

1 LISA S. GREEN, District Attorney  
County of Kern  
2 **Cynthia J. Zimmer**, SBN 116401  
3 Deputy District Attorney  
4 **Joseph A. Kinzel**, SBN 258113  
5 Deputy District Attorney  
6 Civic Center Justice Building  
1215 Truxtun Avenue, 4<sup>th</sup> Floor  
7 Bakersfield, California 93301  
Telephone: (661) 868-2340

8 Attorney for the Plaintiff

9 **SUPERIOR COURT OF CALIFORNIA, COUNTY OF KERN**  
10 **METROPOLITAN DIVISION**

11 THE PEOPLE OF THE STATE OF CALIFORNIA,  
12 Plaintiff,

13 v.

14 **CHARLES LEWIS LAWTON,**  
15 **DUPREE LANGSTON,** and  
16 **ANTWYNE HARPER**

Defendants.

No. BF 139247 ABC

**PEOPLE'S MOTION IN LIMINE TO  
ADMIT DNA ANALYSIS**

Jury Trial: 10/9/12  
Time: 8:30 a.m.  
Dept: 1

17  
18 Comes now the plaintiff, the People of the State of California, by and through their  
19 attorneys, **LISA S. GREEN, District Attorney**, Cynthia J. Zimmer, Deputy District Attorney, and  
20 Joseph A. Kinzel, Deputy District Attorney, respectfully submits the following Motion to Admit  
21 DNA Analysis.

22  
23 **I.**

24 **STATEMENT OF FACTS**

25 The People seek to admit DNA analyses conducted by the collaboration of Kelly Woolard,  
26 from the Kern Regional Crime Laboratory, and Dr. Mark Perlin from Cybergenetics, who utilized the  
27 Cybergenetics TrueAllele Casework System. DNA evidence was collected from three crime scenes;  
28

1 but only the evidence collected from the robbery of the Advance America branch in Delano on  
2 October 11, 2011 resulted with inculpatory information.

3 **Count 3 - PC 212.5 ( c) plus PC 186.22(b), PC 12022.53(b), PC 12022.53(b)(e)(1)**

4 **Defendants – Lawton and Langston**

5 **Date – 10/11/11**

6 **Victim – Adrianna G.**

7 **Location – Advance America, 1009 Main Street, Delano**

8 On October 22, 2011, Delano Police Officer Robert Geivet was dispatched to Advance  
9 America, a small retail store, at 1009 Main Street in Delano. He spoke to Adrianna Gutierrez who  
10 was crying and distraught. Ms. Gutierrez said that two black males entered the store. One of the two  
11 asked to pay a bill. As he approached the counter, the second male jumped the counter and forced  
12 Ms. Gutierrez to the floor. When the second male jumped over the counter, he clearly touched the  
13 rough surface of the counter with his hand (the video surveillance confirms this). The second male,  
14 the shorter of the two, pulled out a firearm and stuck it under her right temple while the other subject  
15 asked her where the safe was. The first subject removed money from the safe. The second subject  
16 took money from the cash drawer. The robbers forced her to the back of the store into the restroom  
17 and told her to lock herself inside. Responding officers from the Delano Police Department secured  
18 the scene and took swabs of areas the robbery suspects were believed to have touched, including the  
19 front counter and the safe.  
20  
21

22 The swab of DNA taken from the front counter of the business, as well as the swab taken  
23 from the safe was analyzed by Kelly Woolard of the Kern Regional Crime Laboratory, as well as Dr.  
24 Mark Perlin of Cybergenetics, who utilized the TrueAllele Casework system for data interpretation.  
25

26 Kelly Woolard analyzed the samples based on the now commonplace procedures of DNA  
27 extraction, amplification, using the Polymerase Chain Reaction (PCR) and Short Tandem Repeat  
28 (STR) analysis.

1  
2  
3       **DNA Evidence**  
4

5       The use of DNA evidence has become ubiquitous in American criminal trials. The PCR  
6 amplification method, particularly, has been repeatedly admitted by courts in this jurisdiction and  
7 others. As the use of DNA evidence has become more available, so too have more advanced methods  
8 of interpreting the data collected from DNA evidence samples. The TrueAllele system employed by  
9 Dr. Mark Perlin and Cybergenetics is an example of the development in this field that has a  
10 foundation on scientifically validated principles. At the outset, it is important to understand what the  
11 TrueAllele analysis system does *not* do any differently from a standard PCR-STR analysis. First, it  
12 does not alter in any fashion the methods in which DNA is collected (say, from a crime scene or a  
13 controlled environment). Second, it does not alter in any fashion the manner in which DNA is  
14 extracted from the biological samples that have been collected. Third, it does not alter in any fashion  
15 the amplification of the extracted DNA. Fourth, it does not alter the typing of the amplified DNA.  
16 The TrueAllele system uses data produced by the same procedures and techniques that have been  
17 validated for DNA. The DNA data set contains the same presence and strength of alleles present at  
18 each set of loci that are present in manual data interpretation. In fact, a standard DNA analysis uses  
19 the same data that TrueAllele uses.<sup>1</sup> In that sense, it is important to understand the basics of  
20 extraction, amplification, and DNA typing before TrueAllele is addressed.  
21  
22  
23  
24

25 \_\_\_\_\_  
26 <sup>1</sup> One exception is notable. A typical PCR-STR analysis would include the use of analytical thresholds and stochastic  
27 thresholds, which essentially direct the examiner to ignore data within a certain range of thresholds. The use of thresholds  
28

1  
2 **Extraction and Amplification:**

3           The extraction process begins by extracting the DNA from its biological source material –  
4 human cells. Once DNA has been isolated, specific regions – or loci – are replicated using a  
5 technique known as Polymerase Chain Reaction. This process utilizes a commercially available kit  
6 manufactured by Life Technologies, called “Identifiler Plus.” The kit contains a solution comprised  
7 of primers which anneal (bind) to the flanking regions for the target DNA sequence. These primers  
8 contain fluorescent tags, which become incorporated into the STR fragments during amplification.  
9 Once the primers have attached to the targeted regions, the enzyme Taq polymerase binds to the  
10 primers and replicates the targeted sequence. This process is repeated such that the alleles at a given  
11 locus are replicated millions of times, allowing their presence to be detected and quantified. The  
12 sources from which DNA has been extracted in this case include crime scenes as well as the more  
13 controlled collection of DNA from witnesses, victims, and suspects, via buccal swabs.  
14  
15

16  
17 **Typing:**

18           The amplified DNA is then typed using the ABI Prism 3130 Genetic Analyzer, which uses  
19 capillary electrophoresis to separate DNA fragments according to the different alleles present in the  
20 sample. A charge is applied to the capillary containing the amplified DNA, causing the DNA to flow  
21 through the capillary and past a detection window. The smaller fragments traverse the capillary more  
22 quickly, causing targeted sequences to reach the detection window sooner than those of larger size.  
23 As the fragments move, they are then exposed to a laser which causes the allele’s fluorescent tag to  
24  
25

---

26  
27 simplifies analysis by human examiners. The TrueAllele Casework system, which uses a computer program to run a  
28

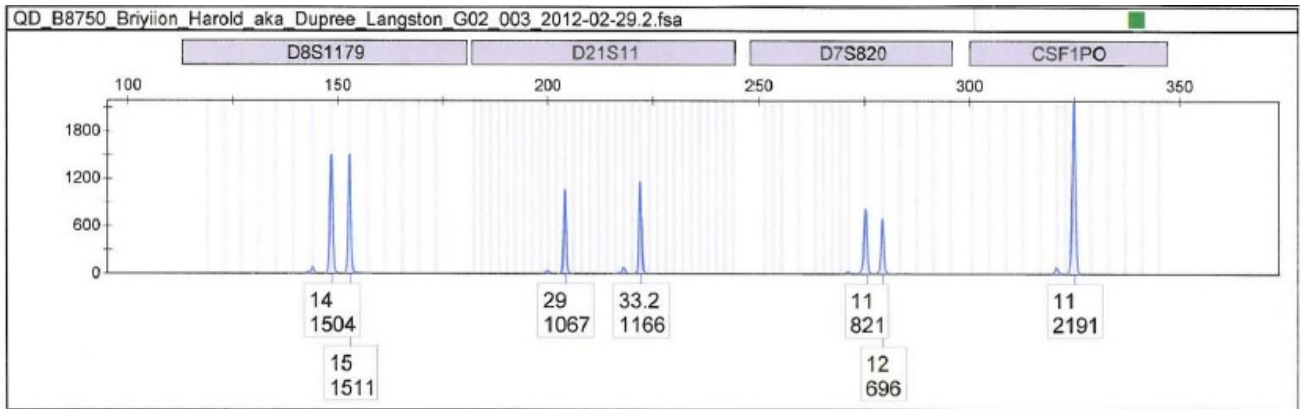
1 emit light. The light emissions are measured in terms of Relative Florescent Units (RFUs), which  
2 reflect the relative quantity of alleles passing by the detection window. The RFUs are shown on the  
3 Y-axis of the electropherogram.

4 **Analysis:**

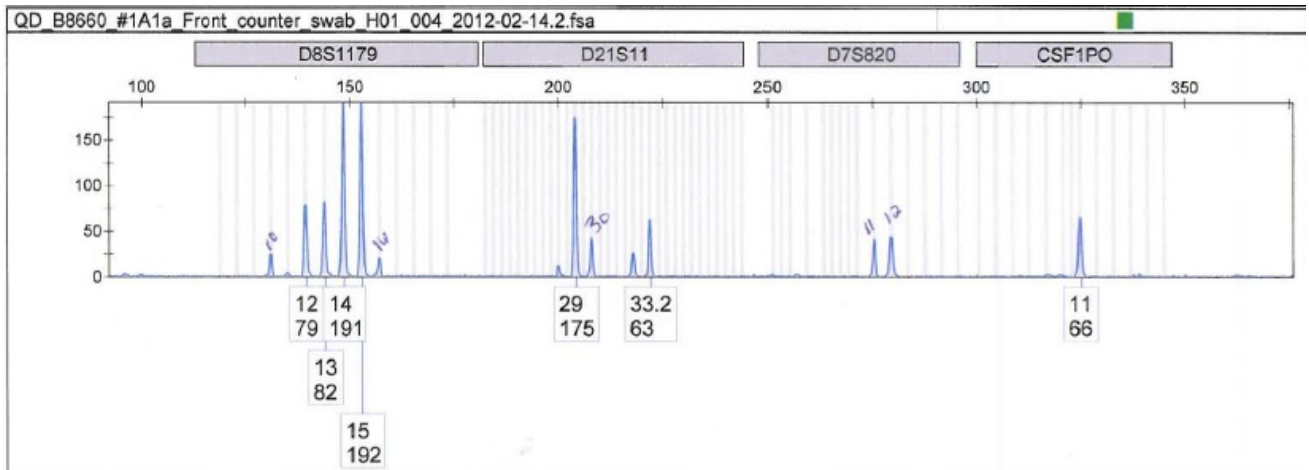
5  
6 Where TrueAllele differs from a standard PCR/STR analysis is *what is done* with the genetic  
7 data that is derived. A traditional interpretive approach would have an analyst compare the  
8 evidentiary genetic profile with profiles of known or suspected contributors to determine if suspects  
9 can be excluded from consideration as a contributor to the DNA evidence. If a suspect cannot be  
10 excluded, then statistical analysis can compare the relative likelihoods that a suspect, as opposed to a  
11 random person was a contributor. In a simple case, this is may not be difficult – the analyst merely  
12 compares the genetic profile of the evidentiary sample with the genetic profile of each suspect. While  
13 a fine process for analyzing straightforward cases where the genetic profiles are each from only one  
14 contributor, the process becomes increasingly complex when the evidentiary samples clearly contain  
15 genetic material from multiple contributors. In the field, these types of samples are referred to as  
16 “mixtures” because of the obvious presence of multiple DNA sources. By means of example,  
17 consider some of the evidence in this case. Below, is a portion of the electropherogram from the  
18 controlled buccal swab of DNA obtained from Defendant Dupree Langston. The sample was taken in  
19 such a manner to preclude contamination, such that a clear genetic profile could be obtained.  
20  
21  
22

---

23  
24 litany of calculations required to analyze *all* of the data derived, does not use thresholds – it doesn’t need to.  
25  
26  
27  
28



This is but a portion of the full genetic profile of the sample obtained from Defendant Langston. Here, it shows results at 4 of the loci examined; **D8S1179**, **D21S11**, **D7S820**, and **CSF1PO**. At each locus, an analyst would expect either one or two peaks. This is because humans receive DNA from both their mother and father. If the alleles from the mother and father are different, it will represent as two peaks; if they are the same, it will show as only one peak. In the case of Defendant Langston, at locus **D8S1179**, he shows alleles of both 14 and 15. At locus **D21S11**, he shows alleles of both 29 and 33.2. Notably, at locus **CSF1PO**, he has the same allele from both parents, representing as a single peak – 11. Were the defendant to cut his finger, and leave a drop of blood on an otherwise clean surface, (say, a microscope slide) we would expect that a DNA profile of that blood would look very similar – indeed, nearly identical to the above electropherogram. Peaks would show at the same places within the same loci. The evidence collected in this case, however, was not derived from a sterile environment – it was taken from a crime scene. Notably, one DNA swab was obtained from the front counter of a business, in an attempt to collect any DNA that may have been left by the suspect that vaulted over the counter. The electropherogram for that front counter sample, looking at the same loci as shown above for Langston, is depicted below.



Note particularly the alleles present at locus **D8S1179**. Peaks at 12,13,14, and 15 are present, as well as smaller peaks at 10 and 16.<sup>2</sup> That there are more than 2 peaks at a given locus indicates that the sample contains DNA from more than one person – but the question remains *how many* others, and *in what proportion*? The TrueAllele Casework System is able to provide scientifically validated answers to these questions, and, more importantly, is able to consider *all of the data* to determine the probability that a suspect’s DNA is included in the mixture sample obtained from the scene. Based on the genetic profiles of controlled samples for victims and suspects in this case, Kelly Woolard was able to eliminate all suspects and victims as potential contributors for the DNA found on the front counter – with one notable exception – Dupree Langston.

The TrueAllele Casework System is a computerized DNA interpretation system that objectively infers genetic profiles from all types of DNA samples. These profiles can then be automatically matched against available references or large databases, producing informative match statistics that are easy to explain and report. The system further eliminates any potential bias because

<sup>2</sup> Handwritten allelic values over certain peaks are the work of Kelly Woolard, and are represented as such because the peaks fall below the analytical threshold set by the Kern Regional Crime Lab.

1 it eliminates the human element of potential bias, and furthermore develops profiles of the  
2 evidentiary samples without considering the “known” samples of suspects and victims. Furthermore,  
3 the TrueAllele Casework system does not need to disregard data by use of analytical thresholds to  
4 simplify things for the analysis, as is the case with human review. Rather, the TrueAllele Casework  
5 system incorporates all of the data in developing profiles and arriving with match statistics. By  
6 utilizing the TrueAllele system, Dr. Perlin was able to pick up where Kelly Woolard left off. He used  
7 the exact same genetic data gathered by Kelly Woolard, and applied it to the TrueAllele Casework  
8 system. Dr. Perlin has reported that a match between the front counter DNA obtained and Dupree  
9 Langston is:  
10  
11

- 12 1) 553 million times more probable than a coincidental match to an unrelated Black person
- 13 2) 731 million times more probable than a coincidental match to an unrelated Caucasian  
14 person, and
- 15 3) 208 million times more probable than a coincidental match to an unrelated Hispanic  
16 person.  
17

18 The DNA analysis that pertains to this case also led to the exclusion of Lawton, Langston, and  
19 Harper as contributors to samples taken on other surfaces at crime scenes. Dr. Perlin’s analysis  
20 further confirmed the presence of DNA of the victims at their respective crime scenes. Because the  
21 People do not anticipate a defense objection to these analyses (they are not inculpatory), they are not  
22 addressed here.  
23  
24  
25

## 26 II.

### 27 POINTS AND AUTHORITIES



1  
2 The admissibility of expert testimony based on a new or novel scientific technique is  
3 governed by rules adopted in the leading cases of *Frye v. United States* (D.C. Cir. 1923) 293 Fed.  
4 1013 (*Frye*) and *People v. Kelly* (1976) 17 Cal.3d 24 (*Kelly*) (abrogated by statute on another point as  
5 explained in *People v. Wilkinson* (2004) 33 Cal.4th 821, 845-848). Federal courts have since  
6 abandoned *Frye*. (*Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993) 509 U.S. 579; *People v.*  
7 *Cowan* (2010) 50 Cal.4th 401, 469, fn. 22.) But California has retained the *Kelly* test despite  
8 *Daubert*. (*People v. Leahy* (1994) 8 Cal.4th 587, 598-604, 612; see also *People v. Cooley* (2002) 29  
9 Cal.4th 228, 242, fn. 3.)  
10

11 Under the *Kelly* rule, the proponent of the evidence must establish (1) the reliability of the  
12 method – that it is “ ‘sufficiently established to have gained general acceptance in the particular field  
13 in which it belongs,’ ” (2) that the witness is an expert qualified to give an opinion on the subject, and  
14 (3) that correct scientific procedures were used. (*Kelly, supra*, at p. 30; see also *People v. McWhorter*  
15 (2009) 47 Cal.4th 318, 364.)  
16

17 Published case precedent can eliminate the need to show general acceptance of the scientific  
18 technique or to qualify the expert witness to testify about its general acceptance. Once a published  
19 appellate opinion has affirmed the admission of evidence based upon a new scientific technique, that  
20 precedent is controlling on the first prong of the *Kelly* test, unless the opponent can produce new  
21 evidence to establish a change in the attitude of the scientific community. (*Kelly, supra*, 17 Cal.3d. at  
22 p. 32; see, e.g., *People v. Dooley* (2009) 45 Cal.4th 390, 447-448 [PCR DQ-Alpha DNA analysis];  
23 *People v. Nelson* (2008) 43 Cal.4th 1242, 1259 [“product rule” to calculate statistical odds of DNA  
24 match]; see also *People v. Pride* (1992) 3 Cal.4th 195, 238-239 [hair sample comparisons]; *People v.*  
25 *Morganti* (1996) 43 Cal.App.4th 643, 658 [agglutination inhibition test]; *People v. Yorba* (1989) 209  
26  
27  
28

1 Cal.App.3d 1017, 1023-1024 [electrophoresis evidence].) Of course, an expert witness must still be  
2 qualified, and the proponent of the evidence still must make a case-specific foundational showing that  
3 correct scientific procedures were used. (*People v. Morganti, supra*, 43 Cal.App.4th at pp. 660-662.)

4  
5 The *Kelly* rule applies only to “new” scientific testing procedures. As use of a scientific  
6 practice or instrument becomes widespread, it is no longer new or novel. Consequently, a *Kelly*  
7 hearing is unnecessary even though no appellate opinion specifically establishes its general  
8 acceptance. (*People v. Municipal Court (Sansone)* (1986) 184 Cal.App.3d 199, 201 [blood alcohol  
9 content of urine]; *People v. Palmer* (1978) 80 Cal.App.3d 239, 251-254 [scanning electron  
10 microscopes].) Similarly, a new method of doing an established scientific test generally does not  
11 implicate the *Kelly* rule. (*People v. Cowan, supra*, 50 Cal.4th at p. 470 [ballistics testing using  
12 elastomeric material]; *People v. Webb*(1993) 6 Cal.4th 494, 523-524 [fingerprint comparison of laser-  
13 derived image of latent print].)

14  
15 Not all new scientific testing procedures or instruments are subject to *Kelly-Frye*. “Where, as  
16 here, a procedure isolates physical evidence whose existence, appearance, nature, and meaning are  
17 obvious to the senses of a layperson, the reliability of the process in producing that result is equally  
18 apparent and need not be debated under the standards of *Kelly* . . . .” (*People v. Webb, supra*, 6  
19 Cal.4th at p. 524 [latent fingerprints]; see also *People v. Cowan, supra*, 50 Cal.4th at pp. 470-471  
20 [method of isolating lands and groves in barrel of gun]; *People v. DePriest* (2007) 42 Cal.4th 1, 40  
21 [“overlay” method of shoe print comparison]; *People v. Hoyos* (2007) 41 Cal.4th 872, 910, fn. 21  
22 [blood spatter analysis]; *People v. Farnam* (2002).) 28 Cal.4th 107, 160 [CAL-ID fingerprint “hit”];  
23 *People v. Ayala* (2000) 24 Cal.4th 243, 281 [bullet comparison].)

24  
25  
26  
27 The *Kelly* rule only applies to scientific instruments, machines and testing methods.  
28 California distinguishes between expert medical opinion and scientific evidence; the  
former is not subject to the special admissibility rule of *Kelly-Frye*. [Citation.] *Kelly-*

1 *Frye* applies to cases involving novel devices or processes, not to expert medical  
2 testimony, such as a psychiatrist's prediction of future dangerousness or a diagnosis of  
3 mental illness. [Citations.] [¶] Similarly, the testimony of a psychologist who  
4 assesses whether a criminal defendant displays signs of deviance or abnormality is not  
subject to *Kelly-Frye*. [Citation.]

5 (*People v. Ward* (1999) 71 Cal.App.4th 368, 373 [*Kelly* rule not applicable expert opinion re:  
6 likelihood person would engage in acts of sexual violence]; see also *People v. Stoll* (1989) 49 Cal.3d  
7 1136 [expert opinion on sexual deviancy, based upon standardized psychological tests]; *People v.*  
8 *MacDonald* (1984) 37 Cal.3d 351, 372-373 [identification expert testimony], overruled on other  
9 grounds in *People v. Mendoza* (2000) 23 Cal.4th 896, 914; *People v. Hill* (2011) 191 Cal.App.4th  
10 1104, 1123-1124 [gang expert]; *People v. Cegers* (1992) 7 Cal.App.4th 988, 999-1000 [diagnosis of  
11 sleep disorder]; *People v. Marx* (1975) 54 Cal.App.3d 100, 110-111 [bite mark evidence].)

12  
13 Finally, the *Kelly* test does not apply to the use of common medical instruments of  
14 unquestioned reliability. (*People v. Cegers, supra*, 7 Cal.App.4th at p. 999 [oximeter]; *People v.*  
15 *Mendibles* (1988) 199 Cal.App.3d 1277, 1292-1294 [use of colposcope to determine cause of injury];  
16 *People v. Pitts* (1990) 223 Cal.App.3d 606, 864-865 [same].)

17  
18  
19  
20 The *Kelly* test has been applied to a variety of forensic techniques. The following have been  
21 found to pass the *Kelly* test:

- 22 1. DNA polymerase chain reaction analysis (PCR) for DQ alpha gene. *People v. Morganti*,  
23 43 Cal. App. 4<sup>th</sup> 643, 657 (1996)  
24  
25 2. DNA polymerase chain reaction analysis, and short tandems repeat test (STR). *People v.*  
26 *Allen*, 72 Cal. App. 4<sup>th</sup> 1093, 1099 (1999).  
27  
28

1 3. DNA profiling or typing for identification using restriction fragment length polymorphism  
2 (RFLP) method. People v. Soto, 21 Cal. 4<sup>th</sup> 512, 514 (1999).

3 4. DNA profiling using Profiler Plus kit and 310 Genetic Analyzer (found to be sophisticated  
4 extension of PCR-STR testing methods). People v. Hill, 89 Cal. App. 4<sup>th</sup> 48, 58 (2001).

5 5. DNA profiling involving multiple mixtures using Profiler Plus and COfiler kits ABI 310  
6 genetic analyzer. People v. Smith, 107 Cal. App. 4<sup>th</sup> 646, 666 (2003).

7 6. Using unmodified product rule to calculate statistical probabilities in DNA forensic  
8 analysis. People v. Soto, 21 Cal. 4<sup>th</sup> 512, 415 (1999).

### 9 III.

#### 10 ARGUMENT

#### 11 **A. THE TRUEALLELE SYSTEM OF ANALYSIS HAS GAINED GENERAL** 12 **ACCEPTANCE IN THE SCIENTIFIC COMMUNITY**

13  
14 In many ways, the TrueAllele Casework system is merely a combination of scientifically  
15 accepted procedures and principles that incorporate genetics, computer engineering, probability, and  
16 the product rule. However, to the extent that the TrueAllele Casework system's application of these  
17 principles is deemed novel, there is considerable research that is published by credible sources, and is  
18 a product of the scientific community which validates the reliability of the TrueAllele System and  
19 demonstrates its acceptance in the scientific community. These papers and reports will be attached as  
20 exhibits to this motion, and will likely be referenced by Dr. Mark Perlin in his testimony. The  
21 exhibits have been separated into categories, to assist the court and counsel in locating and reviewing  
22 them. A guide follows below:  
23  
24  
25  
26  
27

#### 28 **Exhibits 1A through 1F: General Reading Publications:**

1 **1A:** “The DNA Investigator,” Cybergenetics Newsletter, Fall 2009.

2 **1B:** “The DNA Investigator,” Cybergenetics Newsletter, Spring 2010.

3 **1C:** “The DNA Investigator,” Cybergenetics Newsletter, Winter 2011.

4 **1D:** “Local Technology Enhances DNA Analysis; Oakland Firm Uses Computer Software,”  
5  
6 Newspaper article by David Templeton; Sunday, June 26, 2011, Pittsburgh Post-Gazette.

7 **1E:** “Latest in DNA Analysis Gains Wider Acceptance,” Newspaper article by David Templeton;  
8  
9 Saturday, February 18, 2012, Pittsburgh Post-Gazette.

10 **1F:** “Forensic Science in the Information Age,” by Mark Perlin, Ph.D., MD, Ph.D. Forensic  
11  
12 Magazine, posted online April 10, 2012.

13  
14 **Exhibits 2A through 2H: Validation Studies of TrueAllele Casework System:**

15 **2A:** New York State StrueAllele Developmental Validation (submitted to New York State DNA  
16  
17 subcommittee 2010).

18 **2B:** New York State Police [NYSP] TrueAllele Validation (submitted to New York State DNA  
19  
20 subcommittee, 2011).

21 **2C:** Massachusetts State Police Internal Validation Study of TrueAllele (August 2011).

22 **2D:** Australia TrueAllele Validation Report. [multi-axis validation] (Cybergenetics, September,  
23  
24 2011).

25 **2E:** National Institute of Standards and Technology (NIST) – International Society for Forensic  
26  
27 Genetics 2011 Conference presentation.  
28

1 **2F:** “TrueAllele Volume Crime Validation Study.” Abstract of Orchid Cellmark volume crime  
2 study, Orchid Cellmark UK and Cybergentics, February 25, 2010. [Abstract regarding 2,000  
3 samples].  
4

5 **2G:** “Quantifying DNA identification information loss with CPI mixture interpretation relative to  
6 a TrueAllele continuous method.” Abstract of Allegheny County study on human vs.  
7 computer information produced. Authored by Mark W. Perlin, Erin Tro, Walter Lorenz and  
8 Tom Meyers.  
9  
10

11 **2H:** “Highly Informative DNA mixture evidence is often misreported as ‘inconclusive’ when  
12 interpreted using threshold methods.” By Mark Perlin, Matt Legler, and Joseph Galdi. Abstract  
13 of  
14 study from Suffolk County on human vs. computer inconclusive results. Presented to New York  
15 State DNA subcommittee, May, 2011.  
16  
17

18 **Exhibits 3A through 3D: Regulatory Approvals:**

19 **3A:** TrueAllele Casework binding recommendation for forensic casework applications. May 20,  
20 2011, issued by the New York State DNA Subcommittee.  
21

22 **3B:** TrueAllele Casework Approval for Forensic Casework Applications. June 27, 2011, issued  
23 by  
24 the New York State Commission on Forensic Science.  
25  
26

27 **3C:** “SWGDM Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Testing  
28

1 Laboratories.” Scientific Working Group on DNA Analysis Methods, SWGDAM 2010 (§3.2.2)  
2 January 2010.  
3

4 **3D:** “American National Standard for Information Systems; Data Format for the Interchange of  
5 Fingerprint, Facial, and Other Biometric Information. National Institute of Standards and  
6 Technology, March, 2011. [§18.020, 18.021; probabilistic genotype data exchange].  
7

8 **Exhibits 4A through 4E: Forensic Applications:**  
9

10 *World Trade Center DNA reanalysis – 18,500 victim remains and 2,700 missing people:*

11 **4A:** “Mass Casualty Identification through DNA analysis: overview, problems and pitfalls” [book  
12 chapter authored by Mark Perlin], published in Forensic Investigation and Management of Mass  
13 Disasters. M.I. Okoye and C.H. Wecht. Tucson, AZ, Lawers & Judges Publishing Co: 23-30.  
14

15 **4B:** “Identifying Human Remains Using TrueAllele Technology” [book chapter authored by  
16 Mark Perlin], published in Forensic Investigation and Management of Mass  
17 Disasters. M.I. Okoye and C.H. Wecht. Tucson, AZ, Lawers & Judges Publishing Co: 31-38.  
18

19 *The United States National Institute of Standards and Technology (NIST) provides forensic*  
20 *laboratories with Standard Reference Material (SRM) mixture DNA that uses TrueAllele technology*  
21 *as a calibration standard to assess mixture weight and genotype composition:*  
22

23 **4C:** “The New Standard Reference Material 2391c: PCR-based DNA profiling Standard. Forensic  
24 Science International: Genetics Supplement Series; 2011. Available online October 26, 2011. By  
25 M.C. Kline, E.L.R. Butts, C.R. Hill, M.D. Coble, D.L. Duewer, and J.M. Butler.  
26  
27  
28

1 **4D:** National Institute of Standards and Technology, Certificate of Analysis, Standard Reference  
2 Material (SRM) 2391c, PCR-Based DNA Profiling Standard.  
3

4 *Using TrueAllele as a laboratory instrument to measure DNA identification information:*

5 **4E:** “DNA mixture genotyping by probabilistic computer interpretation of binomially-sampled laser  
6 captured cell populations: combining quantitative data for greater identification information,” By  
7 J. Ballantyne, E.K.Hanson, and M.W. Perlin. *Science & Justice*, 2012.  
8  
9

10 **Exhibits 5A and 5B: Validation Papers:**

11 **5A:** “An Information Gap in DNA Evidence Interpretation.” By Mark W. Perlin and Alexander  
12 Sinelnikov. December, 2009.  
13

14 **5B:** “Validating TrueAllele DNA Mixture Interpretation.” By Mark Perlin, M.D., Ph.D.; Matthew  
15 M. Legler, B.S.; Cara E. Spencer, M.S.; Jessica L. Smith, M.S.; William P. Allan, M.S.; Jamie L  
16 Belrose, M.S.; and Barry W. Duceman, Ph.D. *Journal of Forensic Sciences*, Vol.56, No. 6.  
17 November, 2011.  
18  
19

20 **Exhibits 6A through 6D: Defense Commentary:**

21 *Defense attorneys and scholars prefer objective TrueAllele approach to subjective human review:*

22 **6A:** “Painting the target around the matching profile: the Texas sharpshooter fallacy in forensic  
23 DNA interpretation.” By William C. Thompson. *Law, Probability and Risk* (2009). Pages 257-  
24 76.  
25  
26  
27

28 **6B:** “Low Template DNA.” By David Bentley and Peter Lownds. *Archbold Review*, Iss. 1.



1 February 15, 2011.

2 **6C:** “Subjectivity and bias in forensic DNA mixture interpretation.” By Itiel E. Dror and  
3  
4 Greg Hampikian

5 **6D:** “Challenging the Admissibility of DNA Identification Evidence,” by Shirley K. Duffy,  
6  
7 Esq. New York Bar Association, New York Criminal Law Newsletter, 2012.

8 **Exhibits 7A and 7B:** Citation Index and Bibliography relating to TrueAllele processes:

9  
10 **7A:** Citation Index: Work that relies on TrueAllele Technology [created by Dr. Mark  
11 Perlin].

12  
13 **7B:** Bibliography: DNA Mixture Interpretation [created by Dr. Mark Perlin]

14 **Exhibits 8A and 8B: Judicial Opinions relating to TrueAllele Admissibility:**

15  
16 **8A:** *Commonwealth of Pennsylvania v. Foley* (Feb. 15, 2012) 38 A.3d 882 [Superior Court  
17 of Pennsylvania].

18  
19 **8B:** Regina v. Colin F Duffy & Brian P Shivers, Ruling on Voir Dire. The Crown Court in  
20 Northern Ireland Sitting at Antrim. Opinion by the Honourable Mr Justice Hart.

21 December 1, 2011.

22  
23 **Exhibits 9A through 9B, Further evidence of acceptance in the scientific community:**

24  
25 **9A:** “DNA commission of the International Society of Forensic Genetics: Recommendations on the  
26 interpretation of mixtures.” By, P. Gill, C.H. Brenner, J.S. Buckleton, A. Carracedo, M.  
27 Krawczak, W.R. Mayr, N. Morling, M. Prinz, P.M Schneider, and B.S. Weir. April, 2006.  
28

1 **9B:** “Forensic Science Service Expands License for Cybergenetics Automated DNA Data Review  
2 Technology; Pioneering TrueAllele Software Helps Build World’s Largest DNA Database,”  
3  
4 Business Wire, July 26, 2004. Last Accessed online October 10, 2012.  
5  
6 [http://www.businesswire.com/news/home/20040726005070/en/Forensic-Science-Service-](http://www.businesswire.com/news/home/20040726005070/en/Forensic-Science-Service-Expands-License-Cybergenetics-Automated)  
7 [Expands-License-Cybergenetics-Automated](http://www.businesswire.com/news/home/20040726005070/en/Forensic-Science-Service-Expands-License-Cybergenetics-Automated) [cited to in the *Foley* opinion in Exhibit 8A].

8 A brief summary, however, may be helpful:  
9

10 (1) In 2006, the DNA Commission of the International Society of Forensics Genetics published an  
11 article entitled, “DNA Commission of the International Society of Forensics Genetics:  
12 Recommendations on the Interpretation of Mixtures” which, among other things, compared the  
13 “probability of exclusion” method that is utilized by the FBI and the “likelihood ratio” method that is  
14 utilized by Dr. Perlin in DNA mixture interpretation; [Exhibit 8A]  
15

16  
17 (2) That article recognizes that the FBI's “probability of exclusion” method discards information  
18 which the “likelihood ratio” method used by Dr. Perlin includes in its calculations, i.e. the latter  
19 utilizes data that is available but unused by the former; [Exhibit 8A]  
20

21  
22 (3) According to the article, **the Commission recommends the “likelihood ratio” approach**  
23 **employed by Dr. Perlin as the preferred approach to DNA mixture interpretation (over the**  
24 **method utilized by the FBI); [Exhibit 8A]**  
25  
26  
27  
28

1 (4) The article also states that **there is broad consensus within the scientific community on this**  
2 **point:**

3 ...The RMNE method [used by the FBI] has considerable intuitive appeal but usually entails an  
4 unrealistically simple model of DNA evidence and is therefore restricted in its use to unambiguous  
5 profiles. Even in those cases RMNE [used by the FBI] has the further shortcomings as it does not  
6 make full use of the evidence...**A likelihood ratio approach [used by Dr. Perlin] is therefore**  
7 **preferred. There is a broad consensus view on this point...** [Exhibit 8A]  
8

9  
10  
11 (5) **Numerous government agencies and private organizations have utilized and are currently**  
12 **utilizing Dr. Perlin's methodology, including the Allegheny County Crime Laboratory, the**  
13 **University of Pittsburgh, the Forensic Science Service of the United Kingdom (“FSS”), the New**  
14 **York State Police, and the Maryland State Police;** [Exhibits 2A,2B,2C,2G,9B]  
15

16  
17 (6) The FSS is an executive agency of the Home Office of the United Kingdom. It has the largest  
18 DNA database in the world, and utilizes the TrueAllele Casework system for automated forensic  
19 DNA review; [Exhibit 9B]  
20

21  
22 (7) **Dr. Perlin's TrueAllele Method was used by the City of New York following the World Trade**  
23 **Center disaster in 2001 to assist with DNA interpretation for the purpose of identifying victim**  
24 **remains;** [4A, 4B]  
25  
26  
27  
28

1 (8) On December 16, 2009, the scientific journal PLoS ONE published the scientific paper “Perlin,  
2 M.W. and Sinelnikov, A. *An Information Gap in DNA Evidence Interpretation*,” **which provides**  
3 **validation of the TrueAllele Method;** [5A]  
4

5  
6 (9) On October 8, 2010, the Journal of Forensic Sciences -- the premier American scientific journal  
7 relating to forensic sciences - accepted for publication in 2011 a scientific validation paper entitled  
8 “*Validating TrueAllele® DNA mixture interpretation*” by Perlin, M.W., Legler, M.M., Spencer, C.E.,  
9 Smith, J.L., Allan, W.P., Belrose, J.L., and Duceman, B.W. **The article documents an extensive**  
10 **validation of the TrueAllele Method in a study done in collaboration with the New York State**  
11 **Police.** [5B]  
12

13  
14 (10) The TrueAllele Casework system employed and developed by Dr. Perlin has been approved by  
15 other courts in the United States, most notably, in Pennsylvania, where an appellate court, in a  
16 published opinion, found no problems with the use of Dr. Perlin’s TrueAllele Casework analysis in  
17 the murder trial of Kevin Foley. (*Commonwealth v. Foley* (2012) 47 A.3d 1173). The court held  
18 that the TrueAllele analysis of Dr. Mark Perlin had general acceptance in the scientific community,  
19 and, despite defense arguments to the contrary, that there was no legitimate dispute about its  
20 reliability.  
21

22  
23  
24 The foregoing, in combination with Dr. Perlin’s testimony, constitutes significant and compelling  
25 evidence of general acceptance within the relevant scientific community.  
26  
27  
28

1           **B.           DR. MARK PERLIN IS A QUALIFIED EXPERT CONCERNING DNA**  
2                               **ANALYSIS AND, PARTICULARLY, THE TRUEALLELE CASEWORK**  
3                               **SYSTEM**

4  
5           Dr. Perlin holds two Ph.D. degrees and an M.D. He has been active in the field of DNA  
6 interpretation for several years, and has been personally involved with the development of the  
7 TrueAllele Casework system. He is the CEO of Cybergenetics, the company that owns the TrueAllele  
8 Casework System, and has written numerous scientific studies and articles about the system,  
9 including validation studies. He has testified regarding the TrueAllele System in courts in the United  
10 States and abroad. He has made presentations to, and is active in, the relatively small worldwide  
11 community of scientists that are at the forefront of DNA analysis technology. There is no one better  
12 situated to provide the court and jury an expert opinion concerning how the TrueAllele system works  
13 and its reliability.  
14  
15

16           **C.           PROPER TESTING PROCEDURES WERE USED IN THIS CASE**

17  
18           The final standard for the Kelly test is whether proper testing procedures were used in this  
19 case. Dr. Perlin will discuss the procedures used in the case, and show that they are in compliance  
20 with the standards of the scientific community. Should the defense challenge the procedures of  
21 Kelly Woolard, she too, can discuss the testing procedures used to extract and amplify the DNA  
22 from the samples provided to her.  
23  
24  
25  
26  
27  
28

**IV.**

1 CONCLUSION

2 A careful review of the TrueAllele Casework system reveals that it is an elegant combination  
3 of established sciences, relying on DNA extraction and amplification, genetic profiling, and  
4 probability theory. The system has advantages over “human” analysis in low-level DNA cases and  
5 mixture cases because the system does not have the undetectable bias of a human examiner. The  
6 system, furthermore, refuses to ignore significant data. Where a human analyst is compelled to  
7 introduce analytic and stochastic thresholds to make sense of the data derived from the instruments,  
8 the TrueAllele system can consider all of the data, assign corresponding probabilities to different  
9 hypotheses that would explain the data, and calculate an accurate result based on the complete data  
10 set. The elimination of bias and thresholds are two of the primary manners in which the TrueAllele  
11 Casework system has *improved* upon STR-PCR analysis of low-level and mixture DNA cases. Its use  
12 in this case provides substantial and reliable evidence of guilt, and for all of the foregoing reasons,  
13 the People seek its admission in this case.  
14  
15  
16

17 Dated: October 2, 2012

18  
19 Respectfully Submitted,  
20 LISA S. GREEN  
21 District Attorney, County of Kern

22 \_\_\_\_\_  
23 Cynthia Zimmer  
24 Deputy District Attorney

25 \_\_\_\_\_  
26 Joseph Kinzel  
27 Deputy District Attorney  
28

\*\*\*\*\*  
RECORD OF CASE EVENTS:

01/10/13 - CONTINUED

DEFENDANT APPEARED WITH DEPUTY PUBLIC DEFENDER ANDREW KENDALL.  
CO-DEFENDANT CHARLES LEWIS LAWTON AND HIS COUNSEL, RICHARD TERRY ARE PRESENT IN OPEN COURT.  
CAUSE CAME ON REGULARLY AT THIS TIME TODAY FOR FURTHER HEARING AND TRIAL BY JURY, WITH PARTIES APPEARING BY AND WITH COUNSEL, PRESENT IN OPEN COURT.  
DEFENDANTS AND COUNSEL PRESENT IN OPEN COURT.  
CAUSE CONTINUES WITH EVIDENCE CODE 402 HEARING.  
PEOPLE'S MOTION IN LIMINE #8 AND DEFENDANT- LAWTON MOTION IN LIMINE #9.  
DR. MARK PERLIN HERETOFORE SWORN, RESUMES TESTIMONY.  
SEE COPY OF EXHIBIT LIST ATTACHED AND MADE A PART HEREOF FOR EXHIBITS MARKED FOR IDENTIFICATION AND/OR ADMITTED INTO EVIDENCE.  
DR. MARK PERLIN HERETOFORE SWORN, RESUMES TESTIMONY.  
10:12 A.M.  
COURT IS IN RECESS UNTIL FURTHER NOTICE. 15 MINUTES.  
10:32 A.M.  
DEFENDANTS AND COUNSEL PRESENT IN OPEN COURT.  
CAUSE CONTINUES WITH EVIDENCE CODE 402 HEARING.  
DR. MARK PERLIN HERETOFORE SWORN, RESUMES TESTIMONY.  
KELLY WOOLARD HERETOFORE SWORN, RESUMES TESTIMONY.  
ARGUMENTS PRESENTED. EVIDENCE SUBMITTED TO THE COURT FOR RULING.  
SEE COPY OF EXHIBIT LIST ATTACHED AND MADE A PART HEREOF FOR EXHIBITS MARKED FOR IDENTIFICATION AND/OR ADMITTED INTO EVIDENCE.  
PEOPLE'S MOTION IN LIMINE #8 IS GRANTED. DEFENDANT-LAWTON MOTION IN LIMINE #9 IS DENIED AS CLARIFIED BY THE COURT.  
12:00 P.M. : THE COURT ORDERS AN ADJOURNMENT UNTIL 1:30 P.M. THIS DATE.  
1:43 P.M.  
DEFENDANTS AND COUNSEL PRESENT IN OPEN COURT.  
JURY IS NOW PRESENT IN OPEN COURT.  
CAUSE RESUMES ON BEHALF OF THE PEOPLE.  
DESTINY MARTINEZ, DULY SWORN, CALLED TO TESTIFY ON BEHALF OF THE PEOPLE.  
RICHARD JAMES DOSSEY JR., HERETOFORE SWORN, RECALLED, TESTIFIES FURTHER.  
KELLY WOOLARD, DULY SWORN, CALLED TO TESTIFY ON BEHALF OF THE PEOPLE.  
2:59 P.M.  
THE JURY IS DULY ADMONISHED.  
COURT IS IN RECESS UNTIL FURTHER NOTICE. 15 MINUTES.  
3:23 P.M.  
DEFENDANTS AND COUNSEL PRESENT IN OPEN COURT.  
JURY IS NOW PRESENT IN OPEN COURT.

