New York State Police TrueAllele® Validation

New York State DNA Subcommittee
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Property Crime Study

Materials
• 25 property crime cases
• 91 evidence items
• nonsuspect reference comparison

Match information results
• human: 6 CMPs reported
• computer: 33 LRs reported

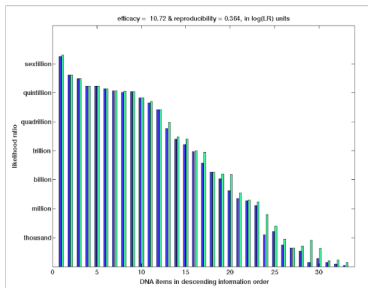# Efficacy and Reproducibility

Sensitivity and Specificity

Within-case sensitivity
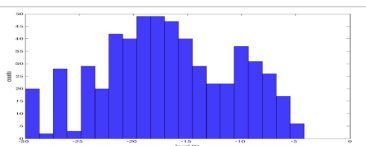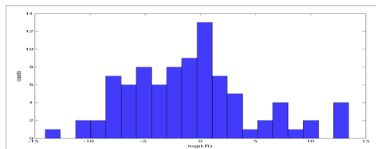
Between-case specificity

Evidence-to-evidence

Within-case sensitivity
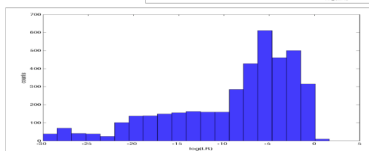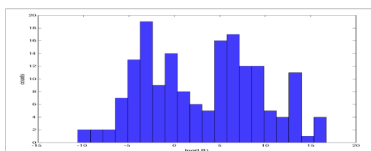
Between-case specificity

Preserving Identification Information
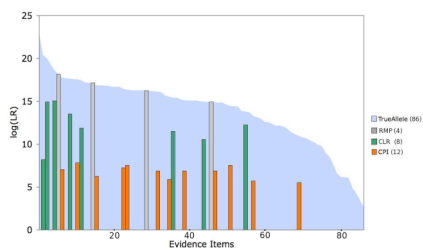
Solving Unsolved Cases
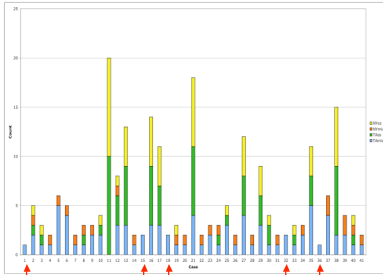
Complex Case

- 30 evidence items
- 6 known references
- genotype: 36 items
- compare: 180 pairs

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item	1F1	1G1	A1H1	A1I1	A1J1	A1K1
1A2	14.65					
1E1	14.65					
1E3	14.65					
1E5	14.64					
1E6				9.11		
1E7				4.11		
1H-I	6.55					
1J-L						
2A1A	14.65					
2E1A	14.65					
2E1C	14.65					
2E1F	14.65					
2E1H						
2E2A	14.65					
2E2B	14.65					
2E2C			12.40			
2E2D			6.98			
2E2E						
2F-H						
2I-J						
2K	14.65					
2L-N						
2O						
3D-E						
3F-H						
3I-K						
3L-N						
4D						
4E						
4F						

item	1F1	1G1	A1H1	A1I1	A1J1	A1K1	jane1	john1
1A2	14.65							
1E1	14.65							
1E3	14.65							
1E5	14.64						14.40	
1E6				9.11				
1E7				4.11				
1H-I	6.55						10.53	
1J-L								
2A1A	14.65							
2E1A	14.65							
2E1C	14.65							
2E1F	14.65							
2E1H								
2E2A	14.65							
2E2B	14.65							
2E2C			12.40					
2E2D			6.98					
2E2E								
2F-H								
2I-J								
2K	14.65							
2L-N								
2O								
3D-E								
3F-H								
3I-K							14.50	
3L-N							10.02	
4D								13.60
4E								13.23
4F								13.16

item	**1F1**	1G1	**A1H1**	A1I1	A1J1	A1K1	jane1	john1
1A2	14.65							
1E1	14.65							
1E3	14.65							
1E5	14.64						14.40	
1E6				9.11				
1E7				4.11				
1H-I	6.55						10.53	
1J-L								
2A1A	14.65							
2E1A	14.65							
2E1C	14.65							
2E1F	14.65							
2E1H			**6.44**					
2E2A	14.65							
2E2B	14.65							
2E2C			12.40					
2E2D			6.98					
2E2E			**6.44**					
2F-H								
2I-J								
2K	14.65							
2L-N								
2O								
3D-E								
3F-H								
3I-K							14.50	
3L-N							10.02	
4D								13.60
4E								13.23
4F								13.16

item	**1F1**	1G1	A1H1	A1I1	A1J1	A1K1	**jane1**	john1
1A2	14.65							
1E1	14.65							
1E3	14.65							
1E5	14.64						14.40	
1E6				9.11				
1E7				4.11				
1H-I	6.55						10.53	
1J-L								
2A1A	14.65							
2E1A	14.65							
2E1C	14.65							
2E1F	14.65							
2E1H			6.44					
2E2A	14.65							
2E2B	14.65							
2E2C			12.40					
2E2D			6.98					
2E2E			6.44					
2F-H								
2I-J								
2K	14.65							
2L-N								
2O								
3D-E								
3F-H								
3I-K	**5.34**						**13.77**	
3L-N	**5.34**						**13.77**	
4D								13.60
4E								13.23
4F								13.16

Genotype Report

locus	allele 1	allele 2	probability
AMELO	1	1	1
CSF1PO	10	11	0.95
D13S317	9	13	0.99
D16S539	12	12	1
D18S51	12	18	0.96
D19S433	11	13	0.99
D21S11	30	31.2	0.95
	30	30	0.05
D2S1338	21	24	0.9
	17	24	0.07
D3S1358	17	18	0.98
D5S818	12	15	1
D7S820	9	11	0.92
	8	9	0.05
D8S1179	11	13	0.99
FGA	20.2	23	0.89
	20	23	0.04
	23	23	0.01
	21	23	0.01
TH01	7	9	0.99
TPOX	8	11	0.99
vWA	14	19	1

Probabilistic genotype: SWGDAM 3.2.2, ANSI/NIST 18.020

Match Report

log(LR)	US_BLK_FBI	US_CAU_FBI	US_HIS_FBI
CSF1PO	0.92	0.78	0.84
D13S317	2	1.7	1.19
D16S539	1.37	0.9	1.04
D18S51	1.72	1.54	1.82
D19S433	1.34	2.25	2.35
D21S11	1.49	1.28	1.18
D2S1338	1.49	2.06	2.41
D3S1358	1.57	1.13	1.6
D5S818	2.15	2.06	2.14
D7S820	1.1	1.17	1.46
D8S1179	1.68	1.32	1.33
FGA	2.44	2.27	2.31
TH01	0.87	1.21	1.12
TPOX	0.77	0.55	0.51
vWA	1.92	1.7	1.95
Total	**22.84**	**21.92**	**23.27**

A joint log(LR) value of 21.92 is 8.32 sextillion

Conclusions

TrueAllele interpretation of DNA evidence

- information preserving
- reproducible
- sensitive
- specific
- solves unsolved cases
- simplifies complex cases
- easy to use
- easy to report