

TrueAllele® Challenges in Court and Culture

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9th Annual DNA Technology Educational Seminar
Centre of Forensic Sciences
and the Promega Corporation
Toronto, Ontario
November, 2012



Cybergenetics

Cybergenetics © 2003-2012



Perlin MW, The Blairsville slaying and the dawn of DNA computing, in *Death Needs Answers: The Cold-Blooded Murder of Dr. John Yelenic*, Niapas A, New Kensington, PA: Grelin Press, 2012.

Commonwealth v. Foley

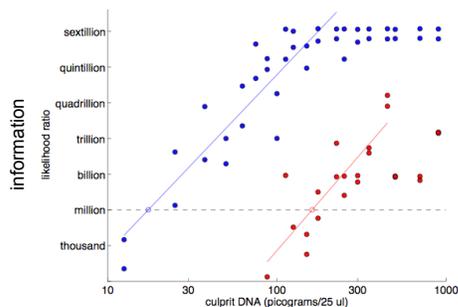
Crime: **Murder**
Evidence: **Victim's fingernails**
Challenge: **Minor 7% DNA mixture**

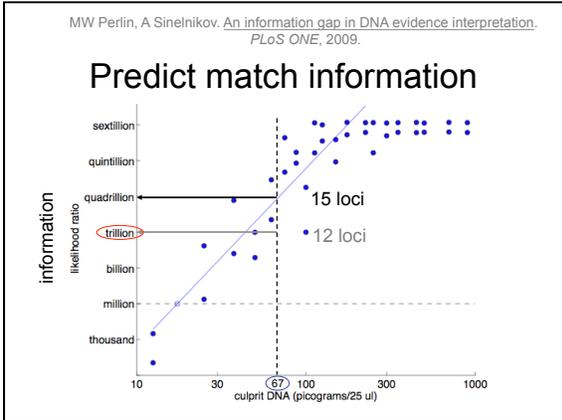
Statistic	Method
13 thousand	inclusion
23 million	obligate allele
189 billion	TrueAllele

Defense: If mixtures are reliable, don't we expect the same information from all methods?

MW Perlin, A Sinelnikov. An information gap in DNA evidence interpretation. *PLoS ONE*, 2009.

TrueAllele v. Inclusion



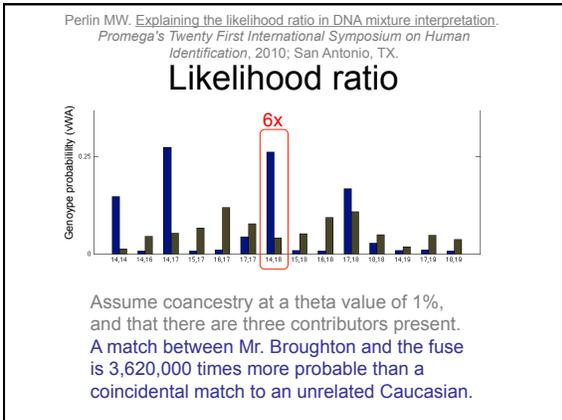


Regina v. Broughton

Crime: **Arson, terror**
 Evidence: **Fuse**
 Challenge: **Low-level DNA mixture**

- low template mixture
- three DNA contributors
- triplicate amplification
- post-PCR enhancement

vWA locus



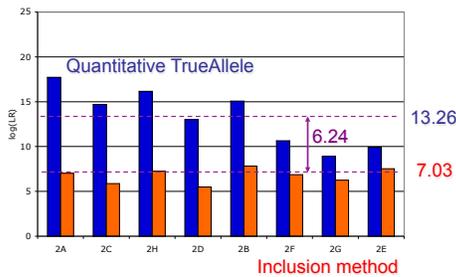
New York State Police validation papers

Perlin MW, Legler MM, Spencer CE, Smith JL, Allan WP, Belrose JL, Duceman BW. [Validating TrueAllele® DNA mixture interpretation](#). *Journal of Forensic Sciences*. 2011;56(6):1430-47.

Perlin MW, Belrose JL, Duceman BW. [New York State TrueAllele® Casework validation study](#). *Journal of Forensic Sciences*. 2013;58(6):in press.

MW Perlin, MM Legler, CE Spencer, JL Smith, WP Allan, JL Belrose, BW Duceman. [Validating TrueAllele® DNA Mixture Interpretation](#). *Journal of Forensic Sciences*, 2011.

Information: sensitivity



New York State Forensic Science regulatory approval



STATE OF NEW YORK
DNA SUBCOMMITTEE
OF THE
COMMISSION ON FORENSIC SCIENCE

May 26, 2011

Honorable Brian

State Police, Acting Commissioner

Chair, Commission on Forensic Science

Division of Criminal Justice Services

4 Tower Place, 10th Floor

Albany, New York 12242-3764

Dear Commissioner Brian:

Per your letter to the DNA Subcommittee

on May 11, 2011, regarding the DNA Subcommittee

request for regulatory approval of the DNA Subcommittee

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Very truly yours,

Jack Belrose

Jack Belrose, Ph.D.

Chair, NY State DNA Subcommittee

Glenn J. Blawie, Esq., Deputy Commissioner & Counsel, DCJS

NY State DNA Subcommittee Member

NY State DNA Subcommittee Member

NY State DNA Subcommittee Member




Regina v. Duffy & Shivers

Crime: **Murder, terror**
 Evidence: **Mobile phone, match stick**
 Challenge: **Low DNA amount; mixtures**



March 7, 2009
 Antrim, Northern Ireland

Real IRA
 claimed responsibility



MW Perlin, *Combining DNA evidence for greater match information*.
 American Academy of Forensic Sciences 64th Annual Meeting,
 Atlanta, GA, February 24, 2012.

Combining DNA evidence

data	singles	pairs	all three
	1.40  25	2.75  560	
	1.43  27	4.60  40,000	6.04  1.1 million
	0.75  6	4.42  26,000	
STR tests	10	20	30

Perlin MW, Galloway J. *Computer DNA evidence interpretation in the Real IRA Massereene terrorist attack*.
 Evidence Technology Magazine, 2012;10(3):20-23.

TrueAllele match statistics



5.91 trillion



6.01 billion



1.1 million



Colin Duffy



Brian Shivers

Admissibility ruling

December 1, 2011
The Honorable Mr. Justice Hart

...
In **Broughton**, Judge Eccles **did not** give a reasoned judgment **explaining his decision**.

...
I am satisfied that the stage has now been reached in the case of this system where it can be regarded as being reliable and accepted, and I am satisfied that Dr Perlin has given his evidence in a credible and reliable fashion. In the light of these conclusions I can see **no basis on which I could properly exercise my discretion ... to exclude this evidence**, and I therefore **admit it in evidence**.

THE HUFFINGTON POST UNITED KINGDOM

DNA Techniques Used In Massereene Conviction Could Pave Way For Future Trials



File Photo 201112 13/12 201112 201112 201112

A pioneering method of genetic analysis could have major implications in future UK trials after helping to deliver a conviction in the Massereene Baracks murder case.

The high-profile case in Antrim saw a pioneering method of analysing genetic samples recovered from a crime scene accepted in a British courtroom for the very first time, opening the way for its use in future trials.

The computer-based statistical technique has emerged as an alternative to the long-established human review process in the last decade.

The True Allele casework system, developed by American scientist Dr Mark Perlin, has been used to examine samples containing mixed DNA traces when traditional lab analysis failed to identify a clear genetic profile of an individual.

After interpreting the sample, Dr Perlin's computer programme derives a likelihood ratio on whether the profile obtained matches a suspect or victim.

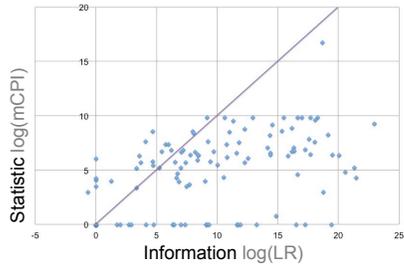


Pennsylvania precedent

Commonwealth v. Kevin Foley
Pennsylvania Superior Court
February 15, 2012

J-A10008-11
2012 PA Super 31
COMMONWEALTH OF PENNSYLVANIA, IN THE SUPERIOR COURT OF PENNSYLVANIA
Appellee
v.
KEVIN JAMES FOLEY, Appellant
No. 2009 WDA 2009
Appeal from the Judgment of Sentence of June 1, 2009
in the Court of Common Pleas of Indiana County,
Criminal Division at Harris: CP-32-CR-00011-09-2007
BEFORE: PAMELLA SHOGAN, and COLVILLE, JJ.
OPINION BY PAMELLA, J. FILED: FEBRUARY 15, 2012
Appellant, Kevin James Foley, appeals from the judgment of sentence entered on June 1, 2009, by the Honorable William J. Martin, President Judge of the Court of Common Pleas of Indiana County, Criminal Division. After careful review, we affirm.
Because Foley has failed to establish the existence of a legitimate dispute over Dr. Perlin's methodology, he has failed to show that Dr. Perlin's testimony constituted "novel" scientific evidence. See *Beitz*, 998 A.2d at 972. Therefore, we find that the trial court's decision to admit the testimony was not an abuse of discretion. Absent a legitimate dispute, there is no reason to "impede admissibility of evidence that will aid the trier of fact in the search for truth." *Id.*

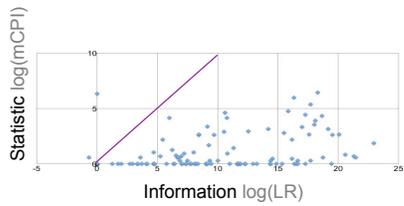
CPI information



Modified CPI information

SWGDM 2010: DNA mixture interpretation guidelines

Interpretation of complex DNA mixtures must account for **data uncertainty**



TrueAllele and the crime lab



Casework system
Interpretation services

More information

<http://www.cybgen.com/information>

- Courses
- Newsletters
- Newsroom
- Presentations
- Publications



Cybergenetics

perlin@cybgen.com
