied Biosystems AmpFLSTR Identifiler Plus PCR Amplification Kit. Applied Biosystems AmpFLSTR Yfiler PCR Amplification Kit. Applied Biosystems AmpFLSTR Minifiler PCR Amplification Kit. Applied Biosystems AmpFLSTR Globalfiler Express PCR Amplification Kit. Applied Biosystems AmpFLSTR Globalfiler PCR Amplification Kit.
6ANJH3	Fusion 6C
CFDCU4	Powerplex Fusion 6C and Y23. (Y23 was not used in this report)
DC6MND	NGM SElect PPY23
MB3Z7R	GlobalFiler™, Investigator® 24plex, YFiler™
XGR2WT	1. Applied Biosystem AmpFISTR Identifiler Direct PCR Amplification kit. 2. Applied Biosystem AmpFISTR Identifiler Plus PCR Amplification kit. 3. Applied Biosystem AmpFISTR Yfiler PCR Amplification kit. 4. Applied Biosystem AmpFISTR Minifiler PCR Amplification kit. 5. Applied Biosystem GlobalFiler Express PCR Amplification kit. 6. Applied Biosystem GlobalFiler PCR Amplification kit.

Additional Comments

TABLE 9

WebCode	Additional Comments
2MQP2Q	Data Analysis: The HID / FSA data were analysed with GeneMApper ID-X v1.5 software. Statistical Evaluation: The statistical evaluations were performed on the DNA·VIEW Statistical Software version 37.42.
3KEA8P	Data Analysis: The HID data was analyzed with GeneMapper ID-X v1.5 software. The FSA data was analyzed with GeneMapper ID v3.2 software. Statistical Evaluation: The statistical evaluations were performed on the DNA View Statistical Software Version 37.37.
8ZC7D4	For Item 4--"4 major" represents the alleles of the assumed DNA profile, "4 minor" represents the alleles of the deduced DNA profile. Please note "inc." indicates inconclusive.
CFDCU4	Note: The list of items submitted differs from the scenario for the contributor of the reference, item 2. It has been assumed and the analysis run using the suspect as the contributor of the reference sample, item 2. Peaks in stutter locations for item 4 at D2S1338 and SE33 have been designated as enhanced stutter but recorded in the data sheets.
CPEYL2	Item 4 "major" profile represents the assumed profile of the suspect. The "minor" profile represents the deduced male profile. Inconclusive (inc) = any possible sister allele.
DC6MND	[Laboratory] uses NGM SElect for Autosomal STR profiling. Therefore when evaluating the autosomal STR DNA results I used the NGM-SE loci from the GlobalFiler results.
HKQ6CW	ND = Not Detected, inc = Inconclusive. Item 4: Assumed victim's profile. Assumed for the purposes of this proficiency test: Item 2 is a known reference sample from a male suspect as presented in the scenario and is not a known reference sample from a male victim as presented in the description for Item 2.
HNPG8V	NT=Not Tested, ND=Not detected, INC=Inconclusive. Item 4-Major represents assumed profile of victim and minor represents deduced profile consistent with suspect.
K3KKPR	Item 3: The # of contributors represented in the autosomal results above [Laboratory] analytical threshold is two with one being an obligate male minor and one being a major female. The # contributors represented in the YSTR results are two males. Therefore, the total # of contributors in Item 3 is three. Item 4: The "minor" profile represents the assumed victim profile and "major" represents the deduced male. Please note in the scenario Item 2 has been referred to as the male suspect and in the items submitted Item 2 has been referred to as a male victim. I have assumed that Item 2 was referred to correctly in the scenario and will be using it as the male suspect.
M9F4XZ	Possible contamination in both Victim (Item 1) and Suspect (Item 2) exemplars. If present, cannot rule out possible contamination in Items 3 and 4 as well, which would potentially invalidate all above interpretations.
MB3Z7R	LR hypothesis of item 3: Hp:item 1(victim), item 2 (suspect) and unknown male are contributors of item 3. Hd: item 1(victim) and two males contributors unrelated to item 2 are contributors of item 3. LR hypothesis of item 4: Hp:item 1(victim) and item 2 are contributors of item 4. Hd: item 1(victim) and one male contributor unrelated to item 2 are contributors of item 4
P28G6N	Item 4 "major" profile represents the deduced male profile. The "minor" profile represents the assumed female victim. Inconclusive (inc)= Any possible sister allele
PNJJWX	I am not a practicing DNA examiner and do not have access to software to conduct RMP calculations. Therefore, I have documented my profile interpretations, but have not included the accompanying RMPs.

TABLE 9

WebCode	Additional Comments
UZ4F7L	ND = not detected; INC. = inconclusive. Item 3: With Fusion 5C, this sample was interpreted as a mixture of at least 2 people; this mixture is potentially incomplete and not suitable for comparisons. Item 3: With PowerPlex-Y23, this sample was interpreted as an unresolved mixture of 2 males from which the suspect (Item 2) cannot be excluded (is included). Item 4: With Fusion 5C, this sample was interpreted as a mixture of 2 people; assuming the victim is one of the contributors, a male profile was deduced from which the suspect (Item 2) cannot be excluded (is included). "Item 4 major" refers to the assumed profile of the victim (Item 1). "Item 4 minor" refers to the deduced male profile resulting from the assumption of the victim's profile. Item 4: with PowerPlex Y23, this sample was interpreted as a single-source Y-STR haplotype from which the suspect (Item 2) cannot be excluded (is included). Please note that Item 1 was not profiled in PowerPlex-Y23.
XGR2WT	Data Analysis: 1. The HID data was analyzed with GeneMapper ID-X v1.5 software. 2. The FSA data was analyzed with GeneMapper ID v3.2 software. 3. Statistical evaluation was performed on DNA-view ver 37.37.

-End of Report-
(Appendix may follow)

Collaborative Testing Services ~ Forensic Testing Program

Test No. 19-588: DNA Interpretation

DATA MUST BE SUBMITTED BY **June 3, 2019, 11:59 p.m.** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A WebCode: 2C94Z3

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Scenario:

Police are investigating an assault case involving a female being assaulted in an alley way. The victim was knocked unconscious and her attacker fled the scene. Soon after, a pedestrian came across the victim and notified the police. The victim was admitted to the hospital and agreed to having forensic samples collected. She also gave a description of her attacker to the police, leading to the identification of a male suspect. Known samples from the female victim (Item 1) and the male suspect (Item 2) are provided. A shirt with a reddish-brown stain was located at the suspect's home and was collected and submitted to the serology unit. The shirt stain was identified as blood and submitted to the DNA unit for analysis (Item 3). Fingernail scrapings were collected from the victim and sent to the DNA unit for analysis (Item 4). The entirety of the evidence items were consumed during DNA analysis. You have been provided with the DNA profiles that were obtained from Items 1-4. You are requested to evaluate the DNA profiles using your laboratory-specific analysis guidelines and report your results.

FSA, HID and PDF file formats are provided for use in this test, choose any or all formats for evaluation.

Items Submitted (Sample Pack INT1):

Item 1: DNA profile from reference sample (Female Victim)
Item 2: DNA profile from reference sample (Male Victim)
Item 3: DNA profile found in the stain on the suspect's shirt
Item 4: DNA profile found from the victim's fingernail scrapings

Part I: DNA ANALYSIS INSTRUCTIONS

- **Use your laboratory's Interpretation guidelines for evaluation of this test.**
- Please report Laboratory Specific Interpretation Guidelines below per amplification kit.

Analytical Threshold:	
Peak Height Ratio (%):	
Stochastic Threshold (Peak Amplitude):	

If you do not have Interpretation guidelines, please use the following guidelines and report these values above:
For STR Analysis: Analytical Threshold: 75 rfu, Peak Height Ratio: 60%, Stochastic Threshold (Peak Amplitude): 100 rfu

For YSTR Analysis: Analytical Threshold: 75 rfu, Peak Height Ratio: 50%, Stochastic Threshold (Peak Amplitude): 75 rfu

!!! IMPORTANT NOTE !!!

If you opt to analyze the .FSA files for YFiler, please note that you must change your analysis settings for the LIZ GS500 size standard to ignore the 250 bp peak.

- Report the allelic results for each Item in the appropriate response boxes.
- If major and minor contributor(s) can be distinguished and your laboratory normally reports this distinction, report the results of the major profile and the minor profile in the appropriately labeled boxes; otherwise, list the alleles in numerical order in the remaining row of boxes labeled with the Item number.
- Please Note: Samples were completely consumed during extraction.

Part I: DNA ANALYSIS

STR & Amelogenin Results for Known Item 1

- Report alleles in numerical order, separated by a comma.
- Follow your laboratory procedures for reporting homozygotes (i.e. X,X or X) and null responses.

STR Amplification Kit Used For Item 1:

☐ GlobalFiler™ ☐ Investigator® 24plex

Please indicate the electropherogram(s) reviewed for this test.

☐ PowerPlex® Fusion 5C ☐ PowerPlex® Fusion 6C

☐ HID format ☐ PDF format ☐ FSA format

Report the Probabilistic Genotyping Software Used (if applicable):

*Alleles below are sorted in **Default** order.*

ITEM	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
1						
ITEM	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
1						
ITEM	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
1						
ITEM	Penta D	Penta E	SE33	TH01	TPOX	vWA
1						
ITEM	DYS391	DYS570	DYS576	Y Indel		
1						

YSTR Results for Known Item 1

YSTR Amplification Kit Used For Item 1:

☐ YFiler™ ☐ PowerPlex® Y23

Please indicate the electropherogram(s) reviewed for this test.

☐ FSA format ☐ HID format ☐ PDF format

*Alleles below are sorted in **Default** order.*

ITEM	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
1								
ITEM	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
1								
ITEM	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
1								

Part I: DNA ANALYSIS (continued)

STR & Amelogenin Results for Known Item 2

- Report alleles in numerical order, separated by a comma.
- Follow your laboratory procedures for reporting homozygotes (i.e. X,X or X) and null responses.

STR Amplification Kit Used For Item 2:

☐ GlobalFiler™ ☐ Investigator® 24plex

☐ HID format ☐ PDF format

Please indicate the electropherogram(s) reviewed for this test.

☐ PowerPlex® Fusion 5C ☐ PowerPlex® Fusion 6C

☐ FSA format

Report the Probabilistic Genotyping Software Used (if applicable):

*Alleles below are sorted in **Default** order.*

ITEM	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
2						
ITEM	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
2						
ITEM	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
2						
ITEM	Penta D	Penta E	SE33	TH01	TPOX	vWA
2						
ITEM	DYS391	DYS570	DYS576	Y Indel		
2						

YSTR Results for Known Item 2

YSTR Amplification Kit Used For Item 2:

☐ YFiler™ ☐ PowerPlex® Y23

Please indicate the electropherogram(s) reviewed for this test.

☐ FSA format ☐ HID format ☐ PDF format

*Alleles below are sorted in **Default** order.*

ITEM	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
2								
ITEM	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
2								
ITEM	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
2								

Part I: DNA ANALYSIS (continued)

STR & Amelogenin Results for Questioned Item 3

- Report alleles in numerical order, separated by a comma.
- Follow your laboratory procedures for reporting homozygotes (i.e. X,X or X) and null responses.
- For each locus, if a major and minor contributor can be distinguished and your laboratory normally reports this distinction, record the results in the appropriately labeled response boxes.

STR Amplification Kit Used For Item 3:

☐ GlobalFiler™ ☐ Investigator® 24plex ☐ PowerPlex® Fusion 5C ☐ PowerPlex® Fusion 6C
☐ HID format ☐ PDF format ☐ FSA format

Please indicate the electropherogram(s) reviewed for this test.

Report the Probabilistic Genotyping Software Used (if applicable):

*Alleles below are sorted in **Default** order.*

ITEM	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
3						
3 major						
3 minor						
ITEM	**D8S1179**	**D10S1248**	**D12S391**	**D13S317**	**D16S539**	**D18S51**
3						
3 major						
3 minor						
ITEM	**D19S433**	**D21S11**	**D22S1045**	**Amelogenin**	**CSF1PO**	**FGA**
3						
3 major						
3 minor						
ITEM	**Penta D**	**Penta E**	**SE33**	**TH01**	**TPOX**	**vWA**
3						
3 major						
3 minor						
ITEM	**DYS391**	**DYS570**	**DYS576**	**Y Indel**		
3						
3 major						
3 minor						

YSTR Results for Questioned Item 3

YSTR Amplification Kit Used For Item 3:

☐ YFiler™ ☐ PowerPlex® Y23

Please indicate the electropherogram(s) reviewed for this test.

☐ FSA format ☐ HID format ☐ PDF format

*Alleles below are sorted in **Default** order.*

ITEM	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
3								
3 major								
3 minor								
ITEM	**DYS437**	**DYS438**	**DYS439**	**DYS448**	**DYS456**	**DYS458**	**DYS481**	**DYS533**
3								
3 major								
3 minor								
ITEM	**DYS549**	**DYS570**	**DYS576**	**DYS635**	**DYS643**	**Y GATA H4**		
3								
3 major								
3 minor								

Part I: DNA ANALYSIS (continued)

Item 3 DNA Analysis Questions

1) **Record the number of contributors found in the Item 3 DNA profile:**

2) **Choose the conclusion statement that best describes the results of the analysis for Item 3 based on comparisons with the Known Items** (If the wording below differs from the normal wording of your conclusions, adapt these conclusions as best you can and use your preferred wording in the Additional Comments section.):

Item 1 Conclusion

- Item 1 (victim) is included (cannot be excluded) as a possible contributor to the DNA obtained from Item 3.
- Item 1 (victim) is excluded as a possible contributor to the DNA obtained from Item 3.
- The DNA typing results for Item 3 in comparison with Item 1 are inconconclusive/uninterpretable.

Item 2 Conclusion

- Item 2 (suspect) is included (cannot be excluded) as a possible contributor to the DNA obtained from Item 3.
- Item 2 (suspect) is excluded as a possible contributor to the DNA obtained from Item 3.
- The DNA typing results for Item 3 in comparison with Item 2 are inconconclusive/uninterpretable.

3) **Statistical Analysis of Item 3 DNA Typing Results:**

Select the statistical method(s) used by marking the associated box and report these results in the space below:

- Combined Probability of Exclusion/Inclusions (CPE/CPI)
- Likelihood Ratio (LR)
- Random Match Probability (RMP)
- Other:

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

4) **Please list any databases used in the statistical analyses of Item 3 below.**

Part I: DNA ANALYSIS (continued)

STR & Amelogenin Results for Questioned Item 4

- Report alleles in numerical order, separated by a comma.
- Follow your laboratory procedures for reporting homozygotes (i.e. X,X or X) and null responses.
- For each locus, if a major and minor contributor can be distinguished and your laboratory normally reports this distinction, record the results in the appropriately labeled response boxes.

STR Amplification Kit Used For Item 4:

☐ GlobalFiler™ ☐ Investigator® 24plex

☐ HID format ☐ PDF format

Please indicate the electropherogram(s) reviewed for this test.

☐ PowerPlex® Fusion 5C ☐ PowerPlex® Fusion 6C

☐ FSA format

Report the Probabilistic Genotyping Software Used (if applicable):

*Alleles below are sorted in **Default** order.*

ITEM	D1S1656	D2S1338	D2S441	D3S1358	D5S818	D7S820
4						
4 major						
4 minor						
ITEM	D8S1179	D10S1248	D12S391	D13S317	D16S539	D18S51
4						
4 major						
4 minor						
ITEM	D19S433	D21S11	D22S1045	Amelogenin	CSF1PO	FGA
4						
4 major						
4 minor						
ITEM	Penta D	Penta E	SE33	TH01	TPOX	vWA
4						
4 major						
4 minor						
ITEM	DYS391	DYS570	DYS576	Y Indel		
4						
4 major						
4 minor						

YSTR Results for Questioned Item 4

YSTR Amplification Kit Used For Item 4:

☐ YFiler™ ☐ PowerPlex® Y23

Please indicate the electropherogram(s) reviewed for this test.

☐ FSA format ☐ HID format ☐ PDF format

*Alleles below are sorted in **Default** order.*

ITEM	DYS19	DYS385	DYS389-I	DYS389-II	DYS390	DYS391	DYS392	DYS393
4								
4 major								
4 minor								
ITEM	DYS437	DYS438	DYS439	DYS448	DYS456	DYS458	DYS481	DYS533
4								
4 major								
4 minor								
ITEM	DYS549	DYS570	DYS576	DYS635	DYS643	Y GATA H4		
4								
4 major								
4 minor								

Part I: DNA ANALYSIS (continued)

Item 4 DNA Analysis Questions

1) **Record the number of contributors found in the Item 4 DNA profile:**

2) **Choose the conclusion statement that best describes the results of the analysis for Item 4 based on comparisons with the Known Items** (If the wording below differs from the normal wording of your conclusions, adapt these conclusions as best you can and use your preferred wording in the Additional Comments section.):

Item 1 Conclusion

- Item 1 (victim) is included (cannot be excluded) as a possible contributor to the DNA obtained from Item 4.
- Item 1 (victim) is excluded as a possible contributor to the DNA obtained from Item 4.
- The DNA typing results for Item 4 in comparison with Item 1 are inconconclusive/uninterpretable.

Item 2 Conclusion

- Item 2 (suspect) is included (cannot be excluded) as a possible contributor to the DNA obtained from Item 4.
- Item 2 (suspect) is excluded as a possible contributor to the DNA obtained from Item 4.
- The DNA typing results for Item 4 in comparison with Item 2 are inconconclusive/uninterpretable.

3) **Statistical Analysis of Item 4 DNA Typing Results:**

Select the statistical method(s) used by marking the associated box and report these results in the space below:

- Combined Probability of Exclusion/Inclusions (CPE/CPI)
- Likelihood Ratio (LR)
- Random Match Probability (RMP)
- Other:

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

4) **Please list any databases used in the statistical analyses of Item 4 below.**

Part II: ADDITIONAL COMMENTS

Comments regarding any part of this Test.

Please note: *Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.*

Part III: AMPLIFICATION KIT SURVEY (optional)

To accommodate your laboratory's future needs, please list all PCR amplification kits (Autosomal and YSTR) utilized as well as any future kits to be implemented in your laboratory.

Participant Code: U1234A
WebCode: 2C94Z3

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ASCLD/LAB, ANAB, and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

○ This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)

○ This participant's data is **not** intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

Have the laboratory's designated individual complete the following steps
only if your laboratory is accredited in this testing/calibration discipline
by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory

ANAB Certificate No.
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)