

Suffolk County TrueAllele® Validation

New York State DNA Subcommittee
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May, 2011



Study Objectives

computer interpretation of DNA mixture evidence

- objectivity
- efficacy
- reproducibility
- "inconclusive"

Range of Cases

Type of Crime	Quantity
arson	1
assault	5
burglary	12
criminal possession of a controlled substance	1
criminal possession of a weapon	3
endangering the welfare of a child	1
larceny	6
rape	24
other sexual assault	5
reckless discharge of a firearm	1
robbery	8
Total	67

Mixture Items

Number of contributors	Quantity
2	87
3	32
4	3
Total number of items	122

Interpretation Methods

human review

- RMP
- CPI
- "inconclusive"

computer review

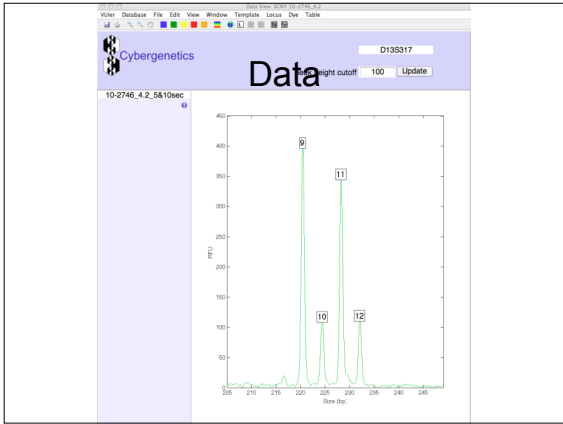
- TrueAllele Casework
- probabilistic genotypes
- likelihood ratio (LR)

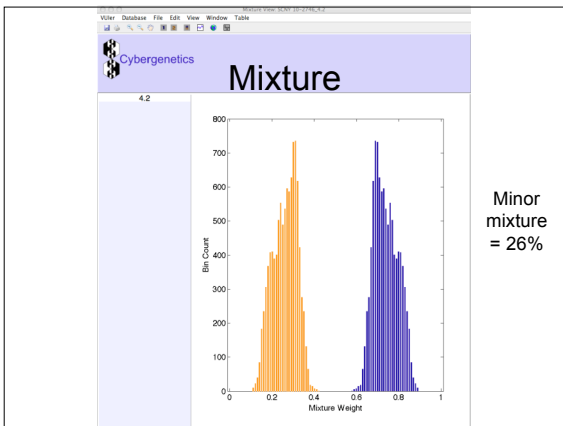
Validation Metrics

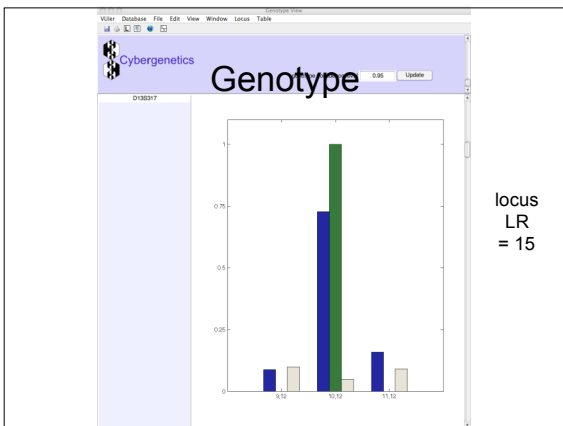
- all the match statistics are LR numbers
- log(LR) is a standard information measure
- compare information results with log(LR)

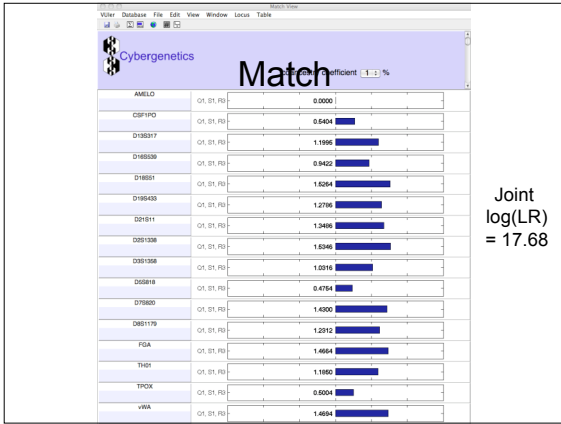
Efficacy: average log(LR) value

Reproducibility: within-item standard deviation









Case Results Comparison

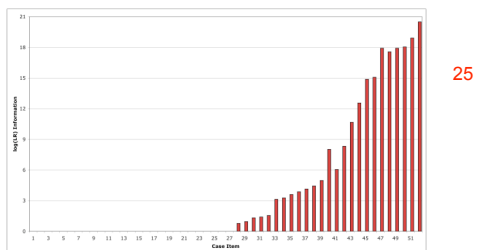
Human: The data are "consistent with" the suspect.

Computer: A match between the evidence and the suspect is 478 quadrillion times more probable than coincidence.

Stratified Information Results

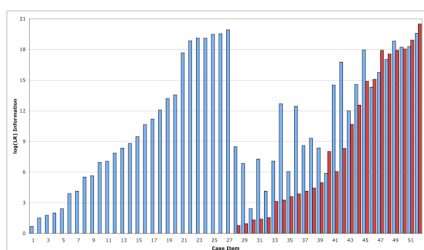
Information	N	Efficacy	Reproducibility	Laboratory	Method	Difference
uninformative	27	10.02	0.510	0.00	None	10.02
< thousand	5	5.83	0.337	1.20	CPI	4.63
< million	7	9.21	0.316	3.91	CPI	5.30
< billion	3	12.39	0.744	7.46	CPI	4.93
> billion	10	16.65	0.125	16.40	RMP	0.24
Total	52	10.92	0.441	4.23	Human	6.69

Suffolk Information



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TrueAllele Information



25
+
27

Conclusions

computer interpretation of DNA mixture evidence

- ✓ objective
- ✓ efficacious
- ✓ reproducible
- ✓ "inconclusive"
