

National Institute of Justice  
Grantees Meeting 2011

**Using Expert Systems (TrueAllele®)  
for Forensic STR DNA Analysis**

Barry Duceman, PhD  
June 20, 2011

New York State Police  
Forensic Investigation Center

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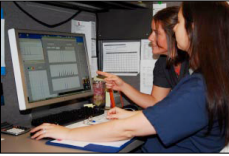
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**NYS OFFENDER DNA DATABANK**

July 2004. *Validation Study of the TrueAllele Automated Data Review System*, Kadash, et al., Journal of Forensic Science



July 2007, Databank Forensic Scientists upload first batch of offender DNA profiles analyzed by TrueAllele® Expert Review system.

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NYSP Forensic Investigation Center  
TrueAllele Production History

Year	Total Samples to CODIS
2010	39,367
2009	32,574
2008	37,895
2007	42,633
<b>Total</b>	<b>152,469</b>

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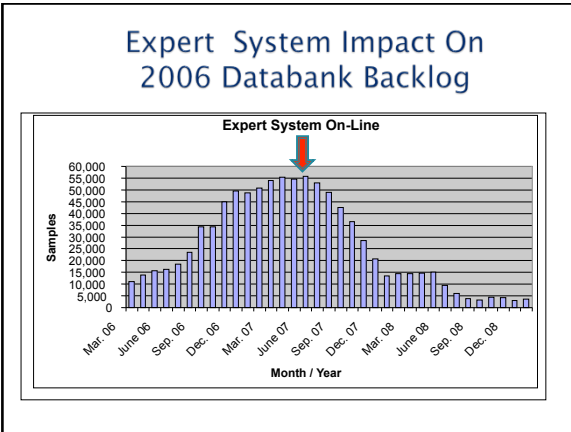
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### DNA Profile Production for Two Analysts Using Two 3100 AB Genetic Analyzers

Month	BODE	In-House	Total
Oct 08	3717	6110	9827
Nov 08	4925	6014	10939
Dec 08	4937	4631	9568
Jan 09	5020	6720	11740
			<b>42074</b>

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- ### TrueAllele Effects on Databank
- Enhanced staff productivity**

  - > Transferred staff to casework unit

**Enhanced data quality**

  - > 85-90% DNA Profiles straight to CODIS

**Increased capacity and throughput**

  - > Target is 14 day turn-around

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*An expert system for DNA Casework*

*Software design features...*

- Easy to use
- Convenient access to the data
- Provides a familiar "feel"
- Analyst formulates requests
- Allows analyst to challenge answers
- Entirely objective
- Standard statistical approach

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*TrueAllele for DNA Casework*

What does the software do?

- Infers genotypes
- Deconvolutes mixtures
- Displays mixing weights
- Establishes matches
- Assigns weights
- Provides reports

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*TrueAllele for Casework*

Key Advantages

- Assured Objectivity
- Enhanced Productivity
- Increased Information

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*TrueAllele for Casework*

**VALIDATION CORE STUDIES**

Study 1: Databank	Concordance, Quality Assessment
Study 2: Sexual Assaults and Homicides	Efficacy (Information), Reproducibility
Study 3: Property Crimes	Sensitivity, Specificity, Ease of Use, Productivity

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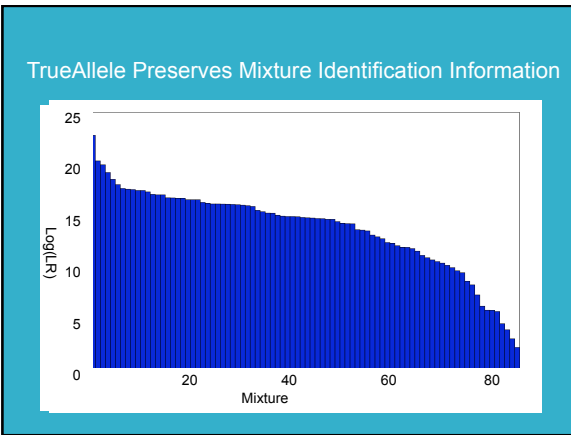
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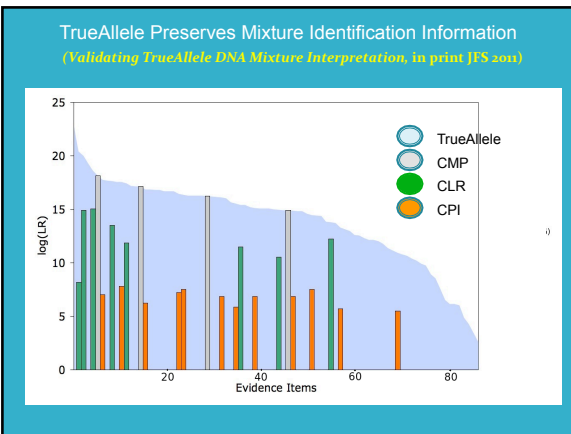
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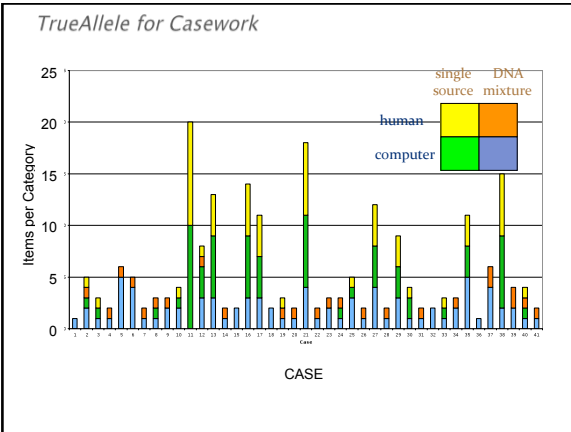
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**Comparison with human review of STR DNA Data**

- ❖ For single source samples, computer provides comparable performance
- ❖ For mixtures, computer provides more information

**The data supports using the software program for all of our DNA casework**

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

May 20, 2011

**Approved**

Subcommittee Members:

*John M. Adams, Ph.D.*  
Chair, Commission on Forensic Science

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*John M. Adams, Ph.D.*  
Chair, Commission on Forensic Science

Sean Byrne, Acting Commissioner  
Chair, Commission on Forensic Science  
Division of Criminal Justice Services  
4 Tower Place, 10th Floor  
Albany, New York 12243-3764

Dear Commissioner Byrne:

Pursuant to Executive Law §995-b (1)(b) the DNA Subcommittee will assess and evaluate all DNA methodologies proposed to be used for forensic analysis and make recommendations to the Commission.

At the May 20, 2011 meeting the DNA Subcommittee reviewed and evaluated the New York State Digital TrueAllele™ validation developed by New York State Police and Cybergenetics Corp. The DNA Subcommittee offers a binding recommendation to the Commission on Forensic Science that its use by NYSP Forensic Investigation Center be approved for forensic casework.

Very truly yours,  
  
Jack Blumenthal, Ph.D.  
Chair, NYS DNA Subcommittee

cc: Gina L. Bianchi, Esq., Deputy Commissioner & Counsel, DCJS  
NYS DNA Subcommittee Members  
NYS Commission on Forensic Science Members

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What is the impact?  
Practically every aspect of lab's operation will be affected

Why?  
To accommodate the major advantages the program confers

Information Retention  
Increased Productivity  
Guaranteed Objectivity

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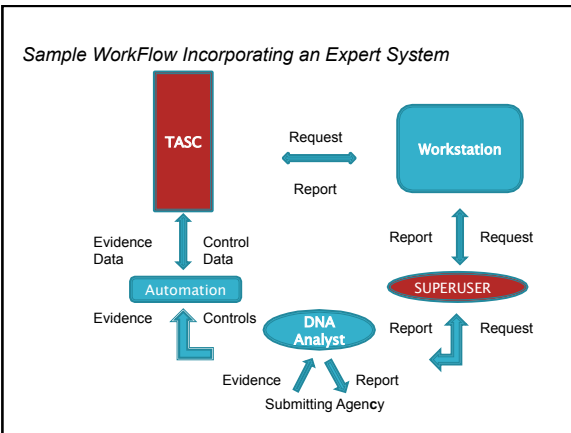
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Conclusion

TrueAllele software offers

- Standardized results (within and between labs)
- Maximum information
- Unbiased reporting
- Faster turnaround

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**ACKNOWLEDGEMENTS**

NYSP FORENSIC INVESTIGATION CENTER  
BIOLOGICAL SCIENCE SECTION

CASEWORK UNIT

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Tim Goble  
Melissa Pemberton  
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Brian Kozlowski  
Michelle Adams  
Lisa Biega

CYBERGENETICS

Mark Perlin  
Matt Legler  
Bill Allan  
CE Spencer  
JL Smith

NERFI

Jamie Belrose

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