IN THE CIRCUIT COURT OF PULASKI COUNTY, ARKANSAS
FOURTH DIVISION

LEDELL LEE		**PETITIONER**
v.	**CR 93-1249**	
STATE OF ARKANSAS		**RESPONDENT**

MOTION FOR POST-CONVICTION DNA TESTING PURSUANT TO ARKANSAS CODE ANNOTATED §§ 16-112-201, *ET SEQ* AND REQUEST FOR HEARING

Petitioner Ledell Lee ("Mr. Lee" or "Petitioner"), through undersigned counsel, respectfully petitions this Court for an order directing forensic DNA testing of biological evidence collected during the investigation of the murder of Debra Reese pursuant to Arkansas's Habeas Corpus – New Scientific Evidence Statute (the "Statute") (codified at Ark. Code Ann. §§ 16-112-201, *et seq*.), and the Due Process and Cruel and Unusual Punishment Clauses of the Fifth, Eighth and Fourteenth Amendments to the United States Constitution. DNA testing of evidence is required if testing or retesting can provide materially relevant evidence that will significantly advance the defendant's claim of innocence in light of all the evidence presented to the jury. *Johnson v. State*, 356 Ark. 534, 546, 157 S.W.3d 151, 161 (2004).

PRELIMINARY STATEMENT

Mr. Lee has consistently asserted his innocence and denied any involvement in the 1993 murder of Debra Reese. Today, probative biological evidence i

Mr. Lee seeks to test residual biological evidence on Converse tennis shoes in the custody of the State seized from the defendant on the day of the crime. The State's expert testified that this biological evidence found on the shoes was blood, but that he was unable to conduct further testing to determine the origin of the blood. At Mr. Lee's trial, the State asked the jury to infer that the positive results of the blood testing supported its contention that Mr. Lee had murdered Ms. Reese. Mr. Lee further seeks to test a hair collected at the crime scene and identified by the state's expert at trial as one "intact Negroid head hair," and hair "fragments" also collected from the scene; the jury was told that the state's expert could not include or exclude the defendant as the source of these hairs. This hair and blood evidence was not previously subjected to DNA testing by the State or by Mr. Lee.

However, today's advanced DNA testing methods can now provide definitive answers to the questions that could not be resolved by the State's experts at trial. Indeed, this previously-unavailable testing could now demonstrate that the blood on the shoes was *not* Ms. Reese's, and that the hairs of African American origin found at the scene were *not* Mr. Lee's. Further, if a sufficient quantity of "root" (tissue) material is present on the hairs, and a DNA profile is obtained that excludes Mr. Lee as the source, the profile can be searched in the national CODIS DNA databank and potentially identify Ms. Reese's actual killer. As discussed *infra*, modern DNA technology has been used in numerous cases to exonerate innocent defendants who were sent to prison or death row on the same kinds of limited serology and hair evidence offered by the State against Mr. Lee, after DNA testing provided more definitive and accurate results.

DNA testing is perfectly suited for cases like this one, where technology unavailable at the time of trial can conclusively establish the legitimacy of a Petitioner's innocence claim and undermine evidence used to convict. As the Supreme Court has recognized, "DNA testing has

an unparalleled ability both to exonerate the wrongly convicted and to identify the guilty . . . [t]he Federal Government and the States have recognized this, and have developed

and April 1, 1999. Following these hearings, the circuit judge denied Lee's petition, and the Arkansas Supreme Court affirmed. *Lee v. State*, 343 Ark. 702, 38 S.W.3d 334 (2001).

Lee then filed a Petition for Writ of Habeas Corpus in federal court. On April 2, 2003, United States District Judge George Howard, sua sponte, noted that Lee's attorney may have been impaired to the point of unavailability on one or more days of the Rule 37 hearing. He ordered the petition stayed and held in abeyance, remanding to the trial court to take appropriate action to allow Lee to present relevant evidence and argument in favor of his Rule 37 petition issues. The Eighth Circuit affirmed the stay. *Lee v. Norris*, 354 F.3d 846 (8th Cir. 2004).

On August 30, 2005, Petitioner moved the Arkansas Supreme Court to recall its mandate on grounds that his attorney in the postconviction proceedings rendered ineffective assistance of counsel. Petitioner maintained, and the Supreme Court later found, that his postconviction attorney suffered from a substance-abuse problem and had been intoxicated during the initial Rule 37 proceedings in 1999. As a result, the Arkansas Supreme Court granted Petitioner's motion to recall the mandate and remanded the matter to the circuit judge for further proceedings. *Lee v. State*, 367 Ark. 84, 238 S.W.3d 52 (2006).

On remand, petitioner filed an amended petition for postconviction relief under Arkansas Rule of Criminal Procedure 37. The circuit judge held another hearing on August 28, 2007, and subsequently denied Lee's petition and entered findings of fact and conclusions of law on November 21, 2007. Lee appealed to the Arkansas Supreme Court which affirmed the lower court. *Lee v. State*, 2009 Ark. 255, 308 S.W.3d 596 (2009).

During the above proceedings, on September 18, 2008, the Supreme Court of Arkansas denied a pro se motion of defendant. *Lee v. State*, 2008 Ark. LEXIS 447 (2008), because he was not entitled to accept appointment of counsel and also proceed pro se.

On November 9, 2008, the United States Supreme Court denied *certiorari* to Lee in connection with the Second Rule 37 petition. *Lee v. Arkansas*, 558 U.S. 1013 (2009).

On June 18, 2013, United States District Judge Jimm Larry Hendren denied Lee's Petition for Writ of Habeas Corpus. *Lee v. Hobbs*, 2013 U.S. Dist. LEXIS 85271, 2013 WL 3149755 (E.D. Ark. 2013). On December 18, 2013, Judge Hendren denied Lee's Motion to Vacate, Alter or Amend Judgment Pursuant to Rule 59(e). *Lee v. Hobbs*, 2013 U.S. Dist. LEXIS 177403, 2013 WL 6669843 (E.D. Ark. 2013).

The Eighth Circuit denied relief to Lee and a petition for rehearing en banc was denied. *Lee v. Hobbs*, 2014 U.S. App. LEXIS 22121 (8th Cir. 2014). The United States Supreme Court denied certiorari. *Lee v. Kelley*, 2015 U.S. LEXIS 6544 (Oct. 13, 2015).

Lee is scheduled for execution on April 20, 2017. On April 15, 2017, the Eastern District of Arkansas entered an order staying Mr. Lee's execution, along with several others, because of problems with the execution drug midazolam. *McGehee et al. v. Hutchison*, et al., No. 4:17-cv-179-KGB (E.D. Ark. April 15, 2017). The State has filed a Notice of Appeal. The Circuit Court of Pulaski also entered a temporary order staying all executions pending a preliminary hearing set on Tuesday, April 18, 2017 regarding another of the execution drugs. *McKesson Medical-*

man they believed they saw in Ms. Reese's neighborhood on the morning of her murder. One of the three identified Mr. Lee entering Ms. Reese's home, and exiting 20 minutes later looking suspicious because of "rapid-head movements." Ms. Reese called her mother that morning and told her that a man had just knocked on the door, asked if her husband was home, and inquired about borrowing some tools. When Ms. Reese replied that she had no tools, the man left. Ms. Reese told her mother that she was scared and did not trust this guy. Three hundred dollar bills given to her by her father were missing from Ms. Reese's wallet. Later that day, Mr. Lee paid a debt with a one-hundred dollar bill that bore a serial number within two digits of serial numbers on bills that Ms. Reese's father turned over to police. *Lee v. Arkansas*, 327 Ark. 692, 942 S.W.2d 231, 232-33 (1997).

The State introduced no confession and no physical evidence that directly tied Mr. Lee to the murder of Ms. Reese. None of the lifted prints from the crime scene matched the defendant and no DNA evidence was presented to the jury. To strengthen the weak circumstantial evidence, the State introduced evidence of "small spot[s]" of blood found on Mr. Lee's Converse tennis shoes at the time of his arrest. Notwithstanding an extremely bloody crime scene, however, no other blood was discovered on Mr. Lee's clothes. According to the Arkansas Supreme Court,

> When Lee was arrested and taken into custody on the day of the murder, among the items police seized from him was a pair of Converse tennis shoes he was wearing. Kermitt Channell, a serologist with the State Crime Lab, examined the shoes and observed what he believed to be a small spot of blood on the sole of the left shoe, and another spot on the tongue of the right shoe. Channell performed what he termed a "Takayama test" on the shoes, which confirmed the presence of blood, but consumed the entire sample, thus removing the opportunity for independent analysis by the defense.

Id., 327 Ark. at 699, 942 S.W.2d at 234. Channel testified at trial that he performed the confirmatory blood test on the shoes in accordance with established laboratory guidelines, but acknowledged that he had not contacted the prosecutor or the defense counsel in advance to

inform them that the sample on the shoes could be consumed. *Id.*, 327 Ark. at 700-01, 942 S.W.2d at 235. Significantly, the Arkansas Supreme Court denied relief because "Lee has made no showing that the blood evidence on the shoes possessed any exculpatory value before it was destroyed." *Id.*, 327 Ark. at 701, 942 S.W.2d at 235.

Donald E. Smith, a criminalist, testified for the State as an expert witness with respect to hair evidence retrieved from the crime scene. Specifically, he analyzed one "intact Negroid head hair" and several Negroid hair fragments. Tp. 688. He also indicates the intact hair has a root

ARGUMENT

The Arkansas General Assembly passed Act 1780 to address mounting concerns regarding persons who were jailed, and sometimes executed, for crimes they did not commit. *See* 2001 Ark. Acts 1780 ("[a]n Act to provide methods for preserving DNA and other scientific evidence and to provide a remedy for innocent persons who may be exonerated by this evidence."); *see also Echols v. State*, 350 Ark. 42, 44, 84 S.W.3d 424, 426-7 (2002); *Johnson v. State*, 356 Ark. 534, 157 S.W.3d 151 (2004). The amendment was passed "to accommodate the advent of new technologies enhancing the ability to analyze scientific evidence" and further the "mission of the criminal justice system [which] is to punish the guilty and exonerate the innocent." Act 1780, § 1.

Almost twenty-two years after the start of the Petitioner's trial, the refined capacities of modern DNA testing can now be applied to the blood found on Mr. Lee's shoes, and potentially prove Petitioner's innocence. Given Petitioner's not guilty plea at his earlier trial, his battle to prove his innocence, and the State's underwhelming case against him, the remedy of DNA testing is particularly compelling.

Under the Act, an Arkansas petitioner may make a motion for forensic DNA testing if:

> (1) The specific evidence to be tested was secured as a result of the conviction of an offense's being challenged under § 16-112-201;
>
> (3) The specific evidence was previously subjected to testing and the person making a motion under this section requests testing that uses a new method or technology that is substantially more probative than the prior testing;
>
> (4) The specific evidence to be tested is in the possession of the state and has been subject to a chain of custody and retained under conditions sufficient to ensure that the evidence has not been substituted, contaminated, tampered with, replaced, or altered in any respect material to the proposed testing;
>
> (5) The proposed testing is reasonable in scope, utilizes scientifically sound methods, and is consistent with accepted forensic practices;

(6) The person making a motion under this section identifies a theory of defense that:

requested DNA testing procedures detailed below—has the capacity to produce new material evidence that

have been subject to a chain of custody, and have been retained under circumstances to prevent contamination. There is no evidence demonstrating or reason to believe that the remaining biological evidence has been in any way compromised.

C. The Petitioner's Proposed Testing of the Physical Evidence is Scientifically Sound, Consistent With Accepted Forensic Practices, Reasonable in Scope, and Includes New Forms of DNA Testing That Are Substantially More

At the time of Mr. Lee's trial in 1995, today's advanced methods of STR DNA analysis were unavailable. Exh.2 at ¶ 3, 8-11(Word aff). Short Tandem Repeat ("STR") "increas[ed] exponentially the reliability of forensic identification over earlier techniques" and is "qualitatively different from all that preceded it." *Harvey v. Horan*, 285 F.3d 298, 305, n.1 (4th Cir. 2002). STR testing fully replaced other DNA testing methods in the FBI crime laboratory and most other crime laboratories by 2000.[3] Today, autosomal (non-sex determining) STR technology is the principal mechanism for obtaining DNA profiles in forensic laboratories around the nation, and is essentially the gold standard of modern DNA testing.[4] For a decade, the forensic science community used a minimum of thirteen genetic markers, referred to as the thirteen core CODIS (Combined DNA Index System) loci, when conducting forensic DNA testing.[5]

Since Mr. Lee's trial, there have been major advances in DNA testing capabilities. While Mr. Channell testified that his analysis of the pinpoints of blood consumed the evidence, STR

deposits of blood for DNA testing. This testing could not have been performed prior to Mr. Lee's trial.

2. The hair analysis performed by the criminalist in 1995 was flawed and the availability of mitochondrial DNA testing can prove the hairs found at the scene of the crime do not belong to Mr. Lee.

At the time of the petitioner's trial, the microscopic hair comparison done by Mr. Smith and presented to the jury was a commonly-used but unvalidated forensic technique – one that has since been entirely replaced by mitochondrial DNA analysis as a method of forensic identification. Under the microscope analysis method, an analyst would place two hairs (a crime scene hair and a known hair) side-by-side under a microscope and visually c2.a1 (i)-7on donetimem (n)0P

including hair with no "root," and bones. Mitochondrial DNA can exclude an individual as the source of the hair. Mitochondrial DNA testing was not available to either the State or Mr. Lee in 1995. *See* Exh. 2, Word aff. at ¶8. In 2012, three men who were convicted based on false hair comparison testimony by three different FBI hair examiners were exonerated when post-conviction mitochondrial DNA testing discredited the evidence proffered against them at trial.

person.[9] In fact, of the 340 convictions overturned by post-conviction DNA testing in this nation, at least 74 – about one in four – involved flawed microscopic hair analysis, where a hair from the crime scene was deemed to be "similar to" or "consistent with" the defendant's or the victim's hair standard.[10]

3. The requested STR DNA testing

D. The Petitioner's Identity Was at Issue During the Investigation and Prosecution of Debra Reese's Murder.

The identity of the perpetrator of Ms. Reese's murder has always been at issue as the Petitioner has maintained his actual innocence of the crime since the time of his arrest, has consistently pled not guilty, and has strenuously litigated his innocence claim. Indeed, at trial, Petitioner's counsel emphasized the limited probative value of the forensic testing done by the State, and argued that it was insufficient for the jury to find that the blood was the victim's and that the hairs belonged to the defendant. On appeal, he continued to argue that the blood evidence could have been exculpatory had the State preserved it in sufficient quantities for further testing (which is now possible due to advances in technology). Because Petitioner has never conceded these critical points – and, indeed, has challenged the State's evidence and maintained his innocence since trial – this provision of the statute is satisfied.

E. Petitioner Can Identify a Theory of Defense That is Not Inconsistent With His Defense at Trial and May be Able to Produce New Material Evidence Establishing His Actual Innocence.

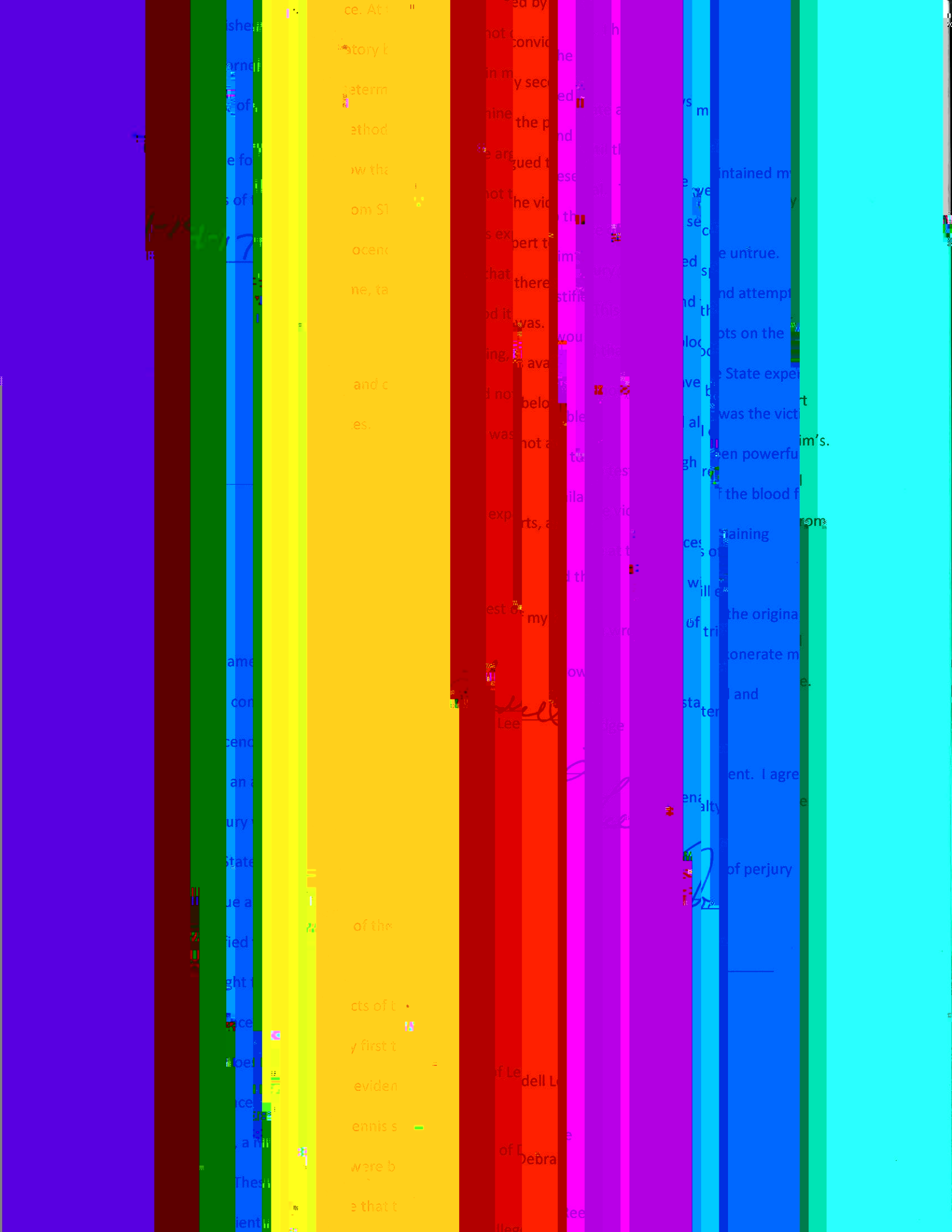
In light of his two decades old innocence claim, Petitioner can readily identify a theory of defense consistent with the "not guilty" plea presented at trial that could establish his actual innocence. He consistently maintained at trial and since that time that he was not perpetrator of this crime, and the DNA testing requested would disprove critical State evidence tending to show that he was the perpetrator. With respect to the current testing, the potential materiality of exculpatory DNA results is apparent, because the testing can: (1) show that the blood on Petitioner's shoes was not Mr. Lee's; (2) show that the "Negroid" hairs found at the crime scene came from someone other than Mr. Lee, and (3) if an STR-DNA profile is obtained from the root of the "intact" hair (as the State's expert said was present when he examined the root), and Mr. Lee is not the source, that STR-DNA profile can be searched in the CODIS DNA database, and

potentially identify Ms. Lee's actual killer.[11]

There are also important public safety interests to be served by the testing Petitioner now seeks. If Mr. Lee is actually innocent of Ms. Reese's murder, then the real perpetrator of this brutal crime has not yet been brought to justice. That individual may still be at large, or incarcerated but pending release, and thus putting other members of the public at risk of future violence. The potential for post-conviction DNA testing to identify the real perpetrator of a serious crime is not speculative: in fully 29% of the post-conviction DNA exonerations documented over a twenty-five year period (1986-2014), the same DNA testing that exculpated a wrongly convicted defendant was used to directly identify a known alternate suspect in the crime(s). *See* West & Meterko, *DNA Exonerations 1989-2014: Review of Data and Findings from the First Twenty-Five Years,* 79 Alb. Law Rev. 717, 730-31 (2015-16). Tragically, many of these individuals had committed still more violent crimes while the innocent defendants were wrongly incarcerated: sixty-eight of these perpetrators went on to commit at least 142 additional violent crimes – including 34 homicides and 77 rapes. *See id.* at 731.

REQUEST FOR HEARING

Mr. Lee respectfully requests that the Court schedule a hearing so that the Court can carefully consider expert and other evidence supporting this Motion for DNA testing.



AFFIDAVIT OF CHARLOTTE J. WORD, Ph.D.

Charlotte J. Word, being duly sworn according to law, upon her oath deposes and says:

1. I, Charlotte Word, am a consultant in forensic DNA testing. I am a former Laboratory Director at Cellmark Diagnostics (which became Orchid Cellmark) in Germantown, MD. I was employed at Cellmark from April 1990 to April 2005.
2. Cellmark Diagnostics in Germantown, MD was a private laboratory that conducted human DNA identification testing and was accredited in 1994 by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board. For many years the Laboratory was also accredited by the American Association of Blood Banks for parentage testing. As a private laboratory in business for over 17 years, Cellmark offered DNA testing services to a wide variety of clients including but not limited to, crime laboratories, prosecutors, defense attorneys, law enforcement, the military, and state and local agencies from around the country.
3. I received a Bachelor of Science degree in Biology from The College of William and Mary in Virginia, and a Ph.D. in Microbiology from The University of Virginia. I did a postdoctoral fellowship at the University of Texas Southwestern Medical School in Dallas, TX conducting research in the areas of molecular biology and immunology. I was on the faculty at the University of New Mexico, School of Medicine, where I did research and taught in the areas of molecular biology and immunology from 1984 to 1990. I have over 37 years of molecular biology experience and over 27 years of experience applying molecular genetics techniques to forensic testing including experience with the majority of the scientific tests used in the United States since 1990 for forensic human DNA identification testing. This includes the extensive use of restriction fragment length polymorphism (RFLP) and polymerase chain reaction (PCR) testing. I have experience in the application of the various, and now outdated, test

procedures used in forensic casework including DQα/DQA1, PM (also referred to as "Polymarker"), D1S80 and short tandem repeat (STR) testing using the "CTT" and "CTT-A" GenePrint systems from Promega Corporation, as well as with the various test systems using fluorescently-labeled STRs, commonly used since the late 1990's.

4. In 1998 and 1999 I was a member of the Post-Conviction Issues Working Group of Attorney General Janet Reno's National Commission on the Future of DNA Evidence and co-author of "Postconviction DNA Testing: Recommendations for Handling Requests" 1999, U.S. Department of Justice Office of Just Ŏ ɹ d y n -

The testimony from the trial indicates that the entire sample from at least one of the shoes was consumed so additional tests could not be performed.[1]

7. At the time of Mr. Lee's arrest in 1993, two forms of DNA testing were available in the United States, and had been available since the late 1980s. Restriction fragment length polymorphism ("RFLP") testing required a large biological sample (e.g., dime to quarter-sized blood stain) to generate interpretable results, and likely would not have been a reasonable test to perform in this case due to the sample-size requirements. Polymerase chain reaction ("PCR") testing using the DQα AmpliType Amplificat] н н e du E

donor of the material. With today's tests, it is possible to obtain statistical frequencies for a match between a DNA profile from a blood stain and a known individual that far exceed the population of the world, leaving little doubt as to the source of the biological sample. Conversely, today's DNA tests can determine that an individual is absolutely not the source of the material tested (i.e., exclude the individual as the source). Third, is the introduction of mitochondrial DNA (mtDNA) testing using DNA sequencing technologies in a few laboratories in the United States, including at the FBI laboratory. This test, which was not available at the time of Mr. Lee's trial, is most commonly used on hair shafts and on biological samples that have been environmentally-stressed such that the DNA is so highly degraded (i.e., broken down into very small pieces) that it is unable to generate test results with conventional DNA tests.

9. Today in the United States, the PCR-based DNA test kits routinely used in all forensic laboratories test for at least 20 STR (Short Tandem Repeat) loci in addition to other markers that confirm the gender of the donor of the DNA in the biological sample. These tests require very small samples, and have been shown to generate interpretable profiles from 20 cells or less, especially if the DNA is from a single contributor. These new test kits, which have only been available in forensic laboratories over the past few months to a year, are also resistant to inhibition by factors inherent in some samples allowing for testing of samples that may not have generated DNA test results with the earlier PCR-based STR tests. In addition, these new kits were developed specifically to generate results from older samples that may ha

not noted previously, and which may be suitable for testing, could be identified on the shoes upon re-examination. For example, minute deposits of blood may remain on the shoe which were not noted or tested by Mr. Channell -- perhaps because such quantities were insufficient for serology testing and thus not deemed significant at that time -- but which could yield the blood donor's DNA profile using today's methods. It is not uncommon for additional biological stains to be discovered upon re-examination of evidence samples years later and to produce significant scientific data. Any DNA test results obtained from a stain on the shoes may be compared to the DNA profile from Mr. Lee and from Ms. Debra Reese to determine if either are included or excluded as the source of the DNA.

11. Similarly, any other biological evidence deposited by an individual or transferred to the victim from the perpetrator, and vice versa, present on other items recovered from the crime scene, victim or the defendant may also be suited for testing with today's various STR DNA typing and/or mtDNA sequencing technologies. For example, a mtDNA sequence can often be generated from the shaft of a hair that is approximately an inch in length or longer and can exclude an individual as the source of the hair. Alternatively, if there is a root on the hair, conventional PCR STR DNA testing procedures may be used to generate a profile suitable for comparison to DNA profiles obtained from Ms. Reese and Mr. Lee and for entry into the FBI's CODIS database.

Exhibit A

Curriculum Vitae

Charlotte J. Word, Ph.D.

Education

Ph.D. Microbiology, University of Virginia, Charlottesville, Virginia, 1981

B.S. Biology, College of William and Mary, Williamsburg, Virginia, 1976

Professional Experience

Consultant, Human DNA Identification and Paternity Testing, 2005 - present

Consultant, Boston University School of Medicine, NIJ Training Grant awarded to Dr. Robin Cotton, 2008 – 2015.

Consultant, Orchid Cellmark, Germantown, MD; Dallas, TX, 2005 - 2012

Consultant, Applied Biosystems, Inc. 2006 - 2012

Project Staff Associate, Northeast Regional Forensic Institute, Research Foundation of State University of New York, Albany, New York, 2006 - 2007

Senior Manager, Forensics and Laboratory Director, Orchid Cellmark, Germantown, Maryland, 2001 - 2005

Deputy Laboratory Director, Forensic Laboratory, Cellmark Diagnostics, Inc., Germantown, Maryland, 1997 - 2001

Senior Scientist, Cellmark Diagnostics, Inc., Germantown, Maryland, 1995 - 1997

Scientist, Cellmark Diagnostics, Inc., Germantown, Maryland, 1990 - 1995

Research Assistant Professor, Department of Cell Biology, University of New Mexico School of Medicine, Albuquerque, New Mexico, 1984 -1990

Research Fellow, Dr. Philip W. Tucker, Department of Microbiology
University of Texas Southwestern Medical School, Dallas, Texas, 1981 - 1984

Graduate Research Student (Ph.D.), Dr. W. Michael Kuehl, Department of Microbiology,

University of Virginia. Thesis Title: "Murine B Lymphomas: Models for Immunoglobulin Expression in B Cell Development.", 1976 - 1981

Sabbatical with Dr. Randolph Wall, University of California at Los Angeles Molecular Biology Institute, Los Angeles, California, 1980

Participant, Histopathobiology of Cancer Workshop, Keystone, Colorado, 1979

Professional Associations and Licensures

American Society of Human Genetics

American Academy of Forensic Sciences

Mid-Atlantic Association of Forensic Scientists

Mid-Atlantic Cold Case Homicide Investigators Association (MACCHIA)

CE Users Group

Maryland Department of Health and Mental Hygiene, Office of Health Care Quality, Forensic Letter of Permit Exception

Honors and Research Support

Member, Subcommittee on Biology/DNA Analysis 2 (Biology Data Interpretation and Reporting) of the Biology/DNA Scientific Area Committee of the Organization of Scientific Area Committees (OSAC), 2014–present

Member, American Academy of Forensic Sciences, Academy Standards Board, DNA Consensus Board, 2016-present

Member, Reporting and Testimony Subcommittee of the National Commission on Forensic Science, 2014–2017

District of Columbia Department of Forensic Sciences Science Advisory Board, 2014–2015

Grant Review for National Institutes of Justice, 2006–present

Auditor for the National Forensic Science Technology Center, 2005–2011

Inspector for the American Society of Laboratory Directors/Laboratory Accreditation Board 2004 – 2005, 2010.

Editorial Board, *The Journal of Forensic Sciences*, 2004 – present

Guest Reviewer, *The Journal of Forensic Sciences*, 2002 – 2004

Guest Reviewer, *Forensic Science International:Genetics*, 2012-present

Member, Post-Conviction Issues Working Group of the National Commission on the Future of DNA Evidence, 1998-1999. Co-author of "Postconviction DNA Testing: Recommendations for Handling Requests" 1999, U.S. Department of Justice Office of Justice Programs.

United States Department of Defense, 1996-1998, Enhanced DNA Recovery, $318,000.

NIH 1 RO1 HD20409. Immunoregulatory Factors in Human Colostrum. $88,218 (direct). 07/01/87 – 06/30/90. Co-PI: S. Crago.

American Heart Association Grant-In-Aid 1985-1989, Regulation of B Cell Immunoglobulin Isotype by T Cells, $99,000.

American Cancer Society Junior Faculty Research Award 1985-1988, Regulation of B Cell Immunoglobulin Isotype by T Cells, $90,500.

Recipient of AAI travel award for 6th International Congress of Immunology, 1986.

Fellow, Damon Runyon –Walter Winchell Cancer Fund Award, 1982-1984.

Semi-Finalist, 1981 Distinguished Dissertation Award from the Council of Graduate Schools/University Microfilms International.

Publications

Word, C.J. and Kuehl, W.M. 1981. Expression of surface and secreted IgG_{2a} by a murine B lymphoma before and after hybridization to myeloma cells. Mol. Immunol. 18:311-322.

Rogers, J., Choi, E., Souza, L., Carter, C., Word, C., Kuehl, M., Eisenberg, D. and Wall, R. 1981. Gene segments encoding transmembranal carboxyl termini of immunoglobulin γ chains. Cell 26:19-27.

Word, C.J., Mushinski, J.F. and Tucker, P.W. 1983. The murine immunoglobulin α gene expresses multiple transcripts from a unique membrane exon. EMBO J. 2:887-898.

Jones, S., Chen, Y.-W., Isakson, P., Layton, J., Pure, E., Word, C., Krammer, P.H., Tucker, P.W. and Vitetta, E.S. 1983. Effect of T cell-derived lymphokines containing B

cell differentiation factor(s) for IgG (BCDFγ) on γ-specific mRNA in murine B cells. J. Immunol. 131:3049-3051.

Vitetta, E.S., Brooks, K., Chen, Y.-W., Isakson, P., Jones, S., Layton, J., Mishra, G.C., Pure, E., Weiss, E., Word, C., Yuan, D., Tucker, P., Uhr, J.W. and Krammer, P.H. 1984. T cell-derived lymphokines inducing IgM and IgG secretion in activated murine B cells. Immunol. Rev. 78:137-157.

Wels, J., Word, C.J., Rimm, D., Der-Balan, G., Martinez, H.M., Tucker, P.W. and Blattner, F.R. 1984. Structural analysis of the murine IgG_3 constant region gene. EMBO J. 3:2041-2046.

White, MI ecr `

White, M.B., Word, C.J., G-Humphries, C., Blattner, F.R. and Tucker, P. 1990. IgD switching can occur through homologous recombination in human B cells. Mol. and Cell Biol. 1990 10:3690-3699.

Cotton, R.W., Forman, L., Word, C.J. 1991. Research on DNA typing validated in the literature. (Letter) Am. J. Hum. Genet. 49:898-899.

WaW M typ-Hum an, L., Word rd

Kokoszka, J.E., Cline, R. E., Leisy, C., Grossweiler, L. L., and Word, C. J. 2006. The Successful DNA Typing of Samples Following a Thermal Cycler Power Loss. J. For. Sci. 51:1074-1079.

Word, C. (2010) What is LCN?—Definitions and Challenges. *Profiles in DNA* **13(1)**; [Internet] 2010. Available from: www.promega.com/profiles/1301/1301_01.html

Word, C.J. (2011) Mixture interpretation: Why is it sometimes so hard? *Profiles in DNA* **14(1)**; [Internet] 2011. Available from: www.promega.com/profiles/1401/1401_04.html

Presentations/Abstracts/Workshops

Word, C.J. and Kuehl, W.M. 1980. A murine B-lymphoma expresses surface and secreted IgG_{2a}. 62nd Annual Meeting Federation of American Societies for Experimental Biology.

Word, C.J., Mushinski, J.F., Slightom, J.L., Blattner, F.R. and Tucker, P.W. 1982. Membrane and secretory IgA. 66th Annual Meeting Federation of American Societies for Experimental Biology.

Word, C.J., Mushinski, J.F. and Tucker, P.W. 1983. The murine immunoglobulin α gene expresses multiple transcripts from a unique membrane exon. 12th Annual UCLA Symposium, Journal of Cellular Biochemistry.

Word, C.J., Mushinski, J.F., and Tucker, P.W. 1983. The murine immunoglobulin α gene expresses multiple transcripts from a unique membrane exon. 5th International Congress of Immunology.

Crago, S.S., Word, C.J., and Tomasi, T.B. 1986. Interaction of antisera to the secretory component with FcαR. International Congress of Mucosal Immunology.

Chen, Y.-W., Word, C., Jones, S., Uhr, J.W., Tucker, P.W., and Vitetta, E.S. 1986. Biochemical and molecular characterization of an IgM/IgG_1-producing variant. 6th International Congress of Immunology.

Word, C.J., White, M.B., Shen, A.L., Kuziel, W.A., Blattner, F.R., and Tucker, P.W. 1986. DNA sequence and

Word, C.J., White, M.B., Shen, A.L., Kuziel, W.A., Blattner, F.R. and Tucker, P.W. 1986. DNA sequence and analysis of the human Ig Cμ-Cδ locus. Rocky Mountain Immunology Meeting.

Crago, S.S., Word, C.J., Tomasi, T.B. 1986. Interaction of antisera to the secretory component with the IgA receptor (FcαR) on murine lymphoid cells. Rocky Mountain Immunology Meeting.

Crago, S., Word, C. and Tomasi, T.B. 1986. Anti-secretory component inhibits binding of IgA to FcαR. 71st Annual Meeting Federation of American Societies for Experimental Biology.

Crago, S., Word, C.J. and Tomasi, T.B. 1987. Anti-secretory component inhibits binding of IgA to FcαR. FASEB Summer Research Conferences on Fc Receptors and Immunoglobulin Binding Factors.

Word, C.J. - Presenter. 1990. Criminal Law and DNA, The Institute of Continuing Legal Education in Georgia. Atlanta, GA.

Word, C.J. - Presenter. 1990. California Association of Criminalist meeting, Long Beach, CA.

Kriss, J.E., Forman, L., Word, C.J., Garner, D.D. and Cotton, R.W. 1991. Factors affecting migration and resolution of DNA fragments. 43rd Annual Meeting of the American Academy of Forensic Sciences, Anaheim, CA.

Forman, L., Wadhams, M.J., Roby, R.K., Stacy, T.D., Word, C.J., Garner, D.D. and Cotton, R.W. 1991. Comparison of allele frequency distributions in four populations using probe YNH24. 43rd Annual Meeting of the American Academy of Forensic Sciences, Anaheim, CA.

Cotton, R.W., Kriss, J.E., Forman, L., Word, C.J. 1992. The effects of sample buffer composition on migration of DNA fragments. 44th Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA.

Forman, L., Roby, R.K., Wadhams, M.J., Stacy, T.D., Word, C.J., Garner, D.D. and Cotton, R.W. 1992. Effects on the calculation of frequencies from statistically-differentiated databases for multiple VNTR loci. 44th Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA.

Word, C.J., Cotton, R.W., Cooper, J.A., McCoy, M.J., Roby, R.K., Stacy, T.D., Walsh, D.J., Wadhams, M.J., Weber, M.A., Yates, P.J. and Forman, L. 1992. Use of single-locus and multilocus DNA probes in forensic paternity cases involving incestual relationships.
44th Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA.

Cotton, R.W., Kriss, J., Sipes, D.E., Wadhams, M., Forman, L., and Word, C.J. 1995. Experimental validation of three STR loci for forensic casework. 47th Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA.

Bing, D.H., and Word, C.J., et al. 1995. PCR based forensic testing with AmpliType® PM PCR Amplification and Typing Kit: The results of validation studies from forensic laboratories. 47th Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA.

Word, C.J., Presenter. 1995. AmpliType Users Forum. 47th Ann. Mtg. Seattle, WA.

Word, C.J. 1995. Implementation of STR/$AgNO_3$ protocols on casework. Florida DNA Training Session III: Advanced PCR Applications. Altamonte Springs, FL.

Word, C.J., Cotton, R.W., Ranadive, A.A., and Weber, M.A. 1995. Forensic casework analysis using STRs, DQα and PM in combination. Sixth International Symposium on Human Identification, Scottsdale, AZ.

Word, C.J. 1995. DNA Mid-Atlantic Association of Forensic Scientists Presents "The Gilbert and Trias Murders." Gaithersburg, MD.

Cotton, R.W., Chakraborty, R., Crouse, C., Forman, L., Kriss, J., Ranadive, A. A., Sipes, D.E., Weber, M.A., Weir, B., Word, C.J. 1996. Analysis of casework samples using a combination of the DQα, PM, and 3 STR loci. 48th Annual Meeting of the American Academy of Forensic Sciences, Nashville, TN.

Word, C.J. 1996. DNA Interpretation Issues Workshop. Northwest Association of Forensic Sciences Meeting, Salt Lake City, UT.

ó ή γ q cc A ˛ l Word, C.J. 1996. Interpretation of m ! cæOǫM D ` ´ ɜ T ʊ l

typing: Forensic casework examples. 50th Annual Meeting of the American Academy of Forensic Sciences, San Francisco, CA.

Word, C.J., Gregory, S.A., Reynolds, J.E., and Cotton, R.W., 1998. PCR amplification and overcoming inhibition of DNA recovered from adhesive surfaces. 50th Annual Meeting of the American Academy of Forensic Sciences, San Francisco, CA.

Word, C. J. 1998. DNA quantitation and PCR inhibition issues. Florida DNA Training Session IV: STRs - The Next Generation, Orlando, FL.

Grossweiler, L.L., Gee, M.A., Crance, K.A., Sipes, D.E., Word, C.J., and Reynolds, J.E. 2000. Successful DNA extraction from serum samples. 11th International Symposium on Human Identification, Biloxi, MS.

Maddox, L.O., Suit, B., Koch, K., Higgins, J., Word, C.J., and Cotton, R.W. 2000. Forensic use of Abacus OneStep ABAcard® test for the identification of the p30 antigen. 11th International Symposium on Human Identification, Biloxi, MS.

Word, C.J., Danielsen, L.A., Reynolds, J.E., Maddox, L.O., and Cotton, R.W. 2000. Multiple-laboratory validation of fluorescent STRs using proficiency test results. 11th International Symposium on Human Identification, Biloxi, MS.

Word, C.J., Reynolds, J.E., Cotton, R.W., Grossweiler, L.L., Maddox, L.O. 2001. Solving old crimes with new DNA testing - contracting "cold" cases. 53rd Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA. (presented by Melissa B. Thompson)

Cotton, R.W., Word, C.J., Danielsen, L.A., Reynolds, J.E., and Maddox, L.O. 2001. Demonstration of general acceptance of STR data to the court. 53rd Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA.

Cotton, R.W., Kriss, J.E., Colombo, K.A., Word, C.J., and Maddox, L.O. 2001. Defin] D ę

C

Grgicak, C.M., Reynolds, J.E., Sipes, D.E., Rosier, L.R., Knickerbocker, C.J., Zimmerman, C.E., Shofkom, A.E., Befus, J.K., Cotton, R.W., Word, C.J. 2002. Relative sensitivity comparison between ABI fluorescent detection instruments using data from large scale no-suspect casework. 54th Annual Meeting of the American Academy of Forensic Sciences, Atlanta, GA.

Cline, R., Polhamus, C., Winebrenner, L., Leisy, C., Heller, A., Cicco, M., Grossweiler, L., Kokoszka, J. E., and Word, C. J. 2002. The night the lights went out in Germantown, An amplification study. 13th International Symposium on Human Identification, Phoenix, AZ.

Grgicak, C., Sipes, D.E., Grossweiler, L.L., Cotton, R.W., Word, C.J. 2003. Comparative Analysis of the DNA IQ™ and QIAamp DNA Extraction Kits for the Processing of Forensic Evidentiary Samples. 55th Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL.

Grossweiler, L.L., Word, C.J., Maddox, L.O., 2003. Decision Branches for Testing of No Suspect Casework. 55th Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL.

Word, C.J. Co-presenter 2005. Presenting DNA Evidence in Court. Sixteenth International Symposium on Human Identification, Dallas, TX

Word, C.J. 2006. Presented Workshop: Statistics in the Courtroom. 5th Annual Bode East Coast Advanced DNA Technology Workshop, Captiva Island, FL

Word, C.J. and Clarke, G. W. 2006. Presented Workshop: Courtroom Testimony: What You Need to Know. 17th Annual International Symposium on Human Identification, Nashville, TN

Word, C.J. and Dale, W. M. 2006. Quality Management System Concept and Tools "Mistakes Happen-What to do when it Happens to you & How to Prevent Them". 17th Annual International Symposium on Human Identification, Nashville, TN

Word, C.J. and Clarke, G. W. 2007. Presented Workshop: Expert Witness Testimony. 18th Annual International Symposium on Human Identification, Hollywood, CA.

Word, C.J. 2009. Presented Workshop: Expert Witness Testimony for New and Advanced DNA Analysts. Albany, NY

Word, C.J. 2009. What is LCN? Definitions and Challenges. 20th International Symposium on Human Identification, Las Vegas, NV

Word, C.J., Cotton, R.W., Grgicak, C., Butler, J. and Coble, M. 2010. Mixture Interpretation: Principles, Protocols, Practice Workshop at 21st International Symposium on Human Identification, San Antonio, TX

Word, C.J. 2011. DNA Testing – Can Anyone be Excluded? Bode West meeting, San Diego, CA

Word, C.J. 2011. Achieving Neutrality as an Expert, Bode West meeting, San Diego, CA

Word, C.J., Cotton, R.W., Grgicak, C.M., Coble, M.D., and Butler, J.M. 2011. Mixture Interpretation: Principles, Protocols, Practice Workshops in Florida, Texas, Michigan and Arizona

Word, C.J. 2011. Mixture Interpretation. Green Mountain DNA Conference, Burlington, VT

Word, C.J., Cotton, R.W., Grgicak, C.M., Coble, M.D., and Butler, J.M. 2011. Mixture Interpretation: Using Scientific Analysis Workshop at 22nd International Symposium on Human Identification, National Harbor, MD

Cotton, R.W., Butler, J.M., Coble, M. D., Grgicak, C.M., Word, C.J., and Gunn, L.M. 2011. SWGDAM Mixture Interpretation Guidelines: Successes, Issues and Suggested Future Directions. Poster presented at 22nd International Symposium on Human Identification, National Harbor, MD

Cotton, R.W., Butler, J.M., Coble, M. D., and Word, C.J. 2012. DNA Mixture Interpretation Workshop. The NIJ Conference 2012, Arlington, VA

Word, C.J. 2012. "New and Improved" Technology – Where Have We Come and Where Do We Need to Go? Green Mountain DNA Conference, Burlington, VT

Word, C.J., Butler, J.M., Coble, M. D., Grgicak, C.M. and Cotton, R.W. 2012. 2012 Mixture Interpretation Workshop: Mixtures Using Sound Statistics, Interpretation and Conclusions. 23rd International Symposium on Human Identification, Nashville, TN

Word, C.J. Challenges and Impact of DNA Interpretation for Forensic Analysis. 2013. 29th International Symposium on MicroScale Bioseparations, University of Virginia, Charlottesville, VA

Word, C.J. Current Issues of DNA Testing. 2013. NACDL & CACJ's 6th Annual Forensic Science & the Law Conference "Making Sense of Science VI", Las Vegas, NV

Word, C.J. Different Assumptions & Different Conclusions. 2013. NIST DNA Mixture Interpretation Workshop & Webcast, with Butler, J.M., Coble, M.D., Cotton, R.W., Heidebrecht, B., Gaithersburg, MD

Word, C.J. Complex Mixtures. 2013. NIST DNA Mixture Interpretation Workshop & Webcast, with Butler, J.M., Coble, M.D., Cotton, R.W., Heidebrecht, B., Gaithersburg, MD

Word, C.J., Cotton, R., Butler, J., Coble, M. and Grgicak, C. 2013. A Clarion Call to Improve the Underlying Science, Laboratory Efficiency and Cost Associated with Testing of Complex DNA Mixtures and Interpretation. ASCLD 40th Anniversary Meeting, Durham, NC

Word, C.J. 2013. Complex Mixture Interpretation Issues. 2nd Annual Advanced DNA Technology Workshop – Bode Mid-Atlantic , Charlottesville, VA

Word, C.J., Buzzell, L.H. III, Scoville, S.G., Spurgeon, T. 2013. Expert Witness Testimony Workshop. 24th International Symposium on Human Identification. Atlanta, GA

Word, C.J. 2013. Complex Mixture Fundamentals. DNA Technical Leader Summit. Norman, OK

Word, C.J. 2013. Recent Issues Seen in Court. DNA Technical Leader Summit. Norman, OK

Word, C.J. 2013. Court Admissibility Considerations. DNA Technical Leader Summit. Norman, OK

Butler, J.M., Word, C.J., Coble, M. 2014. DNA Mixture Interpretation: History, Challenges, Statistical Approaches, and Solutions. 66th Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA

Word, C.J. 2014. Science of the Current Generation. MAAFS 2014 Winter Workshop: TARDIS of Molecular Biology, Manassas, VA

Word, C.J. 2014. New Aspects of Testimony. MAAFS 2014 Winter Workshop: TARDIS of Molecular Biology, Manassas, VA

Word, C.J. 2014. Scientific Neutrality in Expert Witness Testimony. Plenary Session co-presented with Lewis Buzzell III, J.D. and Scott Scoville, J.D. MAAFS 2014 Annual Meeting, State College, PA

Word, C.J. 2014. Why Do We Need to Consider Probabilistic Modeling? NIST DNA Analyst Webinar Series: Probabilistic Genotyping and Software Programs (Part 1)

Word, C.J. 2014. Why Do We Need Probabilistic Modeling? Green MAz # f T M

New SWGDAM Guidelines, Population Database Problems & Implication for Post-Conviction Cases, NACDL In the Mix? Dealing With DNA, Cognitive Bias & Habeas in the Innocence Case, San Antonia, TX

Word, C.J. 2016. Final Reports: Do They Say What We *Really* Mean? Mid-Atlantic Association of Forensic Scientists Annual Meeting, Richmond, VA

Word, C.J. 2016. Probabilistic Genotyping: Issues and Research Needs. Gordon Research Conference: Forensic Analysis of Human DNA, Waterville Valley, NH

Forensic Mixtures: Assessment, Analysis and Technology: Current Methods, New Approaches and Disruptive Technologies Workshop. 26th International Symposium on Human Identification, Dallas, TX, 2015

Countdown to 2017: Internal Validation of the New CODIS Loci Workshop. 26th International Symposium on Human Identification, Dallas, TX, 2015

26th Congress of the International Society for Forensic Genetics. Krakow, Poland, 2015

Beyond DNA-Profiling: RNA-Profiling, Transfer and Persistence – What is it and How did it Get There? Workshop. 26th Congress of the International Society for Forensic Genetics. Krakow, Poland, 2015

The New Y Chromosome Haplotype Reference Database and Optimized Approaches for the Forensic Y-STR Analysis, Workshop. 26th Congress of the International Society for Forensic Genetics. Krakow, Poland, 2015

Ethical, Legal and Social Issues in Forensic Genetics, Workshop. 26th Congress of the International Society for Forensic Genetics. Krakow, Poland, 2015

International Symposium on Forensic Science Error Management – Detection, Measurement and Mitigation, Crystal City, VA, 2015

American Society of Crime Laboratory Directors (ASCLD) 42nd Annual Meeting: Excellence in Forensic Leadership – Policy and Practice in the 21st Century, Washington, DC, 2015

67th Annual Meeting of the American Academy of Forensic Sciences, Orlando, FL, 2015

Advanced Topics for Human Identification & Data Interpretation, The Center for Forensic Science Res2015earch & Education, Philadelphia, PA, 2014

25th International Symposium on Human Identification, Phoenix, AZ, 2014

New Autosomal and Y-STR Loci and Kits, International Symposium on Human Identification, Phoenix, AZ, 2014

Interpretation of Complex DNA Mixtures: The Biological and Statistical Perspectives, International Symposium on Human Identification, Phoenix, AZ, 2014

Almost Everything You Wanted to Know About Probabilistic Software, International Symposium on Human Identification, Phoenix, AZ, 2014

Emerging Forensic Genomic Applications, Greenville, NC, 2014

Green Mountain DNA Conference, Burlington, VT, 2014

NIST DNA Analyst Webinar Series: Probabilistic Genotyping and Software Programs (Part 1), Gaithersburg, MD 2014

Mid-Atlantic Association of Forensic Scientists Annual Meeting, State College, PA 2014

NFI Symposium: Interpretation of complex DNA profiles, The Hague, Netherlands, 2014

MAAFS 2014 Winter Workshop: TARDIS of Molecular Biology, Manassas, VA, 2014

DNA Technical Leader Summit, Norman, OK, 2013

2nd Annual Advanced DNA Technology Workshop – Bode Mid-Atlantic , Charlottesville, VA, 2013

24th International Symposium on Human Identification, Atlanta, GA, 2013

23rd Congress of the International Society for Forensic Genetics 2013, Melbourne, Australia, 2013

Advanced Principles in Forensic DNA Evidence Interpretation, International Society for Forensic Genetics 2013, Melbourne, Australia, 2013

Writing and Reviewing Scientific Papers Workshop, International Society for

The NIJ Conference 2012, Turning to Science: Enhancing Justice, Improving Science, Reducing Costs, Arlington, VA 2012

22nd International Symposium on Human Identification, National Harbor, MD, 2011

Green Mountain DNA Conference, Burlington, VT, 2011

The NIJ Conference 2011, Translational Criminology: Shaping Policy and Practice with Research, Crystal City, VA, 2011

Bode West meeting, San Diego, CA, 2011

63rd Annual Meeting of the American Academy of Forensic Sciences, Chicago, IL, 2011

NIJ/OLES-funded Research Symposium, Office of Law Enforcement Standards, National Institutes of Standards and Technology, Gaithersburg, MD, 2010

American Society of Human Genetics, 60th Annual meeting, Washington, D.C. 2010

21st International Symposium on Human Identification, San Antonio, TX, 2010

American Society of Crime Laboratory Directors Meeting, Baltimore, MD, 2010

15th National CODIS Conference, Reston, VA, 2009

20th International Symposium on Human Identification, Las Vegas, NV, 2009

Ethics Workshop, 20th International Symposium on Human Identification, Las Vegas, NV, 2009

The NIJ Conference 2009, Crystal City, VA, 2009

14th National CODIS Conference, Crystal City, VA, 2008

19th International Symposium on Human Identification, Hollywood, CA, 2008
Ethics and Forensic Science Workshop, 19th International Symposium on Human Identification, Hollywood, CA, 2008

Troubleshooting Common Laboratory Problems Workshop, 19th International Symposium on Human Identification, Hollywood, CA, 2008

The NIJ Conference 2008; Criminal Justice Research, Development and Evaluation in the Social and Physical Sciences, Crystal City, VA, 2008

60th Annual Meeting of the American Academy of Forensic Sciences, Washington, D.C. 2008

Human DNA Quantification Using Real Time PCR Assays Workshop, 60th Annual Meeting of the American Academy of Forensic Sciences, Washington, D.C. 2008

DNA Mixture Interpretation: Principals and Practice in Component Deconvolution and Statistical Analysis Workshop, 60th Annual Meeting of the American Academy of Forensic Sciences, Washington, D.C. 2008

Eighteenth International Symposium on Human Identification, Hollywood, CA, 2007.

The NIJ Conference 2007; Forensic DNA: Tools, Technology, and Policy, Arlington, VA, 2007

Grant Progress Assessment Training, Washington, D.C. 2007

HID 3130 Systems Training Program, Applied Biosystems, Rockville, MD, 2007

Twelfth National CODIS Conference, Arlington, VA, 2006

Seventeenth Annual International Symposium on Human Identification, Nashville, TN, 2006

5th Annual Bode East Coast Advanced DNA Technology Workshop, Captiva Island, FL, 2006

58th Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA, 2006

Eleventh National CODIS Conference, Crystal City, VA, 2005

Sixteenth International Symposium on Human Identification, Dallas, TX, 2005

DNA Auditors Training Class, Quantico, VA, 2004

Tenth National CODIS Conference, Crystal City, VA, 2004

54th Annual Meeting of the American Academy of Forensic Sciences, Atlanta, GA, 2002

Y Chromosome Analysis and its Application to Forensic Casework Workshop, 54th Annual Meeting of the American Academy of Forensic Sciences, Atlanta, GA, 2002

Forensic Mitochondrial DNA Analysis: A Community Forum Workshop, 54th Annual Meeting of the American Academy of Forensic Sciences, Atlanta, GA, 2002

Statistics II – Forensic Mixture Interpretation & Analysis, Thirteenth International Symposium on Human Identification, Phoenix, AZ, 2002

Thirteenth International Symposium on Human Identification, Phoenix, AZ, 2002

Brooklyn Law School Symposium, DNA: Lessons from the Past, Problems from the Future, Brooklyn, NY, 2001

Twelfth International Symposium on Human Identification, Promega, Biloxi, MS, 2001

DNA Audit Class, Quantico, VA, 2000

52nd Annual Meeting of the American Academy of Forensic Sciences, Reno, NV, 2000

Fifth Annual Conference on the Future of DNA: Implications for the Criminal Justice System, New York, NY, 2000

Florida DNA Training Session V: DNA 2000, Miami Lakes, FL, 2000

Eleventh International Symposium on Human Identification, Promega, Biloxi, MS, 2000

Casework Guidelines and Complex Mixture Interpretation Workshop, Promega, Biloxi, MS, 2000

Statistics Workshop, Promega, Orlando, FL, 1999

Mitochondrial DNA Sequence Analysis in Forensic Casework Methods and Issues Workshop, Promega, Orlando, FL, 1999

Tenth International Symposium on Human Identification, Promega, Orlando, FL, 1999

50th Annual Meeting of the American Academy of Forensic Sciences, San Francisco, CA, 1998

Florida DNA Training Session IV: STRs - The Next Generation, Orlando, FL, 1998

Ninth International Symposium on Human Identification, Promega, Orlando, FL, 1998

49th Annual Meeting of the American Academy of Forensic Sciences, New York, NY, 1997

Eighth International Meeting on Human Identification, Promega, Scottsdale, AZ, 1997

A Workshop in Statistics for Forensic Scientists, St. Petersburg Junior College, St. Petersburg, FL, 1996

The Seventh International Symposium on Human Identification, Promega, Scottsdale, AZ, 1996

Northwest Association of Forensic Sciences, Salt Lake City, UT, 1996

Human Identification Users Meeting, Rockville, MD, 1996

47th Annual Meeting of the American Academy of Forensic Sciences, Seattle, WA, 1995

Florida DNA Training Session III: Advanced PCR Applications, Altamonte Springs, FL, 1995

The Sixth International Symposium on Human Identification, Promega, Scottsdale, AZ, 1995

The Mid-Atlantic Association of Forensic Scientists Present "The Gilbert and Trias Murders," Gaithersburg, MD, 1995

46th Annual Meeting of the American Academy of Forensic Sciences, San Antonio, TX, 1994

The Fifth International Symposium on Human Identification, Promega, Scottsdale, AZ, 1994

BioEast '94 Workshop, Washington, D.C., 1994

45th Annual Meeting of the American Academy of Forensic Sciences, Boston, MA, 1993

The Second International Symposium on the Forensic Aspects of DNA Analysis, Quantico, VA, 1993

Florida DNA Training Session II: PCR Applications, Orlando, FL, 1993

The Fourth International Symposium on Human Identification, Promega, Scottsdale, AZ, 1993

44th Annual Meeting of the American Academy of Forensic Sciences, New Orleans, LA, 1992

The Third International Symposium on Human Identification, Promega, Scottsdale, AZ, 1992

AmpliType HLA DQα Forensic DNA Amplification and Typing Workshop, 1992.

43rd