S. HRG. 111–554

STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES

HEARING

BEFORE THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

SEPTEMBER 9, 2009

Serial No. J–111–43

Printed for the use of the Committee on the Judiciary

U.S. GOVERNMENT PRINTING OFFICE

54–720 PDF WASHINGTON : 2010

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON THE JUDICIARY

PATRICK J. LEAHY, Vermont, *Chairman*

HERB KOHL, Wisconsin
DIANNE FEINSTEIN, California
RUSSELL D. FEINGOLD, Wisconsin
CHARLES E. SCHUMER, New York
RICHARD J. DURBIN, Illinois
BENJAMIN L. CARDIN, Maryland
SHELDON WHITEHOUSE, Rhode Island
AMY KLOBUCHAR, Minnesota
EDWARD E. KAUFMAN, Delaware
ARLEN SPECTER, Pennsylvania
AL FRANKEN, Minnesota

JEFF SESSIONS, Alabama
ORRIN G. HATCH, Utah
CHARLES E. GRASSLEY, Iowa
JON KYL, Arizona
LINDSEY GRAHAM, South Carolina
JOHN CORNYN, Texas
TOM COBURN, Oklahoma

BRUCE A. COHEN, *Chief Counsel and Staff Director*
MATT MINER, *Republican Chief Counsel*

CONTENTS

STATEMENTS OF COMMITTEE MEMBERS

WITNESSES

QUESTIONS AND ANSWERS

SUBMISSIONS FOR THE RECORD

ADDITIONAL SUBMISSIONS FOR THE RECORD

STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES

WEDNESDAY, SEPTEMBER 9, 2009

U.S. SENATE,
COMMITTEE ON THE JUDICIARY,
Washington, DC

The Committee met, pursuant to notice, at 10:10 a.m., Room 226, Dirksen Senate Office Building, Hon. Patrick J. Leahy, Chairman of the Committee, presiding.

Present: Senators Durbin, Whitehouse, Klobuchar, Franken, and Sessions.

OPENING STATEMENT OF HON. PATRICK J. LEAHY, A U.S. SENATOR FROM THE STATE OF VERMONT

Chairman LEAHY. Good morning everybody. Please sit down. Please, I'm sorry. I was somewhat plagued getting in. I was just whispering to Senator Sessions that it can take well over an hour to go 10 miles, it seems like. A bit excessive, around here.

Dr. Buel and I both live on dirt roads in the little town of Middlesex, and we measure our travel in minutes, even during rush hour. Rush hour means you sometimes have 5 to 10 cars every 10 minutes or so.

But on a more serious matter, in March this Committee began our examination of the serious problems in forensic science that go to the very heart of our criminal justice system. Both Senator Sessions and I used forensic science in our past lives as prosecutors.

But today we're going to hear from representatives of the professional communities that are going to have to work together to make advances to solve the problems. We know a lot of important work is done through forensics, and those who are with us should be proud of their good work.

Scientific advancements can help prove that you have the guilty person. At the same time, it is equally important, it can help exonerate the innocent. We have to ensure that the forensic science rises to the highest scientific standards, has the maximum possible reliability. Unfortunately, since the report and testimony from the National Academy of Sciences earlier this year, we've heard more about the severity of the problem.

The current issue of The New Yorker includes an article that presents strong evidence that in 2004, what we would all consider the unthinkable happened: an innocent man may have been executed for a crime he did not commit, based in large part on forensic testimony and evidence.

The Committee will soon turn to reauthorizing and strengthening the Innocence Protection Act, and that provides very important tools, passed by bipartisan majorities in the Congress, to prevent that kind of tragedy.

The key point for today's hearing is that the prosecution of Cameron Todd Willingham, discussed in The New Yorker article, rested largely on forensic evidence—in that case, burn analysis—that may not have had any scientific basis. Our criminal justice system, particularly the most serious cases, have to be based on facts.

Also, the Supreme Court held in the case of *Melendez-Diaz* v. *Massachusetts* that forensic examiners must present evidence in court, be subject to cross-examination, rather than simply submitting reports of their findings. Again, that's something I did as a routine matter as a prosecutor 35 years ago. The Supreme Court holding stems from a recognition that forensic findings may not always be as reliable as we would hope or as they might appear.

You know, many have the image from the television shows like "CSI" that forensic scientists get to review crime scene evidence in sleek, ultra-modern, state-of-the-art laboratories. Well, those of you who are experts know that is not always the case, by any means. In fact, the so-called "CSI effect" may be doing harm by suggesting that forensic science is well-funded, and that their results are almost always infallible.

As it turns out, that's not the reality examined by the National Academy of Sciences. According to the latest available statistics from the Justice Department in 2005, the backlog of forensic exams was more than 350,000—the backlog—nationwide, up 24 percent from 3 years ago.

One out of every five labs does not meet the standards for accreditation set by the American Society of Crime Lab Directors. As the National Academy of Sciences report makes clear, we can't allow such nationwide deficiencies in forensic sciences to continue. I think it's critically important to our criminal justice system that we have accurate, timely forensic science so we can find and punish the guilty, but also exonerate the innocent.

What helps is when we take perpetrators of serious crimes off the streets. It doesn't help if we took the wrong person off the street because the criminal is still out there. We can't wait for the backlogs to get worse or the next scandal to take place. I'm looking forward to working with Senator Sessions, Senator Klobuchar, and other interested members of this Committee to find solutions to this.

Now, we're going to hear testimony from Dr. Eric Buel, as I mentioned. He is the respected director of the Vermont Forensic Laboratory, someone who has the respect of both the prosecution and defense. Vermont's lab has done consistently excellent work and it's helped to solve many important cases. Dr. Buel nonetheless, recognizes the need for more standards, more research, more funding. I'm glad to welcome back to the Committee Peter Neufeld. Mr. Neufeld has worked with us. He's the co-director of The Innocence Project, and he's worked with us for years in this Committee. His work on individual cases and bringing important changes to the law has been very, very helpful.

VerDate Nov 24 2008 11:20 Aug 04, 2010 Jkt 054720 PO 00000 Frm 00006 Fmt 6633 Sfmt 6633 S:\GPO\HEARINGS\54720.TXT SJUD1 PsN: CMORC

I look forward to the insights of fellow prosecutors and law enforcement officers who are on the front line every day. The report issued by the National Academy of Sciences is detailed and far-reaching and can provide a foundation for broad consensus for change. It calls for mandating national standards for enforcing best practices and points to a need for standards for the certification of individual examiners, accreditation of their laboratories, and the assets to invest in the research underlying modern forensic sciences.

Now, there are areas of significant controversy, including the report's recommendation of another major new government agency and for the total separation of forensics and law enforcement. There will be disagreement on that, but I hope we can find the areas that we all agree on. So, I hope we can work together toward strengthening our forensic system, rooted in science.

With that, I'll put the rest of my statement in the record.

[The prepared statement of Chairman Leahy appears as a submission for the record.]

Chairman LEAHY. Senator Sessions.

STATEMENT OF HON. JEFF SESSIONS, A U.S. SENATOR FROM THE STATE OF ALABAMA

Senator SESSIONS. Thank you, Mr. Chairman. Forensic sciences in America does present a challenge, in my view. It's something that I have felt strongly about for many, many years. If you look at the criminal justice system as a comprehensive whole and you ask yourself, are there bottlenecks in this system that are causing difficulties, I think you would say that the forensic sciences are being shortchanged financially and we can do better.

I have believed that for some time. You consider huge sheriffs' departments, huge police departments, probation departments, judicial centers, prison systems, the amount of money going to that decisive entity, the forensic scientist who can make the difference in a case being ready to go to trial and being tried fairly and objectively and can be really adverse to the whole criminal justice system. So, I worry about that.

As a prosecutor and one who felt that trials were too much delayed, I conducted research of it as Attorney General of Alabama and concluded one of the biggest things that was delaying justice in America is getting your forensic sciences reports completed in an effectively and timely way. Prosecutors have a slam-dunk cocaine case, the person is tape recorded, but months go by before somebody comes back and says the powder is cocaine.

Now, maybe there are more complicated drugs, pills and that kind of thing that need to be analyzed before the case can go forward. Some prosecutors will use testimony to go forward with an indictment. Some will not return an indictment until they've received that information. Some cases cannot go forward based on fingerprints, based on lack of fingerprints or lack of ballistics or DNA evidence that needs to be promptly produced.

So if you look at the entire criminal justice system, I think you could say that more innocent people could have a cloud removed from them and not be charged. More guilty people could be charged

and proceed forward to justice and get their just desserts with a more effective forensic system in America.

The Commission report has some good recommendations. I don't accept the idea that they seem to suggest that fingerprints is not a proven technology. I don't accept some of the other forensics that are not scientific well-based. For example, the Commission strongly praises the scientific analysis that has gone behind DNA and suggests that should be done more comprehensively in other areas, and perhaps it should.

Perhaps it should, Mr. Chairman. Maybe we can tighten that up and have some sort of better scientific basis for fingerprints and other analysis. But I don't think we should suggest that those proven scientific principles that we've been using for decades are somehow uncertain and leaving prosecutors having to fend off challenges on the most basic issues in a trial.

So, tens of thousands of people, I suggest, are not being promptly tried. While they're out on bail or un-indicted, they're committing crimes this very moment. A lot of that is because we've not invested enough in our forensic sciences so that we can get accurate and prompt reports. I believe it's a very important issue, Mr. Chairman. Thank you for having this hearing. I believe the Commission kicked off a national discussion, and maybe we can make some progress. I certainly hope so.

Chairman LEAHY. Well, thank you, Senator Sessions. You and I have worked on these issues for years, and I think this is an important thing.

Senator Feingold has a statement to place in the record.

[The prepared statement of Senator Feingold appears as a submission for the record.]

Chairman LEAHY. Did you want to——

Senator FRANKEN. Yes. I have a statement, Mr. Chairman.

Chairman LEAHY. Go ahead.

STATEMENT OF HON. AL FRANKEN, A U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator FRANKEN. Okay. Thank you. Thank you, Mr. Chairman, for holding this incredibly important hearing.

We incarcerate more people than any other industrialized nation—in fact, we incarcerate more people than any nation, period. We have 2.3 million prisoners behind bars. Compare that to China, which has four times our population but only—only 1.6 million prisoners. We also have the world's highest incarceration rate, more than five times higher than the world's median rate; even though we have 5 percent of the world's population, we have 25 percent of its inmates.

These are worrying figures for any country, let alone the world's leading democracy. But they are especially troubling when we consider that the forensic techniques used to prosecute and convict many of these individuals have come under serious question. Earlier this year, pursuant to a congressional mandate, the National Academy of Sciences released a report evaluating the scientific integrity of the forensic techniques used daily in thousands of crime labs around the country, including DNA analysis, fingerprinting, firearms identification, and hair/fiber analysis.

The report which was published after 2 years of research and review had a damning conclusion, which I will restate here. It concluded that, "With the exception of nuclear DNA analysis, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source. The fact is that many forensic tests have never been exposed to stringent scientific scrutiny."

For example, the National Academy's report revealed that there is currently no objective uniform method of fingerprint analysis or standard for fingerprint identification. In fact, in the United States the standard for identification, how many points match between two prints, "has been deliberatively kept subjective" to allow for maximum flexibility by the examiner. This means that one examiner can require just 6 points for comparison before declaring a match, while another can require 14 points.

Bad forensic techniques result in false convictions. That's obvious. In a review of 242 DNA exonerations, The Innocence Project found that a large number of the cases involved invalidated or improper forensic science. The number of false convictions is surely higher, however, since 90 percent of criminal cases actually do not involve biological evidence that can irrefutably exonerate someone through DNA testing.

What is less obvious is that bad forensics keeps the real criminals on the streets. Of the 242 DNA post-conviction exonerations nationwide, the real perpetrators were identified in 105 cases. In those 105 cases, while innocent people were in jail, the real perpetrators committed, and were convicted of, 90 serious violent offenses, including 56 rapes and 19 murders. False convictions are a threat and tragedy, both for the innocent and for every law-abiding citizen in the Nation.

In 2006, Supreme Court Justice Antonin Scalia declared that "there has not been a single case, not one, in which it is clear that a person was executed for a crime he did not commit. If such an event had occurred in recent years, we would not have to hunt for it. The innocent's name would be shouted from the rooftops." Sadly, that day has come after the execution of Cameron Todd Willingham. It's being shouted from the rooftops today, this week, by The New Yorker.

The Fifth and Fourteenth Amendments guarantee that all Americans will not be deprived of life, liberty or property without due process of law. This due process right applies to States and it applies to the Federal Government. If it means anything, it means that the tools we use to determine innocence or guilt must be based on sound, rigorous science. Until we can be confident of that, I think we should ask ourselves whether it would be appropriate to impose a nationwide moratorium on the death penalty. Can we, as a law-abiding Nation, execute anyone without being 100 percent certain that they are guilty? Can we risk another Cameron Todd Willingham?

I look forward to hearing from all the witnesses today. Thank you, Mr. Chairman.

Chairman LEAHY. Thank you, Senator Franken.

The first witness is Dr. Eric Buel, current director of the Vermont Forensics Laboratory, a position he's held for the last 11 years. He has 30 years of experience analyzing forensic evidence for the State of Vermont and he is widely recognized for his expertise on forensic DNA analysis. In 1990, Dr. Buel established the Vermont DNA Analysis Program.

He is a past board member of the American Society of Crime Laboratory Directors. He serves on the editorial review board of The Journal of Forensic Sciences and has published articles on forensic drug and DNA analysis. He received his bachelor's degree from the University of Delaware and his Ph.D. in biochemistry from the University of Missouri at Kansas City. As I mentioned earlier, he lives in one of the prettiest towns of Vermont.

Dr. Buel. Is your microphone on?

STATEMENT OF DR. ERIC BUEL, LABORATORY DIRECTOR, VERMONT FORENSIC LABORATORY, STATE OF VERMONT DEPARTMENT OF PUBLIC SAFETY, WATERBURY, VT

Dr. BUEL. I haven't been here for a while, sir.

Chairman LEAHY. We have changed a bit.

Dr. BUEL. Yes. Technology.

Good morning, Mr. Chairman, members of the Senate Judiciary. Thank you for the invitation to speak with you about how best to provide forensic science to the citizens of our great country.

I have been in the field of forensic science for almost 30 years, the last 11 as a laboratory director. I am privileged and honored to speak with you about forensic science and how best to implement the recommendations in the National Academy of Sciences report.

With your permission, Mr. Chairman, I'd like to read a statement into the record.

Chairman LEAHY. Please.

Dr. BUEL. Okay. Several years ago, I served as a board member for the American Society of Crime Lab Directors. A theme that I brought forward for consideration was a long-term goal for us and for society. That goal was for every crime victim to expect the highest level of forensic science services regardless of where in the United States he/she was victimized. Her case would not lie for months in a freezer awaiting examination, resources would be available to perform DNA profiling, and the DNA database would be current. Fingerprints recovered would not fade with time awaiting analysis, and the AFIS database would be fully supported and recently updated.

The laboratory would have the resources to provide the type of services our citizens should have in their time of need. The resources necessary to make that desired reality have not been provided to the State and local crime labs. The Federal funds have flowed toward the reduction of backlogs in DNA, and although this assistance is appreciated and has done much good, crimes continue to go unsolved, citizens continue to be victimized as the backlogs in other forensic disciplines grow and leave cases unresolved.

Mr. Chairman, we need to address the capacity in our crime lab system. We need to provide resolution to these cases. We need secure and stable funding. We need comprehensive forensic reform.

As you know, the National Academy of Sciences clearly recognized this and it provided numerous recommendations to reform and modernize our system.

Let me briefly highlight just a couple of points detailed in the NAS report. Quality assurance is a critical component to ensure quality work. The forensic community has made great strides in this regard through the accreditation process. I agree with the findings of the NAS report that all laboratories performing forensic science must be accredited with certified staff. Accreditation and certification of both laboratories and individuals should be prioritized and funded to allow these activities to occur as soon as possible.

There has been much discussion about forensic services that may require further research to address accuracy and reliability. Let me briefly describe a process that may assist us to find a path forward in that regard.

During the early days of DNA analysis, there were many questions concerning how to apply this new science appropriately to forensic case work. Studies by the National Research Council culminated in two reports that offered recommendations and suggestions for DNA testing by the forensic community based on adherence to high-quality standards and uniform procedures.

Through the work of the council and working groups, a pathway was created for the forensic DNA community to follow. The Federal Government recognized the need to fund this emerging science, and did so. This provided laboratories with the resources to properly train their scientists and purchase state-of-the-art instrumentation. These funds permitted laboratories to initiate programs, submit expectations, and has resulted in the implementation of what has become a very successful forensic program.

This model could be replicated for the other disciplines with the proper resources from the Federal Government. Through a full vetting of the data, methods and procedures currently used by a discipline, appropriate procedures could be modified or additional standards applied if the research indicates the need for change. If further research is needed, Congress must fund this research to resolve unanswered questions. The committee members reviewing the science must include experts from both academia and the forensic community to allow a mutual exchange of ideas and understanding of the work that is performed.

Through this collaborative effort, the success recognized by the DNA program could be realized by each forensic discipline. The National Academy of Sciences has identified the needs of the forensic community and we have an opportunity to make use of the report to make the necessary improvements in our science. I would recommend that Congress take appropriate steps to meet these challenges discussed in the report and to promote and provide the best possible science for our people. Thank you very much.

Chairman LEAHY. Thank you very much, Doctor. Thank you for being here, as always.

Peter Neufeld co-founded and co-directs The Innocence Project, an independent, nonprofit organization affiliated with the Benjamin N. Cardozo School of Law. He is also a partner in the civil rights law firm, Cochran, Neufeld and Scheck. For the last 12

years, he's served on the New York State Commission on Forensic Science, which has responsibility for regulating all State and local crime laboratories in New York. He has co-authored several influential books on the use of forensic evidence in criminal cases and post-conviction review.

Prior to his work with The Innocence Project, Mr. Neufeld taught trial advocacy at Fordham University Law School and was a staff attorney for the Legal Aid Society of New York. He received his law degree from New York University School of Law, his bachelor's from University of Wisconsin. He's no stranger to this Committee, and it's nice to have you back here with us.

Go ahead, please.

STATEMENT OF PETER NEUFELD, CO-DIRECTOR, THE INNOCENCE PROJECT NEW YORK, NEW YORK

Mr. NEUFELD. Thank you, Chairman Leahy, Ranking Member Sessions, and of course, Senator Franken. Thank you all for being here.

I am the co-founder of The Innocence Project and it is a special occasion for me to be back here. I have an incredible respect for this Committee. After all, it was this Committee that played such a pivotal role in the passage of the Innocence Protection Act in 2004, which gave people who have been imprisoned access to DNA testing to prove their innocence.

It was also this Committee that played a critical role in passage of the Coverdell amendment in 2004 which required State and local crime laboratories that receive Federal funding to conduct independent audits whenever there were serious questions about negligence or misconduct that would call into question the reliability of their forensic results.

In that regard, I'd like to congratulate the speaker to the left of me here, Harold Hurtt, who is the police chief of Houston who, frankly, embarked on probably the most comprehensive forensic science audit in the country of a laboratory, and did it before the Coverdell amendment went into effect, just simply did it proactively on his own, and it should be an extraordinary role model for other crime laboratories in the country. So, thank you, Chief Hurtt.

But what I'm here to talk about today is the real-life cost of what happens when forensic science is either misapplied or invalidated forensic science is relied upon to secure a conviction.

On May 23, 1991 in upstate New York, a young social services worker was found dead outside of the farmhouse where she lived. She had been strangled, she had been stabbed. Her assailant had bitten her in half a dozen places, right through her nightgown into her skin. Roy Brown, who is sitting here behind me today, became a suspect in that case, primarily because he had a beef with the social service agency where this victim had worked.

The centerpiece of the police case and the prosecution's case to convict Roy was testimony from a forensic dentist. The forensic dentist used what was then the prevailing methods of comparing bite marks found on a body with the dentures of a suspect. He examined them and he decided that he had a match with Roy's bite. He so testified in court and Roy was convicted. Fortunately for Roy,

it happened just before, a year before the New York State legislature brought back the death penalty, and so Roy received a life sentence. While in prison, he got very ill. He contracted hepatitis and almost died.

But Roy never gave up fighting. He actually, through the FOIA request, got some police reports which identified a person who he believed had actually committed the crime. Roy wrote to him and said, "One day they'll do DNA testing on those saliva stains left by the biter and it will demonstrate that you're the real perpetrator: repent now!"

The letter was sent, and 3 days later that man threw himself in front of an Amtrak train in upstate New York and killed himself. We got involved in the case, and of course we couldn't do DNA testing on the deceased because of the way he died, but we were able to eventually get DNA testing on the saliva stains all over the woman's back and compare them with DNA from the daughter of this man who threw himself in front of the train. Lo and behold, it was a perfect paternity. Again, the remnants of this man were exhumed, DNA testing was done, and everybody agreed, the prosecutor and the judge, that Roy Brown was completely innocent, having spent 15 years of a life sentence in prison for a crime he did not commit.

You've already heard from both Chairman Leahy and also Mr. Franken the story of Todd Cameron Willingham, who very well may have been executed, albeit completely innocent, simply because a State arson investigator used what were then prevailing, generally accepted means to determine when a fire was deliberately set as opposed to an accident. It just so happened that those means that he relied upon had never been scientifically validated and turned out to be unscientific, at least so say the five national experts who have reviewed the data in that case since.

These are only two of the examples of the 242 people that we worked with at The Innocence Project who have been subsequently exonerated through DNA. Although Mr. Willingham was not exonerated through DNA, I think it's pretty clear he was innocent based on the other evidence.

What folks have to realize about these cases, as Senator Franken pointed out, is it's not just about exonerating innocent people because in each of these cases the real perpetrator was out there committing other heinous crimes. In fact, in the 105 cases where we at The Innocence Project worked with police and prosecutors to identify the real perpetrator, it turns out that those real perpetrators committed a minimum of dozens of other vicious rapes and murders, rapes and murders that could be avoided if something had been done about that early on with better science.

The real question here as we go forward is, are we going to try and have an independent scientific entity that can rigorously scrutinize the forensic disciplines and make sure that we have the best, robust methods possible, or are we going to allow the same old system to be perpetuated and allow innocent people to be wrongly convicted and the guilty to go free? I am confident that this Committee will not let that happen and will do the right thing.

Chairman LEAHY. Thank you very much. Again, thank you for your help in the past, especially the original Innocence Protection Act.

Chief Harold Hurtt is the chief of police in Houston, Texas, a position he's held since 2004, am I correct, Chief?

Chief HURTT. Yes, sir.

Chairman LEAHY. Chief Hurtt began his career in 1968 with the Phoenix, Arizona police department. He rose to the post of executive assistant chief of police. After serving as chief of police for Oxnard, California, he returned to Phoenix in 1998 and served as chief of police there. Chief Hurtt has been selected twice by his peers as president of the Major Cities Chiefs Association. Chief Hurtt received his undergraduate degree in sociology from Arizona State University, and later received his master's in organizational management from the University of Phoenix. He and his associate are well known to this Committee, of course.

It was about 38 years ago when the District Attorney of Harris County, a man named Carol Vance, was also the president of the National District Attorneys Association. I know that only because I was one of the officers of the National DAs at the time and went to Harris County and went to Houston a couple of times for meetings and one time for an extradition. Houston has changed a great deal since then.

Chief HURTT. Yes, it has.

Chairman LEAHY. Chief, it's good to have you here. Please go ahead, sir.

STATEMENT OF HAROLD HURTT, CHIEF OF POLICE, HOUSTON POLICE DEPARTMENT, HOUSTON, TEXAS

Chief HURTT. Mr. Chair and members of the Committee, good morning, and thank you for inviting me to testify today. It is, indeed, an honor.

Today I will give you an historical account of the Houston Police Department's crime lab, talk about reforms implemented, and potential solutions for addressing challenges in forensics.

In November of 2002, the Houston Police Department requested an independent audit of the DNA Section of the Houston Police Department by the Texas Department of Public Safety. Deficiencies were found that resulted in the suspension of DNA testing. An Internal Affairs investigation was conducted and discovered criminal and administrative violations. Two grand juries reviewed the evidence and no indictments were returned. Results of that investigation led to reprimands, suspensions, and separation of management and employees of the crime lab.

In 2003, a review of cases in which DNA testing was performed began, in consultation with the Harris County District Attorney's Office. Three outside DNA laboratories were employed to conduct DNA re-testing. The police department hired the National Forensic Science Technology Center to assist in the evaluation of the crime lab's operation and to assess its employees.

In September of 2004, I sought an independent review of the crime lab and property room. A stakeholders' committee was put together to oversee the selection and progress of an independent investigator. Mr. Michael Brumwich, a former Inspector General with

the U.S. Justice Department, was selected. The stakeholder committee included various community leaders, civil rights advocates, prosecutors and defense attorneys, forensic scientists, and members of the academic community.

The primary elements addressed by this study or investigation consisted of reviewing the past and present operation of the crime lab and property room. Serology incarceration cases from 1980 to 1992 were reviewed. The final report was issued in the summer of 2007.

The investigation revealed the following: for the previous 15 years prior to the 2002 closing of the HPD DNA crime lab, or the DNA lab, there was a lack of support and resources for the crime lab. Ineffective management was in place. There was a lack of adequate quality control and quality assurance.

There have been many reforms implemented in the Houston Police Department crime lab. We have implemented new crime lab testing procedures, practices, and policies. In 2005, the Texas State legislature mandated accreditation for all crime labs in the State. During that year, the crime lab received national accreditation from the American Society of Crime Lab Directors' Laboratory Accreditation Board. It was accredited in the following areas: controlled substances, firearms, toxicology, question documents, and biology. In 2006, the crime lab received accreditation in DNA and trace analysis.

Our hiring criteria has been upgraded, with emphasis on experience, certifications, and educational credentials. We have also imposed rigorous training requirements, including yearly ethics training. We have instituted a comprehensive quality assurance program and we have continued our cooperation with The Innocence Project. We have started case assessment strategies based on the United Kingdom model. A new property room has been built and robots are being evaluated for DNA testing.

Now we'd like to make some recommendations in reference to addressing the challenges in forensic science. First of all, proper funding for crime labs must occur. We need to take advantage of the new technology, especially robotics. The hiring of competent staff and training will be critical. Case assessment strategy that was implemented by and used in the United Kingdom must be used here. Also critically important is the educating of judges, prosecutors, and defense attorneys of the basic principles of scientific evidence.

Thank you.

Chairman LEAHY. Chief Hurtt, thank you very, very much. We appreciate the help you and your colleagues have given to this Committee over the years. I appreciate it very much.

Chief HURTT. Thank you, sir.

Chairman LEAHY. Paul Giannelli is the Albert J. Weatherhead, III and Richard W. Weatherhead Professor of Law at Case Western Reserve University. He began his career as a military prosecutor and defense counsel, where he became an academic expert in the field of evidence and criminal procedure.

Mr. Giannelli has authored numerous articles and books on the use of scientific evidence. He received his J.D. and Master of Laws from the University of Virginia, and he has a Master of Science degree in forensic science from George Washington University.

Mr. Giannelli, welcome. Please go ahead, sir.

STATEMENT OF PAUL GIANNELLI, PROFESSOR, CASE WESTERN RESERVE UNIVERSITY, CLEVELAND, OHIO

Mr. GIANNELLI. Thank you, Mr. Chairman, Senator Sessions, Senator Franken.

While serving in the Army during the Vietnam War, I was assigned to the forensic medicine program at the Armed Forces Institute of Pathology at Walter Reed. At the same time, I earned a Master's degree at George Washington University and I then taught a course on scientific evidence at the Army JAG school in Charlottesville for 2 years. I've been at Case Western Reserve University for going on 35 years, and scientific evidence has been my area of research interest for that time.

The publication of the National Academy of Sciences report is one of the most important developments in forensic science since the creation of the first crime laboratory in this country in the 1920s. The report is both comprehensive and insightful. Its findings are well-documented, and the need for a new approach, one rooted in science, as outlined in the report, is critical.

In sum, I believe this is an exceptional report. Its recommendations, if adopted, would benefit law enforcement and prosecutors in the long run. It would allow forensic science to develop a strong scientific basis and limit evidentiary challenges regarding the reliability of scientific evidence.

First, I want to stress the importance of scientific evidence in the criminal process. It is often superior to other forms of proof. Forty years ago, the Supreme Court noted that "fingerprinting is an inherently more reliable and effective crime-solving tool than eyewitness identifications or confessions and is not subject to such abuses as an improper line-up or the 'third degree.'"

More recently, the DNA exoneration cases have highlighted the problems with eyewitness identifications, jail informant testify, and false confessions. According to The Innocence Project, there are now over 240 exonerations. However, the exoneration cases have also exposed problems with scientific evidence, and I want to focus my remarks on what I believe is the crucial issue: the lack of empirical research in some forensic identification disciplines and how to address that.

The lack of empirical research is noted in the report over and over again. "Among existing forensic methods, only nuclear DNA has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, to demonstrate a connection between an evidentiary sample and a specific individual source."

Another passage states, "Some forensic science disciplines are supported by little rigorous, systematic research to validate the discipline's basic premises and techniques. There is no evident reason why such research cannot be conducted." Common identification techniques, those that rely on an examiner's subjective judgment, lack sufficient empirical support.

For example, the report wrote, first, "sufficient studies on firearms identification have not been done to understand reliability and repeatability of the methods"; two, "the scientific basis for handwriting comparisons needs to be strengthened"; three, "re-

VerDate Nov 24 2008 11:20 Aug 04, 2010 Jkt 054720 PO 00000 Frm 00016 Fmt 6633 Sfmt 6633 S:\GPO\HEARINGS\54720.TXT SJUD1 PsN: CMORC

search is needed to properly underpin the process of fingerprint identification"; four, "testimony linking microscopic hair analysis with particular defendants is highly unreliable"; five, "there is no science on reproducibility of the different methods of bite-mark analysis." Chapter five of the report documents these conclusions in detail and my research is in accord.

Similar concerns can be found in court decisions for more than a decade. After the Supreme Court's decision in *Daubert* v. *Merrill Dow Pharmaceuticals*, some lower courts began to question how expert testimony was being presented at trial.

In the *Mitchell* case, Judge Becker wrote, "The testimony at the *Daubert* hearing indicated that some latent fingerprint examiners insist that there is no error rate associated with their activities. This would be out of place under Rule 702," which is the governing standard on expert testimony. In *United States* v. *Green*, the judge wrote, "the more courts admit this type of tool mark evidence without requiring documentation, proficiency testing, or evidence of reliability, the more sloppy practices will endure; we should require more."

In *United States* v. *Crisp*, the judge wrote that "the government has had ten years to comply with *Daubert*. It should not be given a pass in this case." The case dealt with fingerprint and handwriting evidence, and this was six years ago.

Firearms identification. Examiners testified in another case to the effect that they were 100 percent sure of their match. The judge wrote, "Because an examiner's bottom-line opinion as to identification is largely a subjective one, there is no reliable statistical or scientific methodology" to support that conclusion.

In *United States* v. *Glynn*, the court wrote that the "Government did not seriously contest the Court's conclusion that ballistics lacked the rigor of science, and that whatever else it might be, its methodology was too subjective to permit opinions to be stated to a 'reasonable degree of ballistic certainty.' "

In *Williamson* v. *Reynolds* the court wrote: "this court has been unsuccessful in its attempts to locate any indication that hair comparison testimony meets any requirements of *Daubert*." This decision was handed down in a habeas case five days before the scheduled execution date.

A New York case in 1995 concluded that, "forensic document examination, despite the existence of a certification program, professional journals, and other trappings of science, cannot, after *Daubert*, be regarded as scientific knowledge."

Independent scientific research is critical and the most thorough and well-reasoned reports in the field have come from independent scientific investigation: the National Academy's voice print report in 1979, its DNA reports in 1992 and 1996, its polygraph report in 2002, the bullet lead report in 2004.

The creation of a National Institute of Forensic Sciences, recommendation one in the report, is essential. An independent agency, steeped in the traditions of science, is required. In addition to independence and strong scientific credentials, a new entity should be dedicated solely to forensic science. It should not be encumbered with multiple missions.

Once in place, it could focus quickly on the agenda outlined in the report. Moreover, a national institute would have the prestige to attract top scientists to the field and to influence universities to conduct peer-reviewed research and to establish rigorous educational programs. In contrast, an entity that is part of an agency in another department will not attract the same level of talent.

Finally, there are many talented, conscientious examiners working in crime laboratories throughout this country. These examiners need to be supported, they need funds for better equipment and advanced schooling, and continuing education.

Thank you.

Chairman LEAHY. Thank you very much, Mr. Giannelli.

Mr. Matson is from Alabama, and I'd ask if Senator Sessions would like to introduce him. And we thank you for being here, Mr. Matson.

Senator SESSIONS. Thank you, Mr. Chairman. It's a delight to introduce Barry Matson to the Committee. He is an experienced prosecutor who has personally tried many serious major felonies, including capital cases. He's conducted grand jury investigations and personally worked with a lot of complex cases. He now is the chief prosecutor for the Alabama Computer Forensic Laboratories and is deputy director of the Alabama District Attorneys Association. He is founder of the National Computer Forensic Institute in Hoover, Alabama.

I think he'll provide some valuable information to us from a practical perspective, Mr. Chairman. Thank you for inviting him.

Chairman LEAHY. Thank you, Senator Sessions.

Please go ahead.

Senator SESSIONS. I would note, his degree is from Jacksonville State University in criminal justice, undergraduate, which has got an excellent criminal justice program, and his law degree at Birmingham School of Law.

STATEMENT OF BARRY MATSON, DEPUTY DIRECTOR, ALABAMA DISTRICT ATTORNEYS ASSOCIATION; CHIEF PROSECUTOR, ALABAMA COMPUTER FORENSICS LABORATORIES MONTGOMERY, ALABAMA

Mr. MATSON. Thank you, Your Honor.

Mr. Chairman and members of the Committee, I want to thank you for the honor of appearing before you to discuss the National Academy of Sciences' report. It is especially significant that we appear before you on a subject so vital to the future of law enforcement, prosecution, and the administration of justice everywhere.

I'm a career prosecutor. Prior to my current position, I was Chief Deputy District Attorney in Talledega County, Alabama for 16 years. In that county, in Talledega County, it's not unlike most jurisdictions across this country. We were faced, and are faced every day, with challenges facing the criminal justice system while our dockets were exploding. We faced those challenges with a strong work ethic, a deep passion to protect the public, and to do justice.

Mr. Chairman and members of the Committee, please know, a prosecutor is held to a higher standard than that imposed on other attorneys because of the unique function we perform in representing the interests and exercising the sovereign power of the

State. In my testimony today I will endeavor to give a voice to the everyday prosecutor, struggling with too few resources, expanding caseloads, as well as agenda-driven criminal defense lobbies.

We applaud Congress for directing the National Academy of Sciences to undertake the study that led to this report. It is not in spite of the fact that we are prosecutors that we welcome a serious critique of the forensic science process, it is because we are prosecutors.

But like many endeavors, those with agendas have made an impact, not only on this report, but now in the courtrooms across this country. The absence of prosecutors on the National Academy of Sciences Committee on Forensic Sciences has not been lost on those of us serving every day in the trenches of America's courtrooms.

The failure of the Committee to seek the consultation of State or local prosecutors in its eight separate meetings is glaring and overlooks one of the criminal justice system's most vital components. Mr. Chairman and members, you well know the role of the prosecutor in the American system. A prosecutor is to judge between the people and the government. He is to be the safeguard of one and the advocate of the rights of the other.

Make no mistake about it: I and my colleagues—I'm a tough prosecutor and I vigorously seek justice for the victims in the community. However, that toughness is tempered with a simple desire to do what is right. One thing that has been grossly overlooked in all the process that has gone on in this report is that prosecutors and forensic science professionals do more every day to free the innocent and safeguard the liberties of our citizens than any defense project or academician will ever do in their career. Those entities have no burden or have taken no oath to seek the truth. Conversely, they are required to suppress the truth when it serves the best interests of their needs and of their client.

Have regrettable instances occurred in the forensic setting? Yes. Is it to the level that some entities and special projects would have us to believe? Absolutely not. As long as human beings are involved, we will endeavor to do the very best we can, but no system we ever have will ever be perfect.

However, the NAS report before you seems to erroneously focus on perceived biases in the forensic law enforcement communities. Forensic technicians and scientists are said to be rife with cognitive bias. This report says they demonstrate bias by seeking to play supervisors or by basing results on suggested data. Some passages suggest that forensic scientists simply might see things that don't exist or skew their outcome by intentionally presenting their findings in an unfair way to produce a particular result.

If we follow that logic, we must ask this question: when a fingerprint examiner in some jurisdiction tells us that a suspect is excluded as a source of the latent print, meaning that person didn't do it, should we now charge him anyway because the examiner's cognitive bias may affect the examination? Obviously the answer is a resounding no. That's a silly question. But it makes a point that this report overlooks. In other words, this report suggests that the only time forensic sciences is wrong or inaccurate is when the conclusion by the scientist or technician points to the guilt of the accused. If the evidence does not, then everything is okay.

As we speak in courtrooms all across this country and in jurisdictions of yours and your States, a prosecutor is trying to do the right thing. As a seeker of truth, that prosecutor must be able to do everything possible and take every tool into the courtroom that they can to seek justice. If she does not have the forensic evidence juries have come to demand from a satiation of crime scene television and the defense bar demands, she is bludgeoned with pleas of, where are the fingerprints, or where is the bullet? But if that prosecutor has such evidence and it is relevant and admissible, she must now defend that evidence from the defense lawyer's attacks using this NAS report as Defendant's Exhibit Number 1. It's happening every day in our courtrooms.

Members of this Committee, it is vital that you know the negative impact this report has already had on prosecutors trying to find the truth in every jurisdiction across this country. Former convictions and current prosecutions are being challenged by using the words of the NAS report to attack forensic science evidence. This is true, even though the report made efforts to say that no judgment is made about past convictions and no view is expressed as to whether courts should reassess the cases that have already been tried.

We welcome the recommendations of this Committee, in conclusion, and of the NAS report. We believe that some of these recommendations will serve to strengthen forensic sciences for years to come. However, we absolutely recognize and vehemently disagree with portions of the agenda-driven attack upon well-founded investigative techniques. These same techniques or sciences are used every day to find the truth in every type of case.

As an investigative tool, every discipline of forensic sciences has not simply led to convictions, but has delivered the truth. I know this truth, and I sleep very well at night knowing that the dedicated prosecutors, forensic technicians and scientists working in independent law enforcement agencies or labs use their craft to see that justice is done, innocents are exonerated, and the guilty are held responsible for their actions.

I thank you for your time.

Chairman LEAHY. Thank you very much.

Our next witness is Matthew Redle. Did I pronounce that correctly?

Mr. REDLE. Redle, Mr. Chairman.

Chairman LEAHY. Redle. Redle. Sorry. Mr. Redle. That is the note that I had from my staff, so it's my fault, not theirs.

Matthew Redle is a County and Prosecuting Attorney in Sheridan, Wyoming. Mr. Redle has given lectures and conducted training on forensic issues at the National Advocacy Center and for organizations including the National District Attorneys Association, the Wyoming Division of Criminal Investigation, and the Wyoming State Crime Laboratory. He's been a panelist at the National Institute of Justice on post-conviction DNA issues. He's a member of the Council of the Criminal Justice Section of the American Bar Association.

Mr. Redle received his undergraduate and law degrees from Creighton University.

Mr. Redle, please go ahead, sir.

STATEMENT OF MATTHEW F. REDLE, COUNTY AND PROSECUTING ATTORNEY, SHERIDAN COUNTY SHERIDAN COUNTY, WYOMING

Mr. REDLE. Thank you, Mr. Chairman, Senator Sessions, members of the Committee. My name is Matt Redle. I'm the duly elected county and prosecuting attorney of Sheridan, Wyoming. It is an honor, a distinct honor, to appear before you today.

As a prosecutor, I'm charged to act as a minister of justice, to seek justice in the discharge of my duties. When a crime is committed a victim cries out for justice, the evidence necessary to satisfy that plea may rely upon the work of earnest members of the forensic science community. It is their careful analysis of physical evidence that may provide a critical link in the chain of proof that is necessary to lead to the perpetrator of their crime being brought to justice.

Police, prosecutors, and dedicated men and women in our Nation's crime laboratories know that the arrest of the wrong person, the arrest of an innocent person, may result in yet another innocent person being victimized at the hands of the true perpetrator. It does not satisfy our victim's plea to arrest the wrong person, neither does it fulfill my duty to seek justice, nor protect the citizens of my community. Prosecutors know that justice is best served by exonerations of the innocent before trial. The reliability of forensic science is critical to that effort.

The release of the National Resource Council report titled, "Strengthening Forensic Science in the United States" was one step in a dialog. It a dialog on how best to provide reliable scientific evidence to the criminal justice system. This hearing and your work are a critical next step in that process.

My prepared remarks concern one recommendation of the Research Council that misses the mark in our effort to secure reliable scientific evidence. Recommendation No. 4 suggests the removal of public crime laboratories from law enforcement or prosecution agencies. I believe, Mr. Chairman, that the question of where a laboratory is located is not nearly as important to the reliability of its evidence compared to the question of how it operates.

Two things, in my estimation, are far more important in promoting scientific reliability in a crime laboratory. The first, is the culture developed within that laboratory. Hopefully that culture is one that recognizes the contribution that the integrity of the process makes to the reliability of the results and therein to the success of the investigation. It is that culture that fosters autonomy within a law enforcement agency, encouraging objective clinical judgment. Such a culture insulates scientists from inappropriate influences and promotes the scientific value of transparency in the testing process.

The second is more concrete. It is the implementation of effective programs of quality assurance and quality control. Quality control measures, such as laboratory accreditation, certification of scientists, adherence to validated testing protocols, proper and complete documentation, internal and external performance audits and inspections, regular proficiency testing, and appropriate corrective procedures in the event error is discovered promotes values of

transparency and reliability and are far more important than the name of the agency outside the building.

With all due respect to Mr. Brown, I would suggest, Mr. Chairman, that Mr. Brown's case represents not so much a failure of science. As much as it pains me to say so, my understanding of the events involved in that case, it represents a colossal ethical failure on the part of the prosecution in that case.

The prosecutor, as I understand it, had retained a forensic dentist well-known in New York State to examine the evidence in that case. That doctor, Dr. Levine, returned a finding that was exculpatory of Mr. Brown. The prosecutor, not abiding by his ethical responsibilities, not following the constitutional rule of *Brady* v. *Maryland*, withheld that information from the defense and instead shopped for a new expert, a local dentist. As a result of that failure, that ethical failure, this tragic injustice was perpetrated on Mr. Brown, and I apologize on behalf of prosecutors everywhere.

Mr. Chairman, as you and the members of the Committee work through the issues raised by the report, I look forward to providing whatever assistance I might to help you in your efforts. Thank you.

Chairman LEAHY. Thank you, Mr. Redle.

Both you and Mr. Matson and others have stressed the need, as a prosecutor, you're in a pivotal part of the criminal justice system, not only the ability to bring charges, but you're the only one who has the real ability to withhold bringing charges if you don't feel the evidence is sufficient. You do stand at that juncture between society and the criminal justice system. I've always felt that. In many ways, the prosecutor carries the most important part, having to make those decisions.

I won't have time to ask all my questions, and I'll submit some for the record after I finish, because of an appropriations matter. I'm going to turn over the gavel to Senator Klobuchar, who is a former prosecutor herself.

Dr. Buel, you emphasize the need for comprehensive forensic reform, substantive reform, support for research, and in not just a few high-profile disciplines, like DNA. Now, Congress, again, in a bipartisan way, has pushed for important advances in DNA technology, standardization of DNA testing, funding to reduce the backlogs in DNA testing. The more traditional forensic sciences, fingerprints, ballistics, tool-mark examinations, for example, have not received comparable support.

When I used to prosecute cases we didn't have DNA. We did have bullets, we did have fingerprints, we did have tool marks, we did have fiber analysis and so forth. I think every crime victim in America deserves to have the highest quality of forensics examination, whether it's DNA or whatnot. If we take on the challenge of comprehensive forensic reform, we invest more in research and training for all forensic sciences—I think I know the answer to this—not just DNA, would that help us solve more crimes?

Dr. BUEL. Mr. Chairman, if we can fix the infrastructure of our country, if we can fix the bridges, roads, we can improve forensic science. I think it's imperative. I think, like you mentioned, there's only a certain number of cases where DNA would be appropriate for use. The other disciplines provide much information for the prosecutor to either eliminate or include somebody as a suspect.

VerDate Nov 24 2008 11:20 Aug 04, 2010 Jkt 054720 PO 00000 Frm 00022 Fmt 6633 Sfmt 6633 S:\GPO\HEARINGS\54720.TXT SJUD1 PsN: CMORC

The NAS report took some snapshots of these disciplines, and I believe what we need is a full album of pictures to see how best to go forward with some of these areas. That's my recommendation of something like the NRC report, done on a national level for some of these other areas. So, yes. The same sort of support we're giving to DNA, where we're trying to remove the backlogs, trying to improve the science, trying to make education paramount for each examiner would go a long way in solving crimes in our great country.

Chairman LEAHY. Well, Dr. Buel, I like the fact that you mentioned that there's not DNA evidence in a lot of crimes. I just want to underscore that. Many times now, because of, I call it the "CSI effect", people are saying, OK, where is the DNA evidence? In an earlier era, where are the fingerprints? In many cases we don't have that and we don't have those things. I think it's good that you emphasize this.

Mr. Neufeld, you talked about forensic evidence exonerating people. You've worked very hard, you and the others, on this area. How important is comprehensive scientific research and testing of the non-DNA forensic sciences? Are we doing enough in the non-DNA forensic sciences in our standards and our testing?

Mr. NEUFELD. Well, you know, it's interesting. Congress historically has been extremely generous in providing States and localities money to do forensic DNA testing. I think one of the main reasons they were generous is that everybody understood the validity and reliability, the robustness of this technology. It made sense. It was good public safety. What this issue——

Chairman LEAHY. Could we not be doing the same in some of the other areas?

Mr. NEUFELD. Well, I mean, what the NAS report is saying, you know, these other areas are not as robust and they need more research, basic research, applied research. They need standards, like DNA has. Once they have those things in place, sure, they should be getting additional funding as well. But to simply give the funding for the other disciplines——

Chairman LEAHY. But isn't there kind of a chicken/egg thing there? I mean, if you're going to improve them you're also going to have to have funding, training, and standards to improve them, are you not?

Mr. NEUFELD. Well, absolutely. But what you have to do scientifically, is the first thing you do is you have the basic and applied research to validate. Once it's validated you come up with standards and parameters for understanding when the technology will work and when it won't work, and then you have additional funding to train all the people who are utilizing it to make sure they do it the right way. It's not a chicken and egg, it's actually a very logical procedure——

Chairman LEAHY. So what you're saying is, establish the standards and then make sure you've got the money so the standards can be used.

Mr. NEUFELD. Absolutely. And to establish the standards, do the necessary research.

Chairman LEAHY. Thank you.

And if I might, with the forbearance of Senator Sessions, just ask one other question. I'll put the rest in the record.

Chief Hurtt, I read more than I laid out in my introduction of you about the problems you faced in Houston. You actually had two choices. You could have tried to sweep it under the rug or you could have confronted it and tried to make changes and do the necessary retesting, evaluation, and so on.

Based on your experience, and based on your experience of 40 years in law enforcement, what would you tell another police chief if they called you up and said, hey, chief, I think we're a little shaky in our labs here. What should I do about it?

Chief HURTT. Thank you, Mr. Chairman. The first thing the chief did, as far as admitting to, is that he did have a problem. The other is to make sure that any process that is undertaken to fix that problem, that they be very transparent. The only way that we're going to be able to regain the confidence of forensic science, whether it's DNA or the other sciences, we need to make sure that we make it plain that we understand that there were mistakes or errors made and that we're taking the appropriate steps, and that we will employ experts in the field like we did in the Houston Police Department to come in and do an extensive investigation and then implement the recommendations from that investigation. Thank you.

Chairman LEAHY. Thank you very much, Chief.

Chairman LEAHY. Senator Sessions, thank you for your forbearance.

Senator SESSIONS. Thank you.

Mr. Brown, I also would say to you how distressing it is to hear your story and what you suffered as a result of an injustice. That's pretty clear that that happened and it troubles me, as someone who has spent a lot of time in law enforcement. I've seen some close cases. The two I've seen that were innocent, the hair still stands up on my neck when I think about them. Neither served a lot of time. It was eyewitness testimony that turned out to be wrong. So, it's scary. We have to be careful in the criminal justice system.

I would note that in the *Corsican Daily Sun* in Texas, Judge John Jackson, who was one of the prosecutors in the *Willingham* case, wrote a letter August 28th that was published. He said the trial of Mr. Willingham contained overwhelming evidence of guilt completely independent of the undeniably flawed forensic report. He said, for example, the event which caused the three children's death was a third attempt by Todd Willingham to kill his children, established by the evidence. He had attempted to abort both pregnancies by vicious attacks on his wife in which he beat and kicked his wife with the specific intent to trigger miscarriages.

Blood gas analysis revealed that he had not inhaled smoke, contrary to his statement which detailed rescue attempts. He rejected taking a polygraph. He was a serial wife abuser, both physically and emotionally. His violent nature was further established by his vicious attacks on animals, which is common to violent sociopaths.

Witnesses heard him, at the funeral of his deceased older daughter, at the funeral home, whispering to, I guess, the body, "You're not the one who was supposed to die." A refrigerator had been pushed against the back door, making it difficult, if not impossible, to get out. When a plea bargain was discussed with him, it was re-

jected with an obscene and potentially violent confrontation with his defense counsel. So I don't know what the truth is in that case. That does not excuse a flawed forensic report, but it looks like there was other evidence in the case indicating guilt.

Chief Hurtt, you have a big police department. You bring a lot of cases every year. Do the delays in forensic sciences overall, a lack of resources in the forensic science laboratories, does that present a problem for your police officers who go out and make a case, but then you have to wait before it can go forward to prosecution for these reports to be completed?

Chief HURTT. That is, indeed, a problem that we face in the Houston Police Department on a daily basis. For instance, we were investigating a serial rapist and homicide case in north Houston and we wanted to send out some evidence to the FBI DNA lab. It took almost a year for us to get a return on that because of the backlog that they were facing and the requests that they were getting from around the country.

Senator SESSIONS. So you send your DNA to the FBI lab routinely?

Chief HURTT. In some cases, sir, we send it to the FBI lab, but we do have a fully operating lab within the Houston Police Department.

Senator SESSIONS. Mr. Matson, I guess you're still prosecuting, but as a Talledega County prosecutor do you find that frustrating for law enforcement officers and prosecutors, the delays in getting forensic reports? Could those delays actually result in a criminal being able to run loose in the community and commit more crimes?

Mr. MATSON. Yes, it is. It's frustrating. One case comes to mind. We would not report a case out of grand jury until we got the forensic reports back to make certain. An individual that wanted to plea on the information, which is a pre-indictment form of plea in our State, they made the written request. He said, I was caught with it, it was powder, it was LSD, and I want to plead guilty.

The report came in about 6 weeks later and it was not. He had been ripped off when he bought it and it wasn't LSD. He couldn't plead to the controlled substance. He could have plead guilty to something he thought he had, but we had to wait. That delay caused serious problems in that case. So delaying those cases—we can't go to trial until we have those reports, and sometimes when you get the reports, then you need further analysis.

But I will say this: our State has an independent forensic sciences department and they have made great strides in our State to overcome that backlog, but it's come at a great cost, financially and manpower. They're working tremendous hours to get this backlog. I remember several years ago—many years ago, about 10 or so, maybe, going to the lab to speak with an expert, with the defense lawyer, on a case upcoming. I walked in and there were refrigerators down the wall full of rape kits waiting to be done that had to be compared to some perpetrator or to the database system.

Senator SESSIONS. Did Federal funding help the backlog, to your knowledge?

Mr. MATSON. Yes, sir, and we thank you so much. They really did. They were just backed up, and they've been able to get those

taken care of and it's been a great help. But that backlog is a tremendous burden for us.

Senator SESSIONS. My time is over.

Mr. Redle, do you believe that the report, perhaps trying to get our attention, used some pretty strong language suggesting the unreliability of what I have always understood to be proven scientific techniques? Is that something that the District Attorneys are finding, as Mr. Matson said he's finding in Alabama, that this is being thrown up to create the impression with a jury that there's no basis for these kinds of reports?

Mr. REDLE. Senator Sessions——

Senator SESSIONS. You might push your button there to go on record.

Mr. REDLE. Thank you. Senator Sessions, yes. It seems to be spotty around the country, but as a result, we're trying to track that within the national DA's community to see where the impact is, what disciplines are being subject to attack. There are some concerns, although I would note that the National Academy report does indicate that it is not passing any judgment on the use of any of these techniques in prior cases, in past cases. It's simply calling upon the country, the Nation, as it were, policymakers such as yourself, to provide the necessary leadership to see that unvalidated issues of science are given the resources to be validated.

Senator SESSIONS. Well, you're right, it does make those qualifications. But there is some language, I assume, that's probably being thrown up in court a lot. I'd like—Madam Chairman, maybe we can talk with Chairman Leahy, you, and others on this issue. Maybe some national training. Maybe we don't have enough national training centers. It would be something the Federal Government could do without taking over local law enforcement, providing training at a discounted rate, or free, for people so we reduce the possibility of error. Thank you.

Senator KLOBUCHAR. Thank you very much, Senator Sessions.

Senator Franken.

Senator FRANKEN. Thank you, Madam Chair.

I have a question for Mr. Neufeld. I read the article in *The New Yorker* about Mr. Willingham. Actually, I find some of Mr. Jackson, the prosecutor's, testimony to be very suspect. It doesn't seem that it washes. There are parts of this article that really—first of all, five experts said that there was no arson in this. But I don't want to argue this case, but I found the article extremely disturbing and the findings of the National Academy's report to be terrifying, both for the falsely accused and for the safety of our communities who falsely think the real criminals are off the streets.

In my opening statement I asked whether we should consider a nationwide moratorium on the death penalty. What do you think of this? Do you think it is necessary at this point in time?

Mr. NEUFELD. Thank you, Senator. First of all, just to follow up on the remark you made in response to Senator Sessions' statement about the case in Texas, in all these cases, Senator, where we've exonerated people, there was overwhelming evidence of guilt. It just so happened the person was innocent. What we find so extraordinary in these cases is that when we go back and we

deconstruct them, all those different pieces that, together, look like overwhelming evidence of guilt, turn out to not hold scrutiny.

For example, in Mr. Brown's case there was also a jailhouse informant who said he had confessed to him. He, too, had a wife who said not such nice—an ex-wife who said not such nice things about him during the course of the prosecution. It turned out that the informant was wrong, that the wife's remarks had a certain bias themselves, and indeed, this man, Roy Brown, was completely innocent, but nevertheless spent 15 years in prison.

The same can be said for the other 241 post-conviction DNA exonerees, 17 of whom had been sentenced to death. Many of them had been sentenced to death based on the misapplication of forensic science. The case that Mr. Giannelli referenced of Ron Williamson, came within five days of execution. The centerpiece of that case was bad hair evidence from the State hair examiner.

Mr. Brown, fortunately, was never on death row, but we had a death row inmate in Mississippi where the leading forensic dentist said it was absolutely certain it was his teeth, to the exclusion of the whole world. He was dead wrong. He came within months of being executed. Again and again and again, in hair, in serology, in bite marks, and in fingerprints. Brandon Mayfield could have faced the death sentence as a terrorist had he been convicted as an accessory in the bombing of the Madrid train station. Nevertheless, completely innocent.

So the point is, to answer your question, finally, is that whereas we can debate all kinds of things about the death penalty politically, philosophically, religiously, the one thing we can't debate is that all these wrongful convictions demonstrate quite compellingly that the system is not quite as perfect, as invulnerable as we always thought it was and to have a punishment where you can't reverse it in the event you find new evidence of innocence, as in the *Willingham* case, raises a very serious problem and perhaps a justification for considering suspending temporarily the death sentence unless and until we can make these forensic sciences sufficiently rigorous that we don't have to have those reservations.

Senator FRANKEN. Thank you.

Mr. Matson, the National Academy's report unequivocally says that DNA testing is far and away the most reliable and scientifically sound forensic technique. Yet, as you mentioned, law enforcement agencies around the country have a major backlog of rape kits that often contain critical DNA evidence. These should be high-priority cases. Given your experience in the field, what do you think we should do, or could do, to make sure that funding is available for forensic testing, to maximize DNA testing?

Mr. MATSON. Senator, I think Congress has taken great steps to provide funding for that. I think those backlogs are starting to decrease. We're seeing that in our State, and in a lot of States. I think the state of forensic science, particularly with DNA in that area, even the NAS report and I think the folks at this table would agree, that DNA is in a place where we would like it to be. I think it's important, though, when we look at DNA cases and we look at the exoneration cases, to understand that when we say that serology and hair evidence that Mr. Neufeld mentioned earlier, that those cases are flawed science. Well, 75 percent of the cases that

have gone through The Innocence Project, or those people that were exonerated, were cases that were hair and serology from maybe 20 years ago.

Back then, you looked at ABO secreters for blood typing to determine if somebody left a sample. Well, we're beyond that, so those cases are not happening anymore. We're not having ABO secreters tested, it's DNA. If it's hair, it's mitochondrial DNA. I had the first mitochondrial DNA in the State of Alabama. In that case, we used a laboratory out of Virginia. It cost a tremendous amount of money. We had no local funding for it. We had to find the dollars. We did, and had that case. So I do think that there are things in place to help us in funding and DNA and getting that backlog——

Senator FRANKEN. Thank you, Mr. Matson.

Mr. MATSON. Yes, sir.

Senator FRANKEN. I think you answered my question. Thank you very much.

Mr. MATSON. Thank you.

Senator FRANKEN. Thank you, Madam Chair.

Senator KLOBUCHAR. Senator Durbin.

Senator DURBIN. Thank you, Madam Chair.

Mr. Neufeld, based on DNA evidence, how many prisoners have been exonerated following their convictions?

Mr. NEUFELD. As of today, we have 242 people who have been convicted who have subsequently been exonerated by DNA. I would point out that in almost all those cases, the exonerees had completely exhausted their direct appeals, had completed their collateral attacks on habeas corpus, and would have either been executed or spent the rest of their years in prison but for the sort of serendipitous intervention of DNA testing.

Senator DURBIN. In those States where access to DNA testing is not available on a post-conviction basis, what is the solution?

Mr. NEUFELD. Where there hasn't been access to DNA?

Senator DURBIN. States where there is no access to DNA testing.

Mr. NEUFELD. Well, that's a tough question, because I had the misfortune of arguing a case before the U.S. Supreme Court this last term to determine whether there was a constitutional right to post-conviction DNA testing, and five of the nine justices disagreed with me. So we're going to do everything we can to create access through the local legislatures as best we can. I do think that there is something more that Congress can do in that regard.

When the Innocence Protection Act was passed, it was the will of the Congress that States pass bills that would provide easier access to post-conviction DNA testing, and if they did so there would be certain pools of money made available to them. What ultimately happened with that bill is that the pools of money that would be made available shrunk considerably so it no longer became that important to a State to allow for post-conviction DNA testing.

Certainly when you reconsider the Innocence Protection Act, which is coming up, I think, this fall, it would be very useful to go back to the original position taken by many members of this Judiciary Committee to create a much greater incentive for those few States who have so far refused to grant access to DNA testing.

Senator DURBIN. Mr. Matson, as a professional prosecutor, don't you believe, in good conscience, that there should be DNA testing in every State?

Mr. MATSON. Yes, sir. I believe that when it's available, when the DNA evidence is available to show that, then it should be. I would give an example, though. Something we must understand is, post-conviction evidence, sometimes from so many years ago, that evidence, it could be an article of clothing, may be kept in a filing cabinet in a court reporter's office. I had a case that involved a post-conviction on a death penalty case. We were in the Rule 33, or post-conviction hearings. About a year into it, the person serving time, a clerk wanted to come down and look at some of the evidence. They opened the rape kit. He wanted to open it and actually touch it. Well, he would have left DNA in that sample.

Senator DURBIN. But that's an issue that would be raised, would it not, on chain of custody and credibility of the evidence? I mean, it could be that there is not any piece of evidence remaining that could either convict or exonerate a person. I mean, the court has to reach a threshold of where they have some credible piece of evidence. But assuming they have a credible piece of evidence and chain of custody, you're saying, as a professional prosecutor, you believe there should be DNA testing allowed, is that correct?

Mr. MATSON. Any time that we can do anything to find the truth, I support it. I just know that sometimes when you've got a case that is 8, 9, or 10 years old and you've got a sample, maybe from a rape kit or something of that nature, maybe an article of clothing you want to test, we don't know who's handled it and who hasn't handled it in 10 years. Then we come back if a motion for a new trial is granted. The prosecutor is dead, the witnesses are dead, and I'm left there reading a transcript into the record in front of a jury for 3 days.

Senator DURBIN. I think you make a valid point there, and I appreciate your statement.

Mr. Neufeld, are there any forensic science methods that we should basically disregard based on what you've been through? I mean, we understand that nuclear DNA analysis is reliable, but are there some forensic methods that you believe are so intrinsically suspect or unreliable that we should not count on them?

Mr. NEUFELD. Senator Durbin, I'm not a scientist. I'm also not a good technician. I'm not a scientist and I'm unqualified to answer that question. In fact, there's only one scientist actually sitting at this bench right now, and that's the doctor from Vermont. Others have written who are scientists that a number of disciplines have not been adequately validated.

I have seen firsthand, in the cases that I've represented individuals, where technologies that are still in use, such as bite marks and arson, are nevertheless misapplying science and the result is that there are wrongful convictions and the really bad guys are left out there to commit more crimes. If other scientists who are reputable scientists have reached that kind of consensus as they did in the National Academy of Sciences report, then that should be a cause for pause. But hopefully that decision will be made by other scientists, not by a mere lawyer.

Senator DURBIN. Thank you.

Thank you, Madam Chair.

Senator KLOBUCHAR. Thank you very much.

Senator Whitehouse.

Senator WHITEHOUSE. Thank you, Madam Chair.

Chief Hurtt, I'd like to ask you to comment on the problem of delays, particularly delays occasioned by lack of resources in the processing of crime scene evidence, not only from the perspective of its effect on the prosecution of that particular offense, but from a police and investigation point of view as you try to develop leads that might relate to other cases. This was brought home by a recent visit in Rhode Island with a local police chief who had been waiting over a year for a simple firearms ballistics report to come back to him in a case.

How significant is it, in terms of your own investigative authorities and responsibilities as police officers, to not just have accurate scientific evidence, but timely access to it while the crime is fresh and the witnesses are around and interconnections can be made with other evidence in other cases?

Chief HURTT. Madam Chair, Senator Whitehouse, that's a very good question, because as cases linger my investigators are assigned new cases every day. In order for them to be able to manage their cases, at some point they need to close a case, clear it, and move on, otherwise we'll have officers with stacks and stacks of cases. We are very interested in seeing that justice is done.

When we have delays, as you say, witnesses disappear, people die, and I guess the worst part of it all, when we have to wait long periods of time for evidence to be tested, that suspect may stay free to continue to commit other violent offenses. So I guess to sum it up, number one, it increases the workload for the detective, it also gives an opportunity for that individual to remain free and commit other crimes, and justice is not being served to the victims that have been victimized by either property crimes or violent offenses.

Senator WHITEHOUSE. Thank you, Chief.

I guess I'd like to ask prosecutors, Mr. Matson and Mr. Redle, this. When I was our Attorney General in Rhode Island, it's one of the very few States where the Attorney General is also the D.A. We, Delaware, and Alaska are the three. So I have been in your shoes and I remember very distinctly a case that happened during my tenure when a police officer who had been convicted of murder proved to have been innocent.

He was imprisoned, and it was my, I guess, mixed duty—happy to get the right thing done, unfortunate this happened in the first case—to move as rapidly as we could to secure his release from prison and proceed with the prosecution of the individual who had come in to confess to the crime after the police officer had spent several years in prison for a crime that he had not committed.

Now, Rhode Island doesn't have a death penalty. We gave it up years ago after a murder back in 1850, when it appeared very much that the wrong individual had been convicted and hanged for the murder. So we haven't had to face the issue of dealing with death penalty prosecutions.

But I was also U.S. Attorney. The U.S. Attorneys Offices have very rigorous standards for proceeding with a death case. They struck me as being good, thoughtful standards. I was glad, as U.S.

Attorney, that there were these additional layers of process, procedure, internal review, disclosure, and so forth that were required for death penalty cases. I don't believe that those standards exist around the Nation.

In many States there seems to be no real difference at all between a death penalty case and a regular case. I'm just wondering what your observations are as prosecutors about the extent and the merits of additional procedural protections in death penalty cases where, if there is error, the error becomes irretrievable by virtue of the application of the death penalty.

Mr. MATSON. You would like us both to respond?

Senator WHITEHOUSE. If you would.

Mr. MATSON. If I could, a judge that I've worked with for many, many years said he called death penalty cases death penalty cases because the judge and the prosecutor were dead before the defendant was because of the years it takes. That's actually true. It is a lengthy process. In our State, and I think in most States, you have, certainly, the charging process and the grand jury process, and then the trial itself, which is bifurcated here. We have a jury trial, and then once there is a finding of guilt of capital murder—and that doesn't necessarily mean death penalty.

Probably more times than not when I've had a capital case I sought life without parole, or non-dead, which was the recommendation of the victims, the community, or law enforcement, and so we didn't seek death in those cases. It's not a given that it's going to be death. But we go through that process and then there is a stringent amount of appellate systems. We have lengthy post-conviction hearings that come back to State courts where evidence is taken, things can be retested, are retested, and they take years. I do think we do have those safeguards in our State system.

Senator WHITEHOUSE. And you're comfortable that that's true not only of your own State system, but across the country?

Mr. MATSON. I will say this. I'm asked a lot of times, are you for the death penalty? Until you've stood in front of a jury, 12 people, and asked for that punishment, you really don't know. Everybody in a coffee shop somewhere says they are, but they don't really know. That's why the jury selection process is very difficult. When I'm asked that, are you for the death penalty, I say, in the cases that I've had, in the horrible, gut-wrenching homicides that I've had, yes.

In a case in some other States, the facts—it's hard for me to speak to a case in another State that I don't know the facts of, I've not sat on, I've not been part of that. So when those decisions were made, I trust the judgment of a person who lives in that community, who is a part of that community, who has weighed the evidence. I know the jury system, I know the evidence in the case, and I believe in those cases the right thing was done for those people, but I can't judge that for myself because I'm not in that State, in that circumstance.

Senator WHITEHOUSE. Mr. Redle, my time has expired, so it looks like you're off the hook.

Madam Chair.

Senator KLOBUCHAR. If you want to finish up, Senator Whitehouse, you can. Okay.

I wanted to thank all of you for your good testimony here, and I wanted to focus a little bit more on where we can find some agreement on the recommendations of the panel. I sit here and I've listened to both the prosecutors and I just feel that frustration when you want to get a case done and you have a delay in the evidence, and 2 years from now it's much harder to do, or a year from now, than it would have been if you could get it back in a month.

I also have had my own experience with working and finding out that we thought we had the right person for 8 years, when—you've all had these cases—some eyewitness comes forward and says this is the right person, and then you get the DNA back—and what a blessing it is to have that science—and you find out, no, it's not the person that was arrested that happened to live in the building that looked like the guy, it's someone else. So I think the science has been truly a blessing, both for convicting people and also for making sure we are not convicting people who are innocent. So I want us to all remember that as we go forward.

The questions I had were specifically, first, on this report, if there could be some agreement from the prosecutors on this accreditation issue, that this is something—despite the language you may not agree with in the report, that that is something that we could look at going forward as a possibility that could be helpful.

One of the things with the delays, we've seen more and more testing, forensic testing going on, and there would be a reason, I would think, to try to have some set accreditation. I just wondered if you could comment on that.

Mr. REDLE. Senator Klobuchar, yes. I think in most instances we actually agree with a lot of the recommendations that the National Academy makes, accreditation being one of them. In fact, as a result of the DNA testing and the standards that were placed on that by the DNA Advisory Board, you now are looking at a community of forensic crime laboratories where I believe we're pretty close to 90 percent of the public laboratories are in fact accredited. That's a good thing. Certification needs to happen. That needs to be the next step. We believe in standards. The devil is always in the details, but we believe in the imposition of appropriate standards on those disciplines.

Senator KLOBUCHAR. Thank you.

Mr. Matson, do you agree with that?

Mr. MATSON. Yes. Yes, I do. We have taken steps in our State, in the example of computers.

Senator KLOBUCHAR. I know. But how about this? Just to go back to the report, I think—correct me if I'm wrong—they're looking at some national standards for accreditation. Do you think that would be all right?

Mr. MATSON. Certainly. I think the more we can give credibility to the science and to the technology and the technicians that are doing it, the better. I would support that.

Senator KLOBUCHAR. Okay. And then the other piece of this is to suggest some kind of a National Institute of Forensic Science to try to get some more research. I realized, as we went on, we had the type of DNA testing, for instance, or other kind of testing got more and more refined as the science got more and more refined. Not only did this involve the training that Senator Sessions was

mentioning, which I would hope would be a part of any effort that we would have here, some training dollars as well as some of the backlog that you're talking about, but this idea of the research that is suggested by the report, is that something that you think would be helpful?

Mr. REDLE. Madam Chair, in terms of research, I believe we do need more dollars for research. Whether or not that would best be provided through some kind of National Institute of Forensic Sciences, I very much doubt it. I think that we can be more efficient than that. I think we have the framework for accomplishing a lot of those things through already existing agencies. It was odd to me when I read the National Academy report that it proposed the National Institute of Forensic Sciences and rejected the National Science Foundation and NIST as being host agencies, perhaps, for research funding. It did so on the basis that they had modest experience in research funding. Yet, it was proposing the creation of a brand-new agency that at least presumably would have no experience in research funding.

Senator KLOBUCHAR. Okay.

Do you want to answer that, Mr. Giannelli.

Mr. GIANNELLI. I was a prosecutor for 2 years in the Army, so I appreciate the frustration that prosecutors are now facing with this report. I've talked to lab people and they're frustrated, too. The problem, though, is if you look at the cases by 1995, some of the cases I cited, this evidence was being challenged under *Daubert* and the research was not done. It's been 14, going on 15 years when we've had these first cases and the research has not been done under the current system. So that is the problem here. Now, the money was being given, but it was not funneled through the right type of research. I think you need some sort of independent scientific research program. Thank you.

Senator KLOBUCHAR. Okay. Thank you.

Do you want to add anything, Mr. Matson?

Mr. MATSON. Just, we agree with the concept of the research and having that, but I don't know that a new political entity that would go through the political process, the ebbs and flows of politics getting into forensic sciences, is not something I think we need at this time.

Senator KLOBUCHAR. Okay. We'll look at that.

I had wanted to ask one question about a case that actually I asked now-Justice Sotomayor about, Mr. Neufeld. Just so people know, I actually worked with The Innocence Project a little bit when I was a prosecutor. We videotape interrogations in Minnesota, and actually our police have grown to like it because it has protected them in various claims and also has protected defendants, so we've worked together on that, as well as eyewitness identification. It was again I found that we could find some common ground on some of these issues.

I had a question about the *Melendez-Diaz* case. I think I had told you that I disagreed with that case and agreed with Justice Kennedy's dissent. This is the case about requiring various people—it's not clear from the details—to testify in forensic cases. You yourself, in your written testimony, said that cross examination wasn't enough to weed out bad forensic science because judges and law-

yers didn't usually have the scientific backgrounds to understand the limitations of some form of forensic science evidence.

So I'm just curious about how that *Melendez-Diaz* ruling could be a good thing if it just guarantees more cross examination that may not be particularly useful in the first place.

Mr. NEUFELD. Senator Klobuchar, I think you're completely correct. It's our position that one of the problems right now, and why the court took the position that it's not enough to introduce a certified crime lab report, that you'd want the individual who actually created that report in court, is currently there are no national standards about the content of a report. We have seen too many forensic reports all over the country which have little more than a paragraph in length and a thumbs up or a thumbs down.

The kind of report that if your doctor gave it to you for an important medical decision, you'd fire the doctor and go to a new hospital. What we're talking about here, and what the NAS is talking about, is having meaningful standards for report writing, standards which will require the forensic scientists to not only describe what items were tested, to describe what methods were utilized, to identify the results, and then draw conclusions. Those are the things that go into a standard scientific report.

If they did that here, OK, I can assure you, based on my experience—and that's what happens with DNA—what happens is, there are more pleas based on that report. If there aren't pleas, there are stipulations to the content of the report, because the last thing a defense attorney needs is some scientist who can support all of those findings with comprehensive reporting.

Senator KLOBUCHAR. So your argument is, if you had more set standards for these reports, then you wouldn't need these witnesses testifying?

Mr. NEUFELD. My opinion, Senator Klobuchar, is if you have these reports you will ameliorate the problem considerably because people will simply stipulate to their results and they won't have that kind of need to confront somebody on the witness stand. There may be some occasions where someone does it, but there's no question that if you have more rigorous report writing, it becomes a more efficient system.

Senator KLOBUCHAR. Senator Sessions, do you have more? Senator Sessions was out, but we did have a good discussion at the beginning about some common agreements here on the accreditation issue, and perhaps more research. There was some disagreement on where that research should be housed, but I was trying to—as you and I had discussed up here, there is some common agreement we can find here with this important report, while people may not agree about all the language in it as we move forward, and I added that we may want to look at funds for the training that you addressed, as well as the backlog that we continue to deal with all the time, Chief Hurtt. Thank you.

Senator SESSIONS. Well, law enforcement overwhelmingly is a State and local responsibility. The Federal Government has a lot of problems, but one of them should not be to try to micromanage every burglary, robbery, or rape case in America. It's just not possible to do that. What can the government do? Well, Fred Thompson, when he was on this Committee, he believed that we should

conduct—the first thing the Federal Government could do in a positive way is to spend the money to do the kind of research that can benefit every State and local law enforcement agency in America, to provide training, to do those kinds of things. None of those result in a major bureaucracy, hopefully, nor a takeover of local responsibility. So I'm positive about a lot of things that we could do together.

Dr. Buel, with regard to DNA, that's sort of uniquely capable of a virtual absolute scientific certainty, is it not? Not total, but it's——

Dr. BUEL. We in Vermont still use statistics, so we give a statistical analysis of the results.

Senator SESSIONS. How many chances——

Dr. BUEL. If you're giving statistics in the town of Montpelier that has a population of 10,000, and they're in the billions, it's pretty good evidence. Yes.

Senator SESSIONS. Well, I think that's true.

Now, with regard to fingerprints, that is just never going to be an exact science, is it?

Dr. BUEL. Well, I guess my feeling is that under proper use, when it's in an accredited laboratory, when we use quality assurance controls, when we have proficiency testing, blind proficiency testing, peer review, verifications, that we're trying to do the best possible job that we can. If we use a conservative approach to how we are to do this work, I think it's properly done and provides excellent evidence.

Senator SESSIONS. Well, I've seen them testify and I've seen blow-ups of the handwriting, and it's pretty impressive. If that was the only thing in the world I had as evidence against a defendant I might be a bit nervous if I were a juror or a prosecutor, but when you see that as cumulative, it makes you believe it's very unlikely somebody else wrote that document. But some handwriting, there's not enough of it and it's not so clear.

With regard to your forensic people in Vermont, if they wanted to be trained in fingerprint analysis or ballistics or DNA, where do you go? What kind of—are there a lot of places? Could we do a better job of having training centers of the highest order?

Dr. BUEL. Yes. Our region has what we call a New England Laboratory Directors Group. Several years ago, we wrote, I guess, a very short position paper to NIJ, the National Institute of Justice, requesting them to——

Senator SESSIONS. To a National Institute of Justice?

Dr. BUEL. Of Justice. Yes. To try to provide some funding such that we can establish centers for fingerprint examiners and firearm examiners to go through a college such that when they come out, that they would be able to pass a CTS, a collaborative testing program proficiency test. Now, that would get them up to a point, but they would still need further in-house training in the laboratory. Okay. So that is——

Senator SESSIONS. Does that exist today? I mean, how does a fingerprint person who comes out of college and they want to be a fingerprint analyst, where do they get trained?

Dr. BUEL. What we do in forensics, is we steal one from the other laboratory.

[Laughter.]

Dr. BUEL. And it's unfortunate. We just stole one from Chicago. Hopefully we won't have somebody steal one from us. But it's a very small group. It's a lot of on-the-job training that takes a couple of years to do. But there could be educational programs that allow individuals to come out with, perhaps, a 5-year degree, able to do at least the basics and have the understanding to do a proficiency test. That would not prepare them to do casework, but that would prepare them to do in-house training.

Senator SESSIONS. Chief Hurtt.

Chief HURTT. Thank you, Madam Chair and Senator Sessions. I listened to the conversation about more, I guess, training in fingerprints and trace evidence and firearms to ensure that we're doing a good job in identifying suspects. In my 40-plus years of law enforcement, I've found DNA to be the best source, or dependable source, of identifying the suspect in criminal cases. Last year, myself——

Senator SESSIONS. If you have it and the scientific analysis is good, reliable.

Chief HURTT. Yes. But I think, with major cities, counties, and State labs and FBI labs, small jurisdictions should have access to DNA. Whether they have to send it to the Federal, the State, or one of the major cities in this country, there should be access to DNA. Last year, I'm going to share with you, myself and several of my staff members made a trip to the U.K. to visit their crime lab, as far as DNA, and also to visit new Scotland Yard.

At Scotland Yard, they have used DNA for the identification of property suspects, burglary suspects. They've used skin cells and also information that they gained because the person left prints at the scene, whether it was fluids or skin cells. Their detection rate of suspects increased from 15 percent to 50 percent.

Now, is it a good investment of our time to continue to train people in being able to do fingerprint identification or should we move the practice toward using DNA or touch-DNA to solve problems or property crimes? I would submit, the best process would be, move toward using DNA to solve property crimes as well as violent crimes.

Senator SESSIONS. Good point.

Madam Chairman, I would just say that to me, we give billions of dollars to the Department of Justice. I don't know why they're not working on this anyway. I mean, you have to go over there, the police chief of Houston. It seems to me the Department should be on top of all these issues, cutting-edge technology, providing what does work, what is reliable, what's not reliable, and feel that they are a resource, a supportive entity with the best science available, to our local and State law enforcement. To me, I've always felt a bit blasé about that. The National Institute of Justice and Bureau of Justice Statistics provide a lot of valuable information, but I think we could do a better job of getting into that.

Mr. Chairman, I would offer for the record the *Corsican Daily Sun*. Senator Cornyn had provided that to me. He was not able to be here at this hearing and he wanted it made a part of the record, and I would offer that.

Senator KLOBUCHAR. Without objection, it will be included in the record.

[The article appears as a submission for the record.]

Senator KLOBUCHAR. All right. Well, I wanted to thank all of you for being here today, and especially for Mr. Brown, for sitting through this hearing and everything that you've had to endure. I want to thank you for your courage in being here. Also, just to point out again, I do think that we have some common agreement on the need to move forward here with some of the recommendations from this report.

Again, we will work out the details and we will work with all of the groups involved here. That's how we like to get things done. But I will stress again that I have found some common ground with prosecutors, defense lawyers, and police, that we always want to get the right person, if for no other reason than the person who committed the crime is still out there, not to mention, no one wants to put an innocent person behind bars. So I think that there's good reason to move forward here. This has been a very helpful hearing. Thank you very much.

We are adjourned.

[Whereupon, at 12:02 p.m., the Committee was adjourned.]

[Questions and answers and submissions follow.]

QUESTIONS AND ANSWERS

US Senate Committee on the Judiciary regarding "Strengthening Forensic Science in the United States"

Eric Buel's response to Committee questions resulting from his testimony on this subject on September 9, 2009:

1. *Dr. Buel, you testified that "the resources necessary to make [the highest level of forensic science services available to all victims of crime] have not been provided to the State and Local crime labs" and you go on to urge Congress to ensure that "Federal budgets [are] adequate to provide funding to improve capacity to promote long-term improvements, facilitating backlog reductions of State and Local laboratories."* ***What do you think is an appropriate Federal/State & Local mix for forensics funding? Would you support a 50/50 match requirement for Federal grants to states?***

Response: The Vermont Forensic Laboratory is very appreciative of the federal funding received in support of the laboratory. Federal funds support training and continuing education, overtime for backlog reduction, and the purchase of supplies, new equipment and instrumentation. These funds have been essential as state funds have not been provided to meet these laboratory needs. I know my peers also understand the importance of federal support to all forensic laboratories across the country, many of whom also serve states that have not provided forensic funding for capacity building. I know from personal experience that we have not applied for certain federal grants due to "match" requirements. Those grants that require matching funds will not be a viable source of funding for our laboratory since new funds to support the match would not be available for any grants in the immediate future. I am certain that our laboratory would not be the exception in this regard. I would respectfully recommend that federal support not be tied to a match requirement.

Many of the federal programs which support the expansion and improvement of forensic laboratory services aid federal law enforcement and provide interstate cooperation. National databases,

whether they include DNA, fingerprint or firearm information, allow faster identification and interruption of interstate crime. This is a national goal that would be difficult to achieve if state participation was tied to the availability of matching funds. If the federal government feels that it is necessary to require matching funds for certain grants, I would suggest a phased approach to allow states to slowly acquire matching funding over an extended period of time. It is also imperative to note that many federal law enforcement agencies rely upon state and local laboratories for forensic services.

Congress can use the work of the Bureau of Justice Statistics (BJS) in their "Census of Publicly Funded Forensic Crime Laboratories, 2005" as a basis to support the funding mix for building capacity within our forensic laboratories. An appropriate funding level could be estimated based upon the cases received by an agency. For example, the 2005 BJS census reported that Federal forensic laboratories received only 4% of the total number of cases submitted to forensic labs with the remaining 96% evenly split between State & Local forensic laboratories. This data, albeit dated, could be of use in determining the appropriate funding mix to Federal / State & Local agencies. Reliance upon the BJS for timely information may be problematic as their 2005 report was not published until July of 2008. Annual and timely assessment reports detailing the needs of State and Local crime laboratories and forensic science providers is critical and must be included in legislation to accurately address the requirements of the community to perform necessary duties. From such an assessment one could evaluate changes which have occurred since 2005 when the largest case backlogs were in controlled substances (51%) and latent prints (16%), with DNA at 9%. The BJS report also demonstrated a 24% increase in cases submitted to crime labs from 2003 to 2005. I am confident that the case increase was much higher from 2005 to 2009, but we do not have those statistics on a national scale. From this BJS report we see that there is a significant need to fund multiple disciplines in order to reduce backlogs and a necessity to address laboratory

capacity. Without applying a dual approach to this funding problem, we will never improve the capacity of the lab to address the increase in case submissions and the problems of backlogs.

2. *Dr. Buel, you testified that you "support the establishment and congressional funding of National Research Committees to perform a comprehensive review of particular forensic disciplines."* ***How would you go about ensuring that the National Research Committees were not relegated to the same status as DOJ existing Scientific Working Groups (SWGs) that D.C. Circuit Judge Harry T. Edwards described as "of questionable value" because, among other things, their "recommendations are not enforceable"?***

Response: The Scientific Working Groups have developed guidelines and many forensic laboratories follow these as a matter of practice. However, many laboratories may not have the instrumentation or personnel necessary to appropriately implement these guidelines. The NAS report supports nationwide standards and the community can move in that direction but it will take considerable federal support through funding of additional personnel, instrumentation and training to local and state laboratories.

In my testimony of September 9, I mentioned that the process that the DNA discipline went through to obtain standardization could be a model for the other forensic disciplines. Applying the lessons learned from the DNA discipline process could create a path that may build upon the SWG accomplishments to date to develop standards for the community.

Briefly, the DNA discipline saw two NRC reports issued which led to standards developed by the DNA SWG which were then reviewed and finalized by the DNA Advisory Board (DAB). In 1994 the Federal DNA Identification Act outlined the rules under which law enforcement agencies were

allowed to exchange DNA information. These standards established by the DAB were incorporated by accreditation bodies into their audit documents and those laboratories that wanted to load DNA profiles into CODIS had to be audited to these standards and maintain accreditation in order to meet federal guidelines and federal law. Laboratories that failed to maintain accreditation were not allowed to load DNA profiles into CODIS, became ineligible for federal funds to support DNA programs and were therefore open to intense cross examination scrutiny.

With the NAS report we are now in a position to effect similar changes throughout the disciplines of forensic science and to ensure that suitable standards are incorporated and followed by the entire forensic community. One approach would be to have the guidelines already developed by the forensic discipline SWGs reviewed and modified, as necessary, to transition into standards; similar to the process used with the DNA discipline. This approach could be successful if the panel consisted of the proper mix of qualified forensic specialists and academicians. The activities of this panel could be combined into an Advisory Board composed of qualified forensic science practitioners, with assistance from statisticians, academics, and other stakeholders suitable to answer particular technical forensic questions. An Advisory Board with the appropriate members could be charged to answer the technical questions raised in the NAS report and establish suitable standards for the field. The key will be to ensure that they are "qualified" in understanding the various disciplines within forensic science. The Advisory Board could be charged with the following and/or additional duties:

- Coordinate discipline research, literature, and accumulated data and fully vet this material to determine if further research is required.
- Recommend and seek funding for any additional research.
- Promulgate standards for community review, modify as necessary and publish as accepted

standards after community comment.

- Determine needs of the community to implement the standards and recommend necessary funding.

Once the standards are established, they could be made enforceable with mandatory accreditation of all forensic laboratories. Accreditation bodies could incorporate the standards into audit documents and perform assessments to determine compliance with these standards. Those laboratories which fail to meet the standards would no longer be able to achieve or maintain accreditation. By linking federal financial support to mandatory accreditation and database usage (CODIS for DNA, IAFIS for fingerprints and NIBIN for firearms), the quality and standards used by the nation's forensic laboratories could be enforced.

3. *Dr. Buel, your testimony appears to studiously avoid the issue of divorcing forensic laboratories from law enforcement command and control.* ***Do you support the first recommendation in the NAS Report, namely, that "Congress should establish and appropriate funds for an independent federal entity, the National Institute of Forensic Science (NIFS)" and the fourth recommendation that NIFS "must not be part of a law enforcement agency"?***

Response: The criminal justice community would be well served by an organization that directed and facilitated the recommendations found to be appropriate to improve and strengthen forensic science. The creation of a new federal agency, with all the associated costs and time required to "construct" such an arm of the federal government would use considerable funds and resources that would be better spent on forensic science reform. I would look for solutions existing within the federal government to create a division that would conduct the business of a NIFS-like entity without using precious funds that should be reserved for moving forensic science forward.

5

Recommendation #4 states that laboratories should be removed from administrative control of law enforcement agencies or prosecutor offices, or autonomous within. This has been often misconstrued by the media as physically removing the lab from either of those parent organizations. The reason the Committee recommended this administrative separation is to remove undue influence of the parent organization on the forensic laboratory. Accreditation to ISO 17025 standards addresses this administrative separation. The standards address this on three levels: (*i*) Parent agency relationships, (*ii*) Authority of laboratory director, and (*iii*) Undue influence on all lab personnel. The ISO standards stipulate that the laboratory must "have policies and procedures to avoid involvement in any activities that would diminish confidence in its competence, impartiality, judgment or operational integrity" and that laboratory management must "define the organization and management structure of the laboratory, its place in any parent organization, and the relationships between quality management, technical operations and support services". Through conformance with the ISO standards a laboratory is required to demonstrate that an appropriate relationship exists. By meeting these standards laboratories can exist and function properly within, yet remain autonomous to, parent organizations while meeting the expectations of the NAS committee report.

To: Senator Specter

From: Paul Giannelli

Date: March 16, 2010

Re: Judiciary Committee Testimony

1. I think Judge Becker meant that trial judges should exclude evidence regarding "zero error rates" as invalid under Federal Rule 702 and the *Daubert* case. Judge Becker, a well-respected jurist, wrote numerous important (often ground-breaking) decisionis involving the Federal Rules of Evidence, including a number of landmark cases on expert testimony. Having dealt with epidemiological studies and other complex scientific issues in civil cases, he would have appreciated that a zero error rate was impossible, especially in a technique with a significant subjective component as is the case with fingerprint analysis.

2. The creation of NIFS would not replace a federal trial court's responsibility to determine an expert's qualifications under Federal Rule 702. Indeed, there would be constitutional problems if a defense expert's testimony was excluded *only* because the expert was not certified (assuming the expert were otherwise qualified). Certification (which could be required even in the absence of NIFS) would be comparable to the licensing of medical doctors — i.e., an attempt to ensure minimum competency standards as a prerequisite to practicing in a field. Moreover, depending on the jurisdiction, 80 to 90 percent of criminal cases never get to trial, and consequently, judges never decide whether the expert is qualified. Certification would assist in ensuring that expert opinions in the investigative stage are valid. (Presently, you cannot cut hair without a barber's license.)

3. Without funding, it is an unfunded mandate. However, the small department employee is probably the person most in need of education, certification, etc. Personnel in small laboratories have told me that they cannot afford to attend major conferences in their field, which often means that they cannot keep up with developments in their field. The expense of these requirements could be somewhat reduced by on-line education programs.

4. The use of fingerprints for background checks is different than their evidentiary use at a criminal trial. Prior to Automated Fingerprint Identification Systems (AFIS), all ten fingers were used to classify fingerprints (i.e., Henry classification system with FBI modifications). These were also clean ink prints (record prints). In contrast, all ten prints are rarely found at a crime scene; crime scene prints are often *partial* prints from one finger. Because of variations in pressure, they are frequently distorted or smudged. Fingerprint impressions from the same person typically differ in some respects each time an impression is left. Thus, "dissimilarities" between the crime scene and record prints are common; the examiner must decide whether there is a *true* dissimilarity, or whether the apparent dissimilarity can be discounted as an artifact or due to distortion. AFIS has not changed this.

Harold Hurtt

Chief of Police, Houston Police Department

Houston, TX

1. Chief Hurtt, you testified about the far-reaching and significant reforms undergone by the Houston Police Department in the wake of identified deficiencies in its DNA section. Among other things, the Independent Investigator found inadequate resources and attention paid to the Crime Lab by command staff and a lack of technical reviews, standard operating procedures that were cobbled together, gaps and failures in quality control, etc. **Do you favor an external auditing process after the fact—as in Houston—or completely divorcing forensics labs from the control of law enforcement by placing it in an independent agency—as recommended in the NAS Report?**

Mr. chairman and committee members- I have made recommendations to state and local leadership in the state of Texas that an independent DNA lab was the answer to this problem. Today, I still believe that a well funded independent Lab is the most appropriate solution.

2. Chief Hurtt, you testified that as part of your post-audit reforms, the Houston "Crime Lab continues to cooperate fully with the Innocence Project by making evidence available for review and testing." **What is the upside for your Crime Lab in cooperating with Mr. Neufeld's Innocence Project? Are there any downsides and, if so, what are they?**

Mr. chairman and committee members- the upside of the Houston Crime Lab continuing to cooperate with the Innocence project is Justice. We, as present members of the Houston Police Department want our community and the Criminal Justice System to know that we are committed to correcting any wrongs and all harm that may have occurred in the past. I see no downside to this response.

3. **Has the Houston Crime Lab identified any individuals that were exonerated by**

DNA evidence since your review began? If yes, did the same DNA evidence that exonerated someone ever lead to the identification of the actual offender?

Ms Julia Gagne, I am having the last question researched by Ms. Irma Rios, director of HPD crime Lab. I will forward a response when she completes her research.

Thank you.

Harold L. Hurtt

Barry Matson

Deputy Director, Alabama District Attorneys Association & Chief Prosecutor, Alabama Computer Forensics Laboratories

Montgomery, AL

1. Mr. Matson, you essentially criticize the NAS Report because it is being used to challenge former convictions and current prosecutions even though the report disclaims any intent to be used for such purposes. **How have you seen criminal defendants—or their attorneys—use the NAS Report in practice? Is it more likely used in pretrial motions, to cross-examine the State's expert witnesses, or merely in arguments to the jury? Were they successful in their efforts? Have you seen the NAS Report raised *successfully* in post conviction motions resulting in new trials? If yes, please provide case names and docket numbers.**

2. Mr. Matson, there's no doubt about it. In America criminal defendants benefit from several constitutional and legal doctrines designed to ensure that only the truly guilty go to jail. These include the rights commonly enunciated in the *Miranda* warnings; the right to be free from unreasonable searches and the presumption of innocence. **Is it your sense that the NAS Report is insufficiently attuned to the degree to which the criminal justice system already protects criminal defendants?**

3. Mr. Matson, I take it from your testimony that you do not support divorcing forensics labs from law enforcement command and control. **Do you, nonetheless, support Independent Audits like the one described by Chief Hurtt in his testimony? If not, why not?**

4. **Mr. Matson, how do you contend with the Supreme Court's decision in *Melendez-Diaz v. Massachusetts*, in which, Justice Scalia—writing for the Majority—notes, "A forensic analyst responding to a request from a law enforcement official may feel pressure – or have an incentive – to alter the evidence in a manner favorable to the prosecution"?**[1]

[1] *Melendez-Diaz v. Massachusetts*,129 S.CT. 2527, 2536 (Scalia, J. for the Majority).

Questions for Peter Neufeld

Co-Director, The Innocence Project

New York, NY

1. Mr. Neufeld, you testified that, "among the first 241 post-conviction DNA exonerations nationwide, the real perpetrators were identified in 105 cases." You go on to note that "these perpetrators were convicted of at least 90 serious, violent crimes – including 56 rapes and 19 murders – that they committed *after* innocent people were convicted for their earlier crimes." I assume DNA evidence was the means by which actual perpetrators were identified in many of these cases. Is that correct? **Do you think that given the ability of DNA data to serve as both exculpatory and inculpatory evidence Congress should encourage the states to provide for post-conviction DNA testing that is at least as accessible as the Federal standard found in 18 U.S.C. § 3600?**

To date there have been 251 DNA exonerations. In 107 of these cases, the real perpetrator has been identified by DNA testing. The Innocence Project has previously reported the number of violent crimes committed by the real perpetrator as at least 90. Since that time, however, we have narrowed our definition for this figure. The revised number of additional violent crimes for which the real perpetrator was convicted subsequent to the crime for which the innocent person was convicted is 72. The number of crimes committed is larger than this figure however. In cases where the statute of limitations has run out on a crime before the real perpetrator was identified or in cases where the real perpetrator was already serving a lengthy prison sentence, prosecutors could not or elected not to press charges against the real perpetrators for those crimes committed while the innocent person was in prison.

The NAS report stated "With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source."[1] It is a matter of public safety and a duty to provide true justice to victims and their families that post-conviction access to DNA testing is made available in every state. The Innocence Project therefore strongly

[1] "Strengthening Forensic Science in the United States: A Path Forward", National Academy of Sciences, 2009, p.7.

believes that Congress should encourage the states to provide for post-conviction DNA testing that is at least as accessible as the Federal standard.

2. Mr. Neufeld, did the Innocence Project take a position in *Melendez-Diaz v. Massachusetts*—the case concerning the admission of forensics reports on the existence of cocaine and admission of those reports into evidence without the live testimony of the lab analyst over the defendant's objection? What was the Innocence Project's position and why?

The Innocence Project, as a member of the Innocence Network, submitted an amicus brief in support of the petitioner in *Melendez-Diaz v. Massachusetts*. In the brief we discuss the fallibility of forensic evidence and how essential confrontation is in mitigating the discovery of these problems.

Throughout the country, DNA exonerations have revealed the all too frequent mistakes, reliance on unvalidated assays and methods, overreaching testimony, negligence, misconduct (such as drylabbing) and other systemic problems within forensic science laboratories. The guarantee of confrontation provides a vital safeguard for exposing, during the criminal trial, the aforementioned forensic science errors revealed by wrongful convictions.

In addition to the errors uncovered by DNA exonerations listed above Justice Scalia, in his majority opinion, cited the National Academy of Sciences report in discussing the influence of law enforcement on the testimony of forensic analysts:

> "According to a recent study conducted under the auspices of the National Academy of Sciences, "[t]he majority of [laboratories producing forensic evidence] are administered by law enforcement agencies, such as police departments, where the laboratory administrator reports to the head of the agency." National Research Council of the National Academies, Strengthening Forensic Science in the United States: A Path Forward 6–1 (Prepublication Copy Feb. 2009) (hereinafter National Academy Report). And "[b]ecause forensic scientists often are driven in their work by a need to answer a particular question related to the issues of a particular case, they sometimes face pressure to sacrifice appropriate methodology for the sake of expediency." *Id.*, at S–17. A forensic analyst responding to a request from a law enforcement official may

> feel pressure—or have an incentive—to alter the evidence in a manner favorable to the prosecution.
>
> Confrontation is one means of assuring accurate forensic analysis. While it is true, as the dissent notes, that an honest analyst will not alter his testimony when forced to confront the defendant, *post,* at 10, the same cannot be said of the fraudulent analyst."

Justice Scalia identifies an issue that has been exemplified by many of the nation's DNA exonerations: that forensic testimony can be influenced and can stray beyond the results of the actual test or the scientific boundaries and capabilities of a test.

Once the validity and reliability research determines that boundaries and capabilities for forensic science disciplines under question, and standards for the use and interpretation of these forensic tests are put into practice, defense lawyers will be more likely to stipulate to laboratory reports and refuse the right to confrontation as forensic evidence becomes more difficult to disprove.

3. Mr. Neufeld, did the Innocence Project take a position in *District Attorney's Office for Third Judicial Dist. v. Osborne*, 129 S.CT. 2308 (2009), the recent decision in which the Supreme Court held 5-4 that even assuming someone convicted of sexual assault could pursue claims under 42 U.S.C. § 1983, he had no constitutional right to obtain post-conviction access to the State's evidence for DNA testing? If so, what was its position?

The Innocence Project was the counsel of record and argued on behalf of the respondent in *District Attorney's Office for Third Judicial Dist. v. Osborne*. Despite the widespread acceptance of DNA testing as a powerful and reliable form of forensic evidence that can conclusively reveal guilt or innocence, some states continue to unfairly obstruct access to testing.

Even in many of the states that grant access to DNA testing, the laws are limited in scope and substance. Motions for testing are often denied, even when a DNA test would undoubtedly confirm guilt or prove innocence and an inmate offers to pay for testing.

Although Federal law, under the 2004 Justice For All Act, grants access to DNA testing for federal inmates claiming innocence, it is our position that all 50 states should offer at least the same level of access to post-conviction DNA testing as does the federal government. Some states have passed statutes that include barriers to testing that are insurmountable for most prisoners. These include restrictions against inmates who pled guilty, confessed, or whose lawyers failed to request DNA testing at trial. Some laws put an unreasonable standard in place to establish proof of innocence. Others place the burden on the defense to effectively solve the crime and prove that DNA evidence promises to implicate another individual. Still others put time limitations on testing requests. Currently, two states (Alabama and Kentucky) limit post-conviction DNA access to inmates on death row, so those serving life sentences do not have access to testing. In many cases, the questionable evidence used to convict a defendant at trial – like eyewitness identification or snitch testimony – is used by judges as grounds to deny a DNA test. These barriers keep innocent people from securing DNA tests that could prove their innocence

It also bears noting that the Osborne decision did not rule out the possibility of all future constitutional challenges to state post-conviction DNA testing laws, whether under Section 1983 or other vehicles. To the contrary: in Osborne, the Court explicitly recognized, for the first time, that convicted persons have a protected "liberty interest" in pursuing access to DNA evidence that has the potential to prove their innocence, and that state procedures providing for (or denying) access to DNA evidence must meet minimum due process standards.[2] Osborne thus places additional pressure on those states that currently provide no vehicle for obtaining DNA testing, and/or unreasonably restrict persons who might have meritorious claims from obtaining testing, to enact or strengthen those laws.

[2] Brandon Garret, DNA and Due Process. 78 Fordham L. Rev. Forthcoming (2010), link to abstract: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1562820

Matthew F. Redle

County and Prosecuting Attorney, Sheridan County

Sheridan, WY

1. Mr. Redle, you testified that the forensics system is essentially not broken and that removal of laboratories from law enforcement sponsorship is unnecessary. Specifically, on behalf of the National District Attorneys Association you testified, "We have serious reservations concerning the recommendations directed at the creation of a new federal agency, referred to in the report as the National Institute of Forensic Science (or NIFS) and recommendation # 4, to the extent that recommendation #4 would require public crime laboratories to be divorced from law enforcement or public safety agencies." (Redle Testimony at 4-5). **How do you contend with the Supreme Court's decision in *Melendez-Diaz v. Massachusetts*, in which, Justice Scalia—writing for the Majority—notes, "A forensic analyst responding to a request from a law enforcement official may feel pressure – or have an incentive – to alter the evidence in a manner favorable to the prosecution"?**[1]

Thank you Senator Specter for allowing me the opportunity to address the issues raised by your questions.

I do not believe that our position is in conflict with the Supreme Court's holding in *Melendez-Diaz v. Massachusetts.*[2] Rather, Justice Scalia's opinion uses the National Academy of Sciences report to illustrate the values inherent in the Confrontation Clause of the Sixth Amendment and differentiate it from prior Confrontation Clause doctrine.

As you know, *Melendez-Diaz* is the latest case in a line of cases starting with *Crawford v. Washington*[3] re-examining a criminal defendant's right to confrontation under the Sixth Amendment to the United States Constitution.[4] *Crawford* reversed the previous holding in *Ohio v. Roberts.*[5] *Roberts* stood for the proposition that a defendant's right to confront witnesses against him was not violated by the admission of a non-testifying witness' statement if the

[1] *Melendez-Diaz v. Massachusetts*,129 S.CT. 2527, 2536 (Scalia, J. for the Majority).
[2] 129 S.Ct. 2527, 174 L.Ed.2d 314 (2009).
[3] 541 U.S. 36, 124 S.Ct. 1354, 158 L.Ed.2d 177 (2004).
[4] This right of confrontation is applicable to the defendant's in state courts through the due process clause of the Fourteenth Amendment. *Pointer v. Texas*, 380 U.S. 400, 85 S.Ct. 1065, 13 L.Ed.2d 923 (1965).
[5] 448 U.S. 56, 100 S.Ct. 2531, 65 L.Ed.2d 597 (1980).

statement bore sufficient "indicia of reliability."[6] Under the *Roberts* test evidentiary "reliability" was determined by whether a) the statement was admissible under a "firmly rooted hearsay exception", or b) the out-of-court statement contained "particularized guarantees of trustworthiness."[7] *Crawford* rejected the *Roberts* test holding that under the Sixth Amendment "reliability" of a witness' testimonial statement was determined by live confrontation of that witness *via* cross-examination.

In *Melendez-Diaz*, the State of Massachusetts and others as *amici*[8] sought to defend a procedural practice in which sworn certificates of laboratory testing results were offered at trial without live testimony of the examining scientist. In that effort the Respondents resorted to a number of arguments for allowing such certificates to be admitted *in lieu* of testimony. One of arguments offered was that sworn certificates of crime laboratory drug identification testing results should be considered "reliable" and therefore admissible because the out-of-court statement of the non-testifying witness "reflects the results of neutral, scientific testing performed by government officials pursuant to a statutory duty." Respondent's Brief at page 29.[9] The suggestion that "reliability" is assured by the "neutral" and "scientific" nature of the testing process is more consistent with demonstrating the "particularized guarantees of trustworthiness" required under *Roberts* than the live confrontation required under *Crawford.*[10]

The majority opinion by Justice Scalia addresses each of the arguments offered in support of the certificates of analysis, including the reliability of "neutral, scientific testing" argument offered by the state of Massachusetts. Justice Scalia points out that not only is the "reliability" claimed to be inherent in scientific evidence inconsistent with *Crawford* but such forensic evidence may not be "reliable" or "trustworthy" in a *Robert's* sense either.

> "Nor is it evident that what respondent calls 'neutral scientific testing' is as neutral or as reliable as respondent suggests.

---

[6] *Roberts*, 448 U.S. at page 66.
[7] *Id.*
[8] Including the National District Attorneys Association.
[9] See also: Respondent's Brief at page 23 ("The certificates they prepare reflect only these objective or neutral facts."). Respondent's Brief at page 50 ("Moreover, the 'potential for bias is very small' because analysts are employed to function as 'neutral and objective' scientists.).
[10] "'To be sure, the [Confrontation] Clause's ultimate goal is to ensure reliability of evidence, but it is a procedural rather than a substantive guarantee. It commands, not that evidence be reliable, but that reliability be assessed in a particular manner: by testing in the crucible of cross-examination.'" *Melendez-Diaz*, 129 S.Ct. at page 2536 citing *Crawford*, 541 U.S. at page 61.

> Forensic evidence is not uniquely immune from the risk of manipulation." *Melendez-Diaz, id.*

It is at this point that the majority opinion first references the National Academy report.[11] It is clear from what follows that Justice Scalia is not making a finding that forensic evidence is inherently suspect. Neither is he stating his opinion or that of the majority of the Court that any assertions of the National Academy are correct. Justice Scalia instead uses the then recent statements of the National Academy report and articles of others to point out the possibility of error, fraud and bias. His point is that, like any human endeavor such possibilities always exist. The right of confrontation acts as a procedural safeguard protecting a defendant from such an eventuality. The majority accepts a suggestion made in the dissent that confrontation is not the only way or even the best way to verify a forensic test result.[12] Many of those forms of quality control and quality assurance are already employed in forensic protocols. The majority's point is that confrontation is one means of quality assurance that is constitutionally required.[13]

That the statements referencing the National Academy report are not intended to reflect a judgment by the majority but rather serve an illustrative purpose is readily apparent. When Justice Kennedy, writing in dissent[14], suggests that the majority opinion is in error in basing its ruling in large part upon the conclusions of the National Academy, Justice Scalia in footnote 6, quickly corrects that notion.

> FN6. "Contrary to the dissent's suggestion, *post,* at 2555, we do not 'rel[y] in such great measure' on the deficiencies of crime-lab analysts shown by this report to resolve the constitutional question

---

[11] "According to a recent study conducted under the auspices of the National Academy of Sciences, '[t]he majority of [laboratories producing forensic evidence] are administered by law enforcement agencies, such as police departments, where the laboratory administrator reports to the head of the agency.' National Research Council of the National Academies, Strengthening Forensic Science in the United States: A Path Forward 6-1 (Prepublication Copy Feb. 2009) (hereinafter National Academy Report). And '[b]ecause forensic scientists often are driven in their work by a need to answer a particular question related to the issues of a particular case, they sometimes face pressure to sacrifice appropriate methodology for the sake of expediency.' *Id.,* at S-17. A forensic analyst responding to a request from a law enforcement official may feel pressure-or have an incentive-to alter the evidence in a manner favorable to the prosecution." *Id.*

[12] *Id.*

[13] Other constitutionally recognized methods of quality assurance and quality control is the defendant's due process right to the assistance of an expert *Ake v. Oklahoma,* 470 US 68 (1985) or the Compulsory Process clause of the Sixth Amendment which might be employed by a defendant to contest foundational predicates to forensic evidence which might otherwise not be subject to confrontation. See fn. 1, *id.* at page 2532. Another means of quality assurance was suggested by the National Academy of Sciences in the context of DNA testing. Independent testing or examination by a defendant is regularly available through discovery. Such "retesting provides an opportunity to identify and correct errors that might have been made during the course of analysis." National Research Council, The Evaluation of Forensic DNA Evidence at page 87 (1996).

[14] *Melendez-Diaz v. Massachusetts, id.* at page 2555 (Justice Kennedy dissenting).

> presented in this case. The analysts who swore the affidavits provided testimony against Melendez-Diaz, and they are therefore subject to confrontation; we would reach the same conclusion if all analysts always possessed the scientific acumen of Mme. Curie and the veracity of Mother Theresa. We discuss the report only to refute the suggestion that this category of evidence is uniquely reliable and that cross-examination of the analysts would be an empty formalism." [Emphasis Added].[15]

It is apparent from this that the majority of the Court is not suggesting that the rule in *Melendez-Diaz* would be different if the "indicia of reliability" were different for a crime laboratory in law enforcement agency. It does not suggest a return to *Roberts* if only the police laboratory testing the evidence were divorced from law enforcement. It appears, in fact, that the laboratory conducting the drug testing in *Melendez-Diaz* was "divorced from law enforcement or public safety agencies." The opinion states that the analysts involved were from "the State Laboratory Institute of the Massachusetts Department of Public Health.[16]" The holding in *Melendez-Diaz* is unchanged by the fact the analysts performing the drug identification testing were employed by the Department of Public Health rather than the Massachusetts State Police Crime Laboratory, a division of the Executive Office of Public Safety and Security. In an adversarial system such as ours, the values inherent in the confrontation clause still apply as a check against error, fraud or bias.

I have not intended to suggest that are public laboratories are incapable of error, fraud or bias. History clearly shows they may be susceptible to such error. Neither are such incidents somehow limited only to laboratories within a law enforcement agency. It is my understanding, for example, that in some hospital laboratories a form of DNA profiling occurs as a means of guarding against tissue sample mix-ups. Neither does experience suggest forensic fraud is limited only to government laboratories. For every Joyce Gilchrist there may be a Louise Robbins. In some instances the perpetrator of forensic fraud, of "dry-labbing" for instance, may not be the victim of personal grandiosity but someone in a woefully under-funded police laboratory trying to keep their "head above water" in the face of unremitting demands for testing and analysis. Is there any reason to believe that the pressure the forensic analyst in the police lab feels, as described by Justice Scalia, is any greater than that of the same forensic analyst in a private commercial laboratory which relies upon "customer satisfaction" and "word of mouth" for its continued survival.

Recognizing such potential weaknesses within a scientific system affords the ooportunity to plan and control for such eventualities across the breadth of the

---

[15] *Id.* at page 2537.
[16] *Id.* at page 2531.

forensic science community, public and private facilities alike. In my written testimony before the committee I identified a few of the quality assurance and quality control strategies that can be employed to detect or eliminate such error or fraud. In *Melendez-Diaz*, Justice Scalia identified yet another potential strategy for identifying error or uncovering incompetence embodied within our adversarial system. "Confrontation is one means of assuring accurate forensic analysis....Confrontation is designed to weed out not only the fraudulent analyst, but the incompetent one as well.[17]"

There is nothing inherently logical about the premise that a crime laboratory must be divorced from agencies whose mission is the detection of crime and the apprehension and prosecution of those responsible. A crime laboratory, provisioned with adequate resources and staffed by those possessing a moral compass which points to the means appropriate to achieving its mission, informs the acts and judgment of police and prosecutors. In so doing it protects the innocent who might wrongly be implicated and those who might otherwise be victimized.

While I do not believe the forensic science "system" is broken, I do believe that it is in need of care and is capable of improvement. For that reason, the National District Attorneys Association has taken a position in favor of eleven of the thirteen recommendations made by the National Academy of Sciences. We have taken a position against removal of crime laboratories from law enforcement or prosecution agencies but support the National Academy's call for crime laboratories to be autonomous in their operation. We support these things because we believe they will be effective in achieving such results.

2. Similarly, Mr. Redle, how do you contend with Justice Scalia's suggestion in *Melendez-Diaz v. Massachusetts* that "Serious deficiencies have been found in the forensic evidence used in criminal trials"?[18]

Without repeating the thrust of my earlier response let me say that Justice Scalia's reference to findings of "deficiencies" relate to those enumerated in the National Academy report, as well as the articles he cites by Pamela Metzger, Peter Neufeld and Brandon Garrett. It is incontrovertible that those authorities have made such findings. In that sense Justice Scalia's observation is correct. That we have recommended implementation of eleven of the recommendations suggested by the National Academy and agree to insuring autonomy as opposed to independence on the twelfth, indicates some measure of agreement

[17] *Id.* at pages 2536-37.
[18] *Id.*

on our part with their suggestions. The fact that many of the "deficiencies" were already addressed by the forensic community far in advance of the report by the National Academy evidences responsible action by that community.[19] The fact that these writers have found deficiencies is undeniable. That we may disagree with their conclusions or their suggested remedies change neither the validity of their positions nor ours.

[19] For example, the National Academy report focuses considerable attention on microscopic hair analysis and bite mark evidence. Following the release of a study conducted under the auspices of the FBI and cited by the National Academy, microscopic hair analysis has largely been relegated to being a screening mechanism for the far more reliable method of mitochondrial DNA profiling. In a similar fashion, due to the powers of individualization possible with nuclear DNA testing, the preferred protocol in bite mark cases is swab a bite mark for later conventional DNA profiling and comparison with a more limited reliance upon bite mark comparison. In the context of laboratory accreditation, ASSCLD-LAB has, for several years, been in the process of converting accredited laboratories to the international standard ISO 17025 suggested by the National Academy.

SUBMISSIONS FOR THE RECORD

Written Testimony of

Thomas L. Bohan, Ph.D., J.D.
Peaks Island, Maine

Submitted to the

Senate Committee on the Judiciary
United States Senate

Regarding the Hearing on

"Strengthening Forensic Science in the United States"

Hearing Date: September 9, 2009

Submission Date: September 16, 2009

BACKGROUND

My name is Thomas L. Bohan. I am an American citizen, having been born in Terre Haute, Indiana, in 1938. As a preface to my brief testimony, I am going to list the various professional activities I have been fortunate to have been able to engage in during my adult life. I do this to support my assertion that I am familiar with scientific research, the law, and scientific evidence. I hold a S.B. in physics from the University of Chicago (1960), a Ph.D. in physics from the University of Illinois-Urbana (1968), and a J.D. from the Franklin Pierce Law Center (1980). The law degree I obtained as part of my entrance into forensic science.

1957-60	Employed by the U.S. Army Corps of Engineers to research weather modification on the Greenland Ice Cap (summers), first as a technician and then as project director.
1957-58	Employed by the University Of Chicago Department Of Meteorology as a technician in its electron microscope laboratory.
1960-62	Employed as Research Physicist by Fansteel Metallurgical Corporation to perform semiconductor device research.
1962-65	Research Assistant in Semiconductor Laboratory of the Electrical Engineering Department, University of Illinois
1965-69	Research Assistant, Teaching Assistant, and Research Associate, Department of Physics, University of Illinois.
1969-72, 74-76	Physics professor at Bowdoin College, teaching and directing research in low-temperature physics and biophysics
1972-74	Visiting Professor at Universidad de San Marcos, Lima, PERU, under the U.S. Department of State's Fulbright Program, teaching physics and directing research in biophysics.
1977-80	Law student, concentrating on "law-science."
1980-present	Forensic consulting through my firm MTC Forensics

1982-2002 Practicing law through my firm Bohan Mathers.

I am listed in Who's Who in America, Who's Who in Law, Who's Who in Engineering, as well as in American Men and Women of Science. I had a BV Rating from Martindale-Hubble at the time I retired from the practice of law in 2002.

In February of 2009, I was elected President of the American Academy of Forensic Sciences, the most prominent forensic science professional organization in the Western Hemisphere and probably the world. It comprises over 6000 members representing collectively the entire panoply of forensic science.

I have published in refereed journals devoted to physics, laboratory instrumentation, forensic science, and accident reconstruction. I have served for more than 30 years, and continue to serve, as a reviewer of manuscripts submitted to refereed journals. For the past 20 years, I have been particularly interested in the rules of scientific evidence, and have published and spoken on this topic repeatedly in this country and abroad. I have also authored and edited treatises in the field of accident reconstruction (motor vehicle accident analysis).[1]

I have listed this background in hopes of showing that I have the professional experience and education to speak authoritatively regarding scientific research, forensic science, and scientific evidence.

TESTIMONY

I welcome the opportunity provided by the National Academy of Sciences report *Strengthening Forensic Science in the United States: A Path Forward*[2] (NAS Report) Although the NAS Report addresses but one particular type of forensic

---

[1] These include "Scientific Evidence and Forensic Science Since *Daubert*: Maine Decides to Sit Out the Dance," Thomas L. Bohan, 56 Maine Law Review 102 (2004); "The Case Against *Daubert*: "The New Scientific Evidence 'Standard' and the Standards of the Several States," Thomas L. Bohan, 40 J For Sci 1030 (1995); "Ten Years After *Daubert*: The Status of the States," Joseph A. Keierleber and Thomas L. Bohan, 50 J For Sci 1154 (2005); CRASHES AND COLLAPSES, Vol. 6 of Essentials of Forensic Science, Thomas L. Bohan, Facts on File Science Library, New York, 2009; "Computer-Generated Trial Exhibits: A Post-Daubert Update," Thomas L. Bohan and April A. Yergin, in ACCIDENT RECONSTRUCTION: TECHOLOGY AND ANIMATION IX, Society of Automotive Engineers, Warrendale, PA, 1999;

[2] National Research Council of the National Academies of Science, The National Academies Press, Washington, D.C., 2009.

science – that relating to criminal prosecution and more particularly to the techniques used in the nation's crime laboratories – it has relevance throughout the field of forensic science, criminal and civil. I will limit my comments to a single aspect of that field as highlighted by the Report. This testimony is my own and is not offered on behalf of the American Academy of Forensic Sciences, which has already submitted a position statement through the Consortium of Forensic Science Organizations.

Threshold Studies

In Chapter 5 of the NAS Report, a number of forensic practices are identified that, in the opinion of the committee that carried out the study, lack validation. It is important to note that this is not the same as asserting that they are *not* valid, just that the studies required to establish their validity does not exist

For example, the NAS Report does *not* say that fingerprint identification is invalid. In fact, in the case of latent fingerprint identification, the studies that are lacking are those needed to estimate the rate of false positives (such as occurred in the Brendon Mayfield case) and to characterize the minimum quality and size of latent print generally needed to have a reasonable hope of making use of it. In the case of other forensic practices, it is possible that, like some forensic techniques studied in the recent past by the National Academy of Sciences, the practice will be found to be invalid, or severely limited in its range of applicability.

In examining questioned forensic methods, it is very important to not limit the scope of study to the practices identified in Chapter 5 of the NAS Report. In my opinion there are others not even mentioned that have more potential for doing harm to the criminal justice system in this country. One such theory, which is currently being used to convict defendants and sentence them to long terms in prison, is the "shaken baby syndrome" (SBS) theory. As a physicist I was approached 12 years ago to evaluate the physical evidence supporting this theory. At that time, like most people who have never examined its foundation, I believed it to be solidly founded. To my astonishment, after I had read every paper in the refereed literature then extant, I found that the theory had no support at all, let alone enough to make it appropriate for the courtroom. The SBS theory holds that a dead young child displaying *only* certain well-defined soft-

tissue injuries has been murdered by shaking by the last person to hold the child before the child lost consciousness. In this regard, it is a powerful theory indeed. Not only does it tell investigators that murder has occurred, it identifies the murderer. A powerful theory if valid but, if not, the probable source of hundreds of wrongful convictions a year. It is a method crying out to have its scientific underpinnings examined by an impartial scientific group not including the two groups of medical and engineering experts arguing the theory pro and con in the courtrooms of this nation.

What is true for the SBS theory is true for many of the methods identified in Chapter 5 of the NAS Report. Its practitioners are convinced that it is valid, and has been proven so; its opponents assert that at the very least it has not been proven correct in the scientific literature and at worse it is out and out invalid. As long as opposing camps of sincere, well educated, well credentialed experts hold their respective views, the resources needed to carry out the research needed to actually test these forensic methods and theories are unlikely to be mustered. It is for this reason that the literature surveys I advocate are threshold studies.

Sitting in on the various discussions preceding and following the hearing of September 9, 2009, before the Senate Judiciary Committee, I heard a great deal about "research" and data collection from people who very likely do not have any idea that they do not know what they are talking about. Before any actual clinical or laboratory or field research is carried out on the forensic methods and theories being questioned, there first must be the literature search described above. A literature review is nearly always carried out before undertaking a scientific research project, both to see what has been done already and to get a feeling for the context of the field one is about to enter. The literature searches I am calling for have a different goal. They are to be carried out by a broad-based group knowledgeable in the practice being examined, but including people from other fields. After all of the refereed literature professing to establish the validity of the practice being examined, that knowledgeable group reviews it and arrives at a decision which they publish as to whether the practice has been already shown to be valid. In general the group will include a statistician; much of the problem with new knowledge is that it relies too heavily on anecdotal arguments, arguments that can be shown for what they are by a statistical analysis of the results of the collected studies. The procedure used in most of the NAS studies of forensic practices is a good model for the threshold studies that need to be done. I

commend the Committee's attention in particular to the NAS study on the use of polygraphs for the purpose of screening large numbers of employees.[3]

To repeat, once the review of the complete set of valid supporting literature has been completed, the group doing the review is in a position to announce whether the practice has already been validated, has not yet been validated, or, in rare cases, is invalid. At that point, and not before, the actual research is ready to begin.

What I hope to come out of the great time and effort being devoted to responding to the shortcomings identified by the NAS Report is a "go-to" agency, be it a National Institute of Forensic Sciences or something else, where forensic practitioners can petition for the type of threshold studies just described for any forensic practice. That body would have a permanent staff to examine the petition, which would set out the nature of the dispute then existing with respect to the practice in question. In those cases where the staff finds the request justified, a committee either within the agency or made up of persons outside of it, would proceed with the literature survey and review just described. In my opinion, the agency should be located outside of those governmental bodies identified with criminal prosecution.

Although I believe that the National Academy of Sciences does a wonderful job when tasked with this type of review, I sometimes analogize it to a cold steam locomotive in Northern Maine on a cold January morning. It takes a lot to get it started. By having a permanent "go-to" body, in a science-based environment the inertia delaying the startup of much needed studies can be avoided.

Respectfully submitted,
/s/

Thomas L. Bohan

---

[3] The Polygraph and Lie Detection, National Research Council, The National Academies Press, Washington, D.C. 2003.

United States Senate

Senate Committee on the Judiciary

Strengthening Forensic Science in the United States

A Path forward

Testimony by:

Eric Buel, Ph.D.

Director, Vermont Forensic Laboratory

Vermont Department of Public Safety

Mr. Chairman and members of the Senate Judiciary, thank you for the opportunity to speak with you during a time when we are discussing how best to provide forensic science to the citizens of our country. I am Eric Buel, laboratory director of the Vermont Forensic Laboratory. I have been in the field of forensic science for almost 30 years, the last eleven as the laboratory directory. I am privileged and honored to speak with you about forensic science and how best to implement the recommendations in the National Academy of Sciences report.

Several years ago I had the opportunity to serve as a board member for the American Society of Crime Laboratory Directors. A theme that I brought forward for consideration was a long term goal for us and for society. That goal was for every crime victim to expect the highest level of forensic science services regardless where in the United States he/she was victimized. Her case would not lie for months in a freezer awaiting examination; resources would be available to perform DNA profiling and the database would be current. Fingerprints recovered would not fade with time awaiting analysis and the AFIS database would be fully supported and recently updated. The laboratory would have the appropriate resources to provide the type of services our citizens should have in their time of need. The resources necessary to make that desire a reality

have not been provided to the State and Local crime labs. Federal funds have flowed toward the reduction of backlogs in DNA, and although this assistance is appreciated and has done much good, crimes continue to go unsolved and citizens continue to be victimized as backlogs in other forensic disciplines grow and leave cases unresolved. Mr. Chairman we need to address the capacity in our crime lab system; we need to provide resolution to these cases; we need to have comprehensive forensic reform.

As you know the National Academy of Sciences study clearly recognized this and it provided numerous recommendations to reform and modernize our system. I and the rest of the forensics community have studied this document and believe that that report can help us realize the dream that every victim receives timely and excellent forensic services no matter where the crime occurs. This dream will not be easy to achieve, it will not be cheap and it will take the concerted efforts of all to ensure we spend our limited resources wisely to reach our goal.

The NAS Committee has provided an opportunity to constructively review the science and services provided by the forensic community to allow us to better meet the needs of the people we serve. I cannot stress the importance of involving our community in discussions concerning this report leading towards writing laws to improve our field. A team approach that includes forensic scientists in policy discussions will lead to long term legislative success. In the remaining time, I would like to specifically comment on the following points addressed in the Committee's report: 1) resources, 2) quality assurance, 3) universally applied standards, and 4) research.

We at the Vermont Forensic Laboratory feel very fortunate that we will soon be moving to a new facility, vacating the pre-World War II building that has served as our home for over two decades. The resources necessary for this move have been a long time coming and point out the

need for funding in the forensic community. The required funding goes beyond bricks and mortar, it extends to the basic operational infrastructure and affects the very services we can and should provide.

The Vermont Forensic Laboratory employs twenty individuals; a third of the laboratory's workforce is reliant upon the vagaries of federal grants to complete the necessary tasks not performed by state funded positions. Nearly all of the equipment, instrumentation, and the majority of our supplies are obtained from federal funds. Additionally, most of the expensive instrumentation was purchased from a generous earmark award. Without our aggressive pursuit of grant opportunities and the creative use of a variety of federal funding sources, we would be able to offer only minimal services to the citizens of the state of Vermont. Secure and stable federal funding is critical to allow the laboratory to meet the needs of the criminal justice community and to plan for changing technology and policy demands. This funding must be provided to the labs in need. Funding must not be dependent upon the skill of the administrator to write grants, but upon the need of the citizens for whom the laboratory serves. Federal budgets need to be adequate to provide funding to improve capacity to promote long term improvements facilitating backlog reductions of State and Local laboratories.

Quality assurance is another critical component to ensure quality work by quality conscious employees. The forensic community has made great strides in this regard through the accreditation process. I agree with the findings of the NAS report that all laboratories performing forensic science must be accredited and employ the quality assurance practices dictated by accreditation. Staff certification is a NAS recommendation that should be facilitated via a process defined by an existing national organization as determined by the Congress and the Department of Justice. Accreditation and appropriate certification of both laboratories and

individuals should be prioritized with accompanied funding to allow these activities to occur as soon as possible. This will not be an easy task. Although greater than 95% of the 400 or so traditional or full-service crime labs in the US are accredited, there are thousands of forensic service providers housed in local law enforcement agencies providing forensic services that are not accredited. Accrediting all these forensic service providers will take a great deal of effort by accreditation bodies, and will be costly to the law enforcement agency. It will also require significant changes in staffing and support of the accrediting bodies to provide the necessary on-site inspections and reviews to insure compliance.

Standardization of methods, protocols, and reports must become a national priority. Validated best practice methods should be available for all disciplines. Methods that meet strict scientific scrutiny and are accepted at a national level offer a level of standardization to ensure the same science is applied across the country. These standardized methods facilitate analytical expertise, enable uniform report language, and minimize arguments about the science applied to a particular examination. To meet this level of standardization, best practice methodologies must be clearly stated, and adequately funded to support both the in-house validation and the training necessary for their implementation.

Compared to other scientific endeavors, very limited financial support is devoted to forensic science research. The NAS report clearly states that research must start immediately in a number of key areas. The VFL has participated in forensic research and has made small contributions to the field. But we, and other forensic laboratories, do not have the instrumentation or the necessary resources that academia can bring to answer many of the questions posed in the report. Given appropriate funding, and guidance, academia and the forensic community can work together to define how best to perform those analyses questioned in the NAS report, improve

upon them and plot a course that allows us to be prepared for tomorrow's questions. Traditionally the forensic community has relied upon academia and industry to produce tools that could be adapted and applied in a forensic setting. Imagine if we could reverse that process and develop technology and procedures that worked to specifically answer particular forensic questions. Research, time and resources could make this a reality and improve the way forensic science is performed.

During the early days of DNA analysis there were many questions concerning how to apply this new science appropriately to forensic casework. Studies by the National Research Council (NRC) culminated in two reports that offered recommendations and suggestions for DNA testing by the forensic community based on adherence to high quality standards and uniform procedures. Through the work of the Council, and standards created by working groups and the DNA Advisory Board (DAB), a pathway was created for the forensic DNA community to follow. These quality assurance standards and appropriate procedures have provided guidance to the community for best practices in the analysis of forensic casework. The federal government recognized the need to fund this emerging science, and did so; this provided laboratories the resources to properly train their scientists and purchase state of the art instrumentation. These funds permitted laboratories to initiate programs that met the expectations of the NRC and DAB and has resulted in the implementation of what has become a very successful forensic program. This model needs to be replicated for the other disciplines with the proper resources directed to them from the federal government.

The history of the forensic DNA program could be used to establish a model to fully develop the potential of other forensic disciplines. The establishment of National Research Committees or similar entities to perform a comprehensive review of particular forensic disciplines could

become the model that provides the impetus for any changes found necessary. The funding of such an entity or organization must become a congressional imperative. A committee/organization mandated and funded to perform a comprehensive review of a discipline would have the time necessary to examine all the supporting data accumulated by the forensic community. Through the full vetting of the data, methods and procedures used by a discipline, appropriate procedures can be modified or additional standards applied if the research indicates the need for change. If further research is needed, congress must fund this research to resolve unanswered questions. The committee members must include experts from both academia and the forensic community to allow a mutual exchange of ideas and an understanding of the work that is performed.

Vermont has had the opportunity to build a successful DNA program, constructed with significant federal funds and based upon quality assurance standards required by accreditation. Without federal funding I am certain that a number of significant cases would have been seriously delayed or gone unsolved. In Vermont federal funds allowed the processing of samples to provide crucial information about two old, unsolved homicide cases. One case was a 14 year old case that was solved with DNA and the other case was 27 years old before an arrest was made using DNA evidence. More recently, two violent rape-homicides were solved in a matter of weeks, in part, by the application of DNA testing. The resolution of such cases is of paramount importance to the families and protects Vermont citizens from the repetitive acts of violent offenders. These cases moved through the judicial system through the use of federal funds that have supported our purchase of necessary instrumentation and supplies.

The recognized success of the forensic DNA program could and should be realized by each forensic discipline. This can be achieved through devoting resources to make those necessary changes as prescribed by a comprehensive review of each forensic discipline. Similar federal programs that built our DNA program and programs like it throughout the country could be designed for each forensic discipline to allow the appropriate use of quality assurance standards and technology.

The National Academy of Sciences Committee has identified the needs of the forensic community, and we have an opportunity to use the report to make the necessary improvements to our science. Ideally a crime victim should expect the highest level of forensic science services no mater where in the United States he/she was victimized. This ideal could, and should become a reality. I would recommend that Congress take appropriate steps to meet the challenges discussed in the report to promote and provide the best possible science for the people we serve.

Comments of George Castelle to the United States Senate Committee on the Judiciary

"Strengthening Forensic Science in the United States"

George Castelle
Chief Public Defender
Kanawha County, West Virginia

Sept. 16, 2009

Thank you for the opportunity to address the urgent need for forensic science reform. My comments are based on my experience in representing the interests of 216 prisoners in court-ordered investigations into fraudulent forensic science in West Virginia. The West Virginia investigations focused on the questionable laboratory reports and courtroom testimony offered by analysts in the serology division of the West Virginia State Police Crime Lab, all of whom were employed in a dual role: both as uniformed state troopers and as forensic scientists assigned to the crime lab.[1]

The crime lab scandals in West Virginia were the first in a series of disturbing revelations that continue to emerge from various crime labs across the country. (The West Virginia scandals are discussed briefly in the 2009 Report of the National Research Council of the National Academy of Science, *Strengthening Forensic Science in the United States: a Path Forward,* p. 44.)

Because of the deficient and, at times, fraudulent forensic science in West Virginia, the convictions of ten prisoners were eventually overturned, in whole or in part, including those of five prisoners who were fully exonerated by independent DNA testing. The five innocent

prisoners served a total of 33 years in prison before their releases.[2] Because biological evidence was preserved for retesting in only a minority of the West Virginia cases, the actual number of innocent prisoners in West Virginia -- including those still in prison today -- will never be known.

I am addressing the problems of the past not to bring further embarrassment to an imperfect institution, but instead to address a fundamental flaw in the criminal justice system -- a flaw that not only allowed these injustices to occur in the past, but one that remains uncorrected even today. The uncorrected flaw is a structural weakness that not only allowed exaggerated and fraudulent forensic science to enter into our courtrooms, but actually fostered and nourished it: that is, the placement of scientific labs within the supervision and control of law enforcement and prosecutorial agencies, rather than placement in neutral scientific settings.

As demonstrated repeatedly in the West Virginia crime lab, the problem with the placement of crime labs within law enforcement agencies, without independent oversight, is that lab employees in such settings can be subject to substantial pressure, sometime implicit, sometime explicit, to produce results that simply confirm the conclusions of the arresting officer. The lab employees of the West Virginia State Police were expressly rewarded when they confirmed the belief of the arresting officer, praise letters were placed in their personnel files, and recommendations for promotions were based on their ability to produce -- not justice -- but on their ability to produce convictions.

The pressure on the former head of the serology division, Tpr. Fred Zain, and his descent into fraud as a result of that pressure, appears throughout his State Police personnel file. At the same time that some of Tpr. Zain's assistants were reporting his fraud to their supervisors,[3] Tpr.

Zain's personnel file reveals that the same supervisors were concealing the claims of fraud and were instead praising Zain's results and recommending him for promotion.

In his annual evaluations, Tpr. Zain's supervisors repeatedly commended his efforts to assist prosecutors and obtain convictions. In a case that was later determined to be a wrongful conviction obtained in large part by Zain's fraud, his supervisors wrote in his personnel file -- not praise of his science -- but praise of the conviction: "[Tpr. Zain] placed that extra effort into this case and it paid off by the decision of 'Guilty' by the jury."[4]

Elsewhere in Zain's personnel file his supervisors wrote "He goes that extra step when trying to assist the [police] investigator and prosecutor." "[Tpr. Zain's] cooperation with investigators and his efforts to be of assistance to them should be recognized and rewarded" "I would recommend . . . Tpr. Zain be considered for promotion."[5]

In one particularly egregious case where Tpr. Zain's fraud resulted in the conviction of an innocent person (a conviction that was eventually overturned following independent DNA testing), the Superintendent of the State Police appears to acknowledge the suspicions about Zain's work, yet praises Zain's results and urges him to continue. As the Superintendent wrote in Zain's personnel file:

> If my 33 years of experience as a law enforcement officer places me in a proper position to make predictions, then I can predict that there will be some "bleeding hearts" . . . that will question the outcome. I want you to know, as that process evolves (if that prediction is true) that many of us are positive that you did both an excellent job and, in fact, went beyond "job" to the accomplishment of our major purpose as we provide law enforcement service to the citizens of this state, your county, and city.

The Superintendent concludes:

> If "bleeding hearts" should drip on your apparel in the future, please know that the great number of good people support your very proper and proficient action and that I stand ready to assist you in every possible way as we stand proudly together in the law enforcement community.

This letter was written about the conviction of an innocent man.[6] The letter was written after two of Zain's assistants had already reported his fraud but were ignored.[7] From the time the letter was placed in Zain's personnel file, more than six years passed before Zain's fraud was ultimately exposed.[8]

The personnel files of crime lab employees are not the only evidence of the susceptibility to bias and the lack of objectivity that may be found in labs that are not under neutral scientific administration and oversight. In addition to providing insight into the explicit pressure that can be placed on scientists in law enforcement settings, the scandals in the West Virginia crime lab also reveal the inadequacy of internal mechanisms in correcting laboratory errors when they occur in a law enforcement setting. When the problems in the West Virginia Crime Lab became glaringly apparent, for example, the Superintendent of the State Police directed an internal audit of Tpr. Zain's work.

Upon completion of their investigation, the internal auditors concluded that there were no material errors in Zain's work -- that all of Zain's reports were, in essence, correct.[9] By contrast, when the West Virginia Supreme Court of Appeals subsequently ordered an outside, independent investigation of Zain's work, the independent auditors reviewed the same records and immediately found evidence of fraud in virtually every case where there was sufficient data to review.[10]

Despite the overwhelming failure of internal oversight and internal investigations, since the exposure of the fraud there appear to have been no significant structural changes in the

supervision of the West Virginia lab. The lab remains under the direct administration of the State Police.[11] After Zain's departure, the State Police appointed Zain's top assistant to serve in his place and ultimately promoted Zain's assistant to serve as the director of the entire lab. While some analysts within the lab have always appeared to meet appropriate standards of scientific ethics, years after the disclosure of Zain's fraud other analysts in the lab continued to provide grossly overstated results in at least some respects in much the same manner as Zain himself provided.[12] For years after Zain's departure, some of the lab employees continued Zain's practice of testifying in court while wearing a state police uniform, including a gun strapped in a holster.[13]

Furthermore, accreditation by the American Society of Crime Laboratory Directors (ASCLD) failed to prevent repeated incidences of fraud in the decade after Zain's departure, including fabrication of test results from 1993 to 2000, and additional fraud exposed in 2002.[14] Despite a nearly unbroken history of fraud from 1977 (the year Zain began testifying in West Virginia courts) until at least the year 2002 -- that is, twenty-five years of fraud -- the State Police continues to resist any independent oversight and review.[15]

Numerous lives have been damaged by the structural deficiencies within the West Virginia State Police Crime Lab, deficiencies that allowed the overstated and fraudulent forensic science to occur. Innocent citizens spent years in prison while the actual perpetrators of the crimes remained free to commit further crimes and further victimize our communities.

Many of the injustices of the past could have been prevented -- and the injustices that may yet occur in the future can be prevented -- with the adoption of the recommendations of the Report of the National Research Council of the National Academy of Sciences (NAS report).[16] To avoid the inherent conflicts of interest when law enforcement exercises administrative and

supervisory control over scientific endeavors, it is vital that forensic crime labs operate independently from law enforcement agencies.

On a national level, a National Institute of Forensic Sciences should be established to set standards and oversee the forensic science that is introduced in the courtrooms across the country. (Recommendation 1) For the reasons set forth above, the National Institute should be independent of law enforcement agencies and should operate under the supervisory authority of scientists alone. For the same reasons, incentives should be established for the removal of state and local crime labs from the administrative control of law enforcement agencies. (Recommendation 4)

To prevent a repetition of the injustices that occurred in West Virginia and in numerous other jurisdictions around the country, I strongly urge the implementation of all of the recommendations of the NAS report.

Thank you for your attention to these compelling matters of criminal justice.

---

[1] In re: *An Investigation of the West Virginia State Police Crime Laboratory, Serology Division,* 190 W.Va. 321, 438 S.E.2d 501 (1993); *In re: Renewed Investigation of the State Police Crime Laboratory, Serology Division,* 219 W.Va. 408, 633 S.E.2d 762 (2006).

[2] The innocent West Virginia prisoners, convicted on the basis of fraudulent forensic science, include:

(a) Glen Dale Woodall, convicted of multiple counts of kidnapping, sexual assault, and aggravated robbery; sentenced to two terms of life without parole, plus 203 to 335 years, to be served consecutively, Order, *State v. Glen Dale Woodall*, No. 87-F-46 (Circuit Court of Cabell County, W.Va., Sept. 3, 1987); convictions affirmed on appeal, *State v. Woodall*, 182 W.Va. 15, 385 S.E.2d 253 (1989); convictions set aside and prisoner released based on DNA exclusion upon testing of fluids on vaginal swabs, Order, *State ex rel. Woodall v. Trent*, , No. 89-C-1332 (Circuit Court of Cabell County, W.Va., June 28, 1991). The legal work in this case by Lonnie C. Simmons, DiTrapano, Barrett & DiPiero, Charleston, WV, and the scientific review by Edward T. Blake, Forensic Science Associates, Richmond, CA, resulted in the initial discovery of fraud in the West Virginia State Police Crime Lab.

(b) James Richardson, convicted of murder, sexual assault, arson, and burglary; sentenced to life without parole, plus terms of two to twenty and one to fifteen years, to be served consecutively, Order, *State v. James Richardson,* No. 89-F-5 (Circuit Court of Kanawha County, W.Va., Aug. 23, 1989); petition for appeal refused,

Order, *State v. Richardson*, No. 900511 (W.Va. June 25, 1990); conviction set aside in "Zain" habeas proceeding and released on home confinement, Order, *State ex rel. Richardson v. Trent*, No. 93-W-53 (Circuit Court of Kanawha County, W.Va., Sept. 27, 1996); released from home confinement based in part on DNA exclusion upon testing of blood on flashlight recovered from crime scene, Order, *State ex rel. Richardson v. Trent*, No. 93-W-53 (Circuit Court of Kanawha County, W.Va., Feb. 2, 1998); charges dismissed, Order, *State ex rel. Richardson v. Trent*, No. 93-W-53 (Circuit Court of Kanawha County, W.Va., July 15, 1999).

(c) William O'Dell Harris, Jr., convicted of sexual assault in the second degree, sentenced to ten to twenty years, Order, *State v. William O'Dell Harris, Jr.*, No. 86-F-442 (Circuit Court of Kanawha County, W.Va., Oct. 8, 1987); petition for appeal refused, Order, *State v. Harris*, No. 881305 (W.Va. Feb. 14, 1989); released on post-conviction bond, Order, *State ex rel. Harris v. Trent*, No. 93-W-43 (Circuit Court of Kanawha County, W.Va., June 28, 1994); conviction set aside in "Zain" habeas based on exclusion upon DNA testing of slide prepared from vaginal swab, Order, *State ex rel. Harris. v. Trent*, No. 93-W-43 (Circuit Court of Kanawha County, W.Va., Oct. 10, 1995).

(d) Gerald Wayne Davis, convicted of abduction with intent to defile, second degree sexual assault, and first degree sexual abuse; sentenced to terms of three to ten years, ten to twenty years, and one to five years, to be served consecutively, Order, *State v. Gerald Wayne Davis*, No. 86-F-152 (Circuit Court of Kanawha County, W.Va., Oct. 17, 1986); conviction for second degree sexual assault and sentence of ten to twenty years affirmed on appeal, *State v. Gerald Wayne Davis*, 180 W.Va. 357, 376 S.E.2d 563 (1988); conviction set aside in "Zain" habeas and released from prison based on exclusion upon DNA testing of vaginal swab in 1994, Order, *State ex rel. Gerald Wayne Davis v. Duncil,* No. 93-W-45 (Circuit Court of Kanawha County, W.Va., Mar. 16, 1994); retried and acquitted, Order, *State v. Gerald Wayne Davis*, No. 86-F-152 (Circuit Court of Kanawha County, W.Va., Dec. 4, 1995).

(e) Dewey Davis, convicted of abduction with intent to defile, second degree sexual assault, and first degree sexual abuse (as aider and abettor of Gerald Wayne Davis); sentenced to terms of three to ten years, ten to twenty years, and one to five years, to be served consecutively, Order, *State v. Dewey Davis*, No. 86-F-153 (Circuit Court of Kanawha County, Apr. 28, 1987); conviction for second degree sexual assault and sentence of ten to twenty years affirmed on appeal, *State v. Dewey Davis*, 180 W.Va. 357, 376 S.E.2d 563 (1988); conviction set aside in "Zain" habeas and released from prison based upon DNA testing of vaginal swab and exclusion of principal offender (with whom defendant had been charged as aider and abettor), Order, *State ex rel. Dewey Davis v. Duncil,* No. 93-W-45 (Circuit Court of Kanawha County, W.Va., Aug. 16, 1994).

[3] In the 1993 Investigation into fraud in the West Virginia State Police Crime Lab, two of Zain's former assistants, Tpr. Gail Midkiff and former Tpr. Lynn Inman, testified that in the mid-1980s they observed Zain falsify test results in "close to 100" instances. They further testified that they reported Zain's falsification, in writing, to Zain's supervisors, and that they brought Zain's supervisors into the laboratory and showed them the actual falsified results. Deposition of former Tpr. Lynn C. Inman Moreland, Sept. 2, 1993, *In re: An Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 93-MISC-402 (Circuit Court of Kanawha County, W.Va.) at 10-46,; Deposition of Tpr. Sabrina Gayle Midkiff, Sept. 2, 1993, *In re: An Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 93-MISC-402 (Circuit Court of Kanawha County, W.Va.) at 12-63.

[4] Evaluation, July 2, 1987, Zain personnel file, Item 61, Investigative File, *In re: An Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 21973 (W.Va. 1993).

[5] Evaluations, Jan. 15, 1980, and July 4, 1988, Zain personnel file, Item 61, Investigative File, *In re: An Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 21973 (W.Va. 1993).

[6] A summary of the *Glen Dale Woodall* case is set forth in note 2, above.

[7] The reports to Tpr. Zain's supervisors are described in note 3, above.

UNIVERSITY OF CALIFORNIA, IRVINE

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

Simon A. Cole
Associate Professor and Chair
Department of Criminology, Law and Society

School of Social Ecology
Irvine, CA 92697-7080
(949) 824-5575
(949) 824-3001 Fax
clschair@uci.edu

September 16, 2009

The Honorable Patrick Leahy
Chairman
United States Senate
Committee on the Judiciary
Washington, DC 20510-6275

Dear Chairman Leahy:

Greetings from a lifelong summertime Vermonter. I am writing regarding your deliberations on the proposals contained in the National Academy of Science Report *Strengthening Forensic Science in the United States: A Path Forward.* I am an Associate Professor and Chair of the Department of Criminology, Law & Society at the University of California, Irvine. I was trained as a historian and sociologist of science, and I have a Ph.D. in Science & Technology Studies from Cornell University and a bachelor's degree in History from Princeton University. I am the author of the first scholarly history of fingerprint identification, *Suspect Identities: A History of Fingerprint Identification,* which was published in 2001 by Harvard University Press and more than 18 scholarly articles and book chapters about forensic science, primarily fingerprint identification. I am a member of the American Judicature Society Commission on Forensic Science and Public Policy.

How has it come to pass that in the year 2009, the National Academy of Science, the most prestigious scientific organization in the United States, tells us that we need to conduct validation studies to determine how accurate fingerprint identification, a technique that has been used in American courtroom for around a century, actually is? How is it that the experts who testified about this technique in court never conducted such studies? How is it the courts did not demand such studies before allowing such experts to testify in court, claiming that their results were characterized by absolute certainty and by an error rate of "zero"? How is it that we still do not know how to report fingerprint conclusions, with forensic institutions mandating that experts use a term, "individualization," that the National Academy of Science Report now states they cannot support and practitioners on the ground using a wide variety of unapproved reporting terminologies? Why is it that we needed the National Academy to tell us to perform validation studies? And how is it that forensic science, which should be functioning as an independent check on the less objective

forms of evidence used in our criminal justice, has turned out to be complicit in wrongful convictions?

I suggest that the state of forensic science in our country today can only be understood as an outcome of the way it developed historically. A full recounting of this history would be quite complicated and well beyond the scope of this letter. For the purposes of your Committee, however, two key points seem worth emphasizing. I will focus on latent print identification, which is the discipline about which I know the most, but many of my remarks also pertain to some other disciplines.

First, latent print identification, and some other forensic disciplines as well, in the United States have historically been practiced and housed in law enforcement, rather than scientific, institutions—notwithstanding the early involvement of scientists like Malpighi, Purkynê, and Faulds (who were mentioned in the International Association for Identification's letter to the Committee of March 18, 2009) in such questions as the anatomical structure and formation of friction ridge skin and proposing its use for personal identification. It is little surprise that practitioners working in law enforcement institutions did not conduct validation studies of latent print identification. They were trained to perform latent print analyses. They were not trained to conduct validation studies or to appreciate their importance. This, I think, explains why validation studies were not conducted, why "[f]ailure to acknowledge uncertainty in findings is common" (NAS Report, 47), and why some disciplines "are not developed within the culture of science" (39).

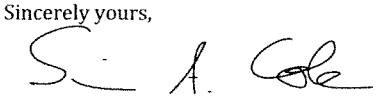
Second, courts have been the primary, if not the sole, "consumers" of latent print analysis (and some other forensic disciplines as well). As the Report notes, the courts, with few exceptions, have not demanded validation studies as a condition of admissibility from the government when it proffered latent print examiners as expert witnesses and yet allowed them to testify in terms of absolute certainty. This created a profound *disincentive* to the conducting of validation studies. This combination of legal and professional self-regulation also led to situation in which, after a century of practice, latent print examiners still need not even be certified to testify in court (137). This is not to say that certification (or accreditation) are panaceas, but they are at least first steps.

If the Committee wishes to avoid replicating in the future this history in which forms of scientific evidence are used in court for decades before the process of validation even begins, it seems reasonable to conclude that the current system of housing forensic science in law enforcement institutions and regulating it through the courts is less than optimal. Without unduly idealizing either science, scientists, or scientific institutions, shifting forensic science's orientation toward scientific values and scientific institutions to the greatest extent possible seems the most promising way forward.

American latent print examiners have been asking government to regulate them since as early as the 1930s (see *Suspect Identities,* pp. 210-11) with little response from the government. Mainstream academic science in the U.S. at the most prestigious institutions has historically shown little interest in forensic science. Simply put, forensic science, especially the more quotidian disciplines like latent prints, only rarely presented the sort of cutting edge scientific problems that conferred the highest scientific prestige. The situation

has now changed. The National Academies and Congress are to be commended for the attention and efforts that they have devoted to forensic science in recent years. The Report you are currently considering is, of course, the most important outcome of these efforts. The present moment offers a historic opportunity to reorient forensic science toward the culture of science and to make forensic science an independent force in our justice system.

Sincerely yours,



Simon A. Cole
Associate Professor & Chair

[8] The following is the full letter from the Superintendent:

Department of Public Safety
West Virginia State Police
725 Jefferson Road
South Charleston, West Virginia 25309
July 10, 1987

Colonel W.F. Donohoe
Superintendent

Sergeant F. S. Zain
West Virginia State Police
725 Jefferson Road
South Charleston, West Virginia 25309

Dear Sergeant Zain:

I have watched, with great interest, the information made available to the public in presentation of evidence to the Petit Jury that tried Glen Dale Woodall. His family and friends presented a great deal of evidence and information which, to say the very least, generated some considerable probability of confusing the real issues and creating doubt in the minds of the jurors. It is to your personal and professional credit that the citizens of Cabell County who served on that jury believed the prosecution evidence presented. You, in both your personal efforts and your professional representation, along with others in the law enforcement community presented evidence that was so credible that 19 guilty verdicts were sustained.

If my 33 years of experience as a law enforcement officer places me in a proper position to make predictions, then I can predict that there will be some "bleeding hearts" (who were not a part of the investigation, were not a part of the jury process established by our national and state laws) that will question the outcome. I want you to know, as that process evolves (if that prediction is true) that many of us are positive that you did both an excellent job and, in fact, went beyond "job" to the accomplishment of our major purpose as we provide law enforcement service to the citizens of this state, your county, and city.

The Huntington Mall rape case was one that gripped the hearts and minds of citizens throughout this and surrounding states who wished to avail themselves of the opportunity of free access to the Huntington Mall. Your work, that was both required on the one hand but then went above and beyond the normal call of duty on the other hand, and your willingness to work in concert with an excellent prosecutorial staff and the many agencies and officers involved in this investigation and subsequent professional presentation to a jury have made it possible for our citizens to have that access and peace of mind once again. I want to personally commend you and your cohorts for not only accomplishing the purpose of your sworn duty but for making me proud to be a part of the law enforcement profession as I view your very high level of personal and professional accomplishments.

If "bleeding hearts" should drip on your apparel in the future, please know that the great number of good people support your very proper and proficient action and that I stand ready to assist you in every possible way as we stand proudly together in the law enforcement community.

Please know that I am,

Sincerely yours,

Colonel W.F. Donohoe
Superintendent
West Virginia State Police

8

[9] Internal Audit, Aug. 28, 1992, Item 3, Appendix B, Investigative File, *In re: An Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 21973 (W.Va. 1993).

[10] ASCLD/LAB Investigation Report, Aug. 6, 1993, Item 26, Investigative File, *In re: An Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 21973 (W.Va. 1993).

[11] The official name of the lab is the "West Virginia State Police Forensic Laboratory." The physical location of the lab is within the headquarters of the West Virginia State Police in South Charleston, WV.

[12] In addition to fabricating results in blood, semen and hair examinations, Tpr. Zain also testified to wildly exaggerated claims of perfection, including claims of "one hundred percent" accuracy. *State v. McLaurin*, Circuit Court of Kanawha County, No. 89-F-60 (Nov. 1989) at 616. In trial testimony seven years after the disclosure of Zain's fraud, an analyst in the toolmark section of the lab continued to testify to 100 percent certainty, asserting that based on only two points of comparison, with one hundred percent certainty he had eliminated every other tool in the world, including identical models manufactured on the same assembly line 30 seconds after the tool in question. *State v. Ladd*, Circuit Court of Jackson County, No. 99-F-33 (March 15, 2000) at 66. In reality, years of proficiency testing have demonstrated that claims of perfection in toolmark comparisons are groundless. In proficiency testing at the time of the examiner's testimony, the error rate for toolmark comparison was 26 percent. Faigman, et al., "Firearms and Toolmark Identification," *Modern Scientific Evidence: The Law and Science*, West Publishing Co. (2002), § 29-1.3 n. 59.

[13] In the William Harris case, Tpr. Zain took the witness stand in his state police uniform, including a gun in its holster. The defense lawyer then inquired on cross-examination:

> Q: And when you work [in the lab], do you wear your state police uniform?
> A: Yes, sir.
> Q: And do you wear your gun when you work?
> A: Sometimes, yes, sir.

State v. William O'Dell Harris, Jr., No. 86-F-442 (Circuit Court of Kanawha County, W.Va., July 16, 1987) at 298-99.

[14] In the wake of the Zain scandal, the West Virginia Supreme Court of Appeals directed the State Police Crime Lab to apply for ASCLD accreditation. In re: *An Investigation of the West Virginia State Police Crime Laboratory, Serology Division,* 190 W.Va. 321, 328, 438 S.E.2d 501, 508 (1993). In 1995, the lab announced that it had received accreditation. "State Police Lab Earns U.S. Accreditation," *Charleston Gazette*, Jan. 27, 1995. Unfortunately, accreditation did not succeed in preventing ongoing fraud in the lab. In the year 2000, a chemist in the drug section of the lab pled guilty in federal court to embarking on a scheme to fabricate results beginning in the year 1993 -- the very year that Zain's fraud was exposed -- and continuing for seven years thereafter. *United States v. McDaniel*, Criminal Action No. 2:00-00211-01 (Oct. 18, 2000, S.D. W.Va.) Additional reports of fraud continued to emerge from the lab throughout the early 2000s. "State Police Lab Closed Amid Probe: 'We may have the Whole Zain Thing Again,' Prosecutor Says," *Charleston Gazette*, Sept. 15, 2000. "Report Details Allegations Against Police Drug Lab," *Charleston Gazette*, May 25, 2002.

[15] The Report of the Grand Jury that indicted Tpr. Zain for fraud in 1998 stated, "We question the wisdom of operating a West Virginia Crime Laboratory within the chain of command of a law enforcement agency. We believe this structure contributed to some of the problems involved in the operation of the Crime Laboratory during the 1980s." Report of Grand Jury, *In re: Investigation and Potential Prosecution of Fred Salem Zain for Crimes Relating to the Falsification of Evidence*, No. 98-F-106 (Circuit Court of Kanawha County, Mar. 26, 1998) (unsealed by Order of July 2, 2001).

The West Virginia Supreme Court of Appeals also considered this issue and stated, " . . . we believe that removing the Crime Lab from State Police supervision and placing it under an independent agency as well as the creation of an independent supervisory board to oversee and advise the work of the Crime Lab deserve further consideration by appropriate authorities." *In re: Renewed Investigation of the State Police Crime Laboratory, Serology Division,* 219 W.Va. 408, 416 n.12, 633 S.E.2d 762, 770 n.12 (2006).

The position of the State Police is set forth by the Executive Director of the West Virginia Prosecuting Attorney's Institute, who stated, "It is . . . illogical to assume that the . . . proposal to remove the Laboratory from its current location would decrease the potential for deception or improve the likelihood of successfully legislating morality. The potential for human error will exist regardless of whether the lab is operated under the aegis of the West Virginia State Police or any other agency, and independent laboratories are no less immune from misconduct merely by virtue of being independently run. Similarly, the results of both the original and renewed investigations do not demand creation of an independent supervisory board . . ." State's Response to Prisoners' Objections to Report of Special Judge Thomas A. Bedell, *In re: Renewed Investigation of the West Virginia State Police Crime Laboratory, Serology Division*, No. 32885 (W.Va., Mar. 3, 2006) at 14.

[16] National Research Council of the National Academies of Science, *Strengthening Forensic Science in the United States: A Path Forward*, (Washington: National Academies Press, 2009).

http://judiciary.authoring.senate.gov/hearings/testimony.cfm

United States Senate Committee on the Judiciary

< Return To Hearing

Statement of

The Honorable Russ Feingold

United States Senator
Wisconsin
September 9, 2009

Senate Judiciary Committee
Hearing on "Strengthening Forensic Science in the United States"
Wednesday, September 9, 2009

Statement of U.S. Senator Russell D. Feingold

Mr. Chairman, thank you for holding this important hearing. Advances in forensic science have made invaluable contributions to the criminal justice system for many years. Men and women in various fields of forensic science across the country have provided critical evidence that has helped identify the guilty and exonerate the innocent. Without the diligent efforts of forensic science professionals, a just result would not have been reached in countless cases.

However, forensic science – like any scientific discipline – is not infallible. Mistakes are made. And limited resources can hamper the most committed forensic professionals. As a result, forensic evidence does not always satisfy the rigorous standards of scientific scrutiny that is required in criminal prosecutions.

The report on forensic science issued by the National Academy of Sciences in February 2009, "Strengthening Forensic Science in the United States: A Path Forward," highlights some of these critical issues. I commend the authors of the report for their detailed assessment of the problems afflicting the forensic science community and the impact of these problems on the criminal justice system.

As Judge Harry Edwards, co-chair of the committee that put together that study, testified earlier this year, the key issues identified by the report included "a paucity of strong scientific research, a lack of adequate resources and national support, and the absence of unified and meaningful regulation of crime laboratories and practitioners." These overarching issues have led to problems ranging from scandals in crime labs to unsupported scientific conclusions being presented at trial by expert witnesses.

And of course, the worst effect of these problems is when they lead to wrongful convictions of innocent citizens, including in capital cases. It is no small irony that the use of DNA testing, one of the most reliable forms of forensic evidence, has exposed serious flaws in other areas of forensic science. As the Supreme Court recognized earlier this year, "[o]ne study of cases in which exonerating evidence resulted in the overturning of criminal convictions concluded that invalid forensic testimony contributed to the convictions in 60% of the cases." Melendez-Diaz v. Massachusetts, 129 S.Ct. 2527, 2537 (2009). Further exacerbating the problem is the tendency of jurors to place undue weight on the value of forensic evidence, even when it is not reliable.

Just recently, there have been extremely disturbing reports that faulty forensic evidence may have led to a conviction in a Texas capital case – one in which the defendant has already been executed. Cameron Todd Willingham was executed in Texas in 2004 after he was convicted of arson murder in 1992. In the years since his execution, multiple reports have concluded that the forensic science used to convict Willingham was erroneous. Indeed, there are serious questions about whether the fire was caused by arson in the first place. In a recent report to the Texas Forensic Science Commission critiquing the Willingham investigation, arson expert Craig Beyler concluded that "a finding of arson could not be sustained" using current

professional standards or the professional standards in place at the time of the investigation. Willingham proclaimed his innocence until the day he was executed.

Mr. Chairman, one wrongful conviction is tragic. Hundreds of wrongful convictions are unacceptable. If a wrongful conviction leads to an innocent person being executed, it is a disgrace to our system of justice.

One cannot understate the importance of this issue. I am pleased that the Committee will hear from witnesses with a variety of perspectives on how we can improve our nation's forensic science community.

Thank you.

THE INNOCENCE NETWORK

Keith A. Findley
President
Innocence Network
University of Wisconsin — Madison Law School
975 Bascom Mall
Madison, WI 53706-1399

September 16, 2009

United States Senate
Committee on the Judiciary
224 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Leahy, Ranking Member Sessions, and Members of the Committee:

Thank you for the opportunity to submit the perspective of the Innocence Network to the Senate Judiciary Committee, in addition to its September 9, 2009, hearing on the National Academy of Sciences (NAS) report, "Strengthening Forensic Science in the United States: A Path Forward."

My name is Keith Findley and I am a clinical faculty member of the University of Wisconsin Law School, the Co-Director of the Law School's Wisconsin Innocence Project, and the President of the Innocence Network. The Innocence Network is an affiliation of 54 organizations dedicated to providing pro bono legal and investigative services to individuals seeking to prove innocence of crimes for which they have been convicted and working to redress the causes of wrongful convictions. In the United States, we have 48 organizations across 42 states and the District of Columbia. We are an independent organization and count the Innocence Project, based in New York, as one of the members of our wider organization.

Our nationwide work includes DNA as well as non-DNA cases. While the work of our projects is hallmarked by the 242 exonerations by DNA, it is important to note that only 5-10% of cases that go to trial have probative DNA evidence available. The limited availability of DNA evidence puts a particular burden on the Innocence Network's non-DNA cases, the type of case that makes up the majority of cases that go to trial. Many of our cases involve forensic evidence involving disciplines that have never been scientifically validated, such as those deconstructed in the NAS report, as well as some techniques not included in the report such as dog sniff and shaken baby syndrome. The cases on which we work reveal that inadequately validated forensic science is a national problem and that criminal justice systems across the country are not equipped to solve this problem.

The NAS report recognizes something that we have known from our ground-level work, that "judicial review, by itself, will not cure the infirmities of the forensic science community".[1] Judges,

[1] National Research Council of the National Academy of Sciences, Strengthening Forensic Science in the United States: A Path Forward (2009), p.12.

attorneys, law enforcement, juries—although they do the best they can to seek the truth in our criminal justice system—are not trained scientists. As such, it is imperative that forensic evidence has a solid scientific foundation and that we have the assurance that the information presented to the stakeholders of the system is within the scientific parameters of the forensic technique utilized. Unfortunately, we have seen time and time again that we cannot make such an assumption and that the "current situation ... is seriously wanting, both because of the limitations of the judicial system and because of the many problems faced by the forensic science community."2 When the forensic system fails, we also jeopardize public safety. Each time an innocent person is placed behind bars, the public remains vulnerable to the acts of the true perpetrator. Among the first 242 DNA exonerations in the United States, the exonerations thus far also identified 105 true perpetrators who committed at least 90 violent acts while the innocent person was imprisoned for a crime he or she did not commit. This makes forensic science reform not solely an innocence issue, but a public safety concern for every community.

In February 1999, the National Institute of Justice released a status and needs report for the forensic science community. That publication included 25 pages detailing the research needs of the community and concluded that validation research and standardization of methods was required across a number of major forensic disciplines. Ten years later to the month, the NAS report details the same research and standardization needs and ten years later, nothing has been done to move forensic science closer to being more valid and reliable. The current forensic system has been unable to accommodate the scientific issues that continue to put justice at risk in our country.

Robert Lee Stinson's case is a testament to the need to validate and standardize forensic techniques. Stinson was 21 years old when he was accused of the murder of his 64 year-old neighbor, who was bitten, beaten, and stabbed. A veteran forensic odontologist, L. Thomas Johnson, identified the bitemark on the victim as belonging to Stinson. After spending 23 years in prison, Stinson was exonerated based on the testimony of four forensic odontologists who reviewed the evidence using improved technology and a DNA analysis of the saliva on the victim conclusively proved that he was innocent. Since 2000, at least eight people in five states whose convictions were based largely on bitemark identification have been exonerated. The NAS report describes the scientific basis of bitemarks as "insufficient to conclude that bite mark comparisons can result in a conclusive match." One of the bitemark standards of the American Board of Forensic Odontologists states, "Terms assuring unconditional identification of a perpetrator, or without doubt, are not sanctioned as a final conclusion." Nonetheless, many forensic odontologists like Johnson still stand by their ability to identify a person conclusively based on this forensic technique.

It is imperative that forensic disciplines that are used in court have one standardized and scientifically sound methodology and that the parameters of its use do not vary from state to state or analyst to analyst. In hopes of expediting science-based change, the Innocence Network supports the recommendations made by the National Academy Committee in its report in full and advocates for its complete implementation.

Most importantly, these recommendations will not change the forensic science landscape without implementing the primary recommendation for an independent, science-based entity to support scientific research, set standards, and oversee the forensic process. While crime laboratories across ~~the country are in need of sufficient funding to alleviate their caseloads and backlogs, simply~~ appropriating more funds to pay for more scientifically unvalidated forensic science testing will do

[2] Ibid., pg. 13.

nothing to alleviate the underlying problems or provide the true prescriptive needed to address them—research to determine the scientific validity and reliability of existing and developing forensic techniques that have not undergone rigorous scientific treatment. What good is mandatory accreditation if the activity we are licensing has not been shown to be scientifically sound? If we require mandatory certification and increase funds for education and training, aren't we just teaching more people to continue the flawed practices of the past? To implement meaningful reform in forensic science, we must have scientific leadership to develop the scientific framework that the hard-working forensic scientists who serve our justice system deserve.

A scientific framework cannot exist without an impartial science-based entity to act as a judge. Just as a judge is the independent authority in his or her courtroom, so must a neutral national entity serve as the independent authority to coordinate forensic oversight. In the same way that we do not allow pharmaceutical companies to manage the drug approval process or automobile manufacturers to determine the safety ratings of their vehicles, we must ensure that forensic science improvement is a responsibility given to the party that is not only the most qualified to make scientific decisions, but that will be free of conflict of interest so that the standards that are set are sufficiently rigorous and necessary to increase both accurate results and public confidence in the forensic system.

Twenty-five years ago this month, Sir Alec Jeffreys discovered how to apply DNA analysis to forensic science. Twenty-five years later, the members of our Innocence Network continue to maintain a tremendous workload. Although DNA has proven remarkably helpful in many cases, we also need non-DNA tools to exonerate the innocent, reveal the true perpetrator of crimes, and sometimes to uncover through scientific analysis when a perceived crime is simply a terrible tragedy. It is not sufficient that our criminal justice system have only a handful of scientifically validated forensic techniques among the full complement of tools used for criminal investigations. To ensure that justice is truly administered and protected and that public safety is improved for all communities, and to increase public confidence in the integrity of convictions, we must make certain that every forensic tool used to make a criminal case is worthy of its use in court.

Other recent cases also illustrate the importance of the NAS recommendations. Ernest Willis and Cameron Todd Willingham were both sentenced to death for arson. Willis was convicted in West Texas for the death of two sleeping women who did not escape the fire and Willingham was convicted in Corsicana, Texas, of the deaths of his three young daughters. Both fires had the same characteristics that were misinterpreted as arson and were later determined, through scientific testing, to be symptoms of a "flashover", a fast burning fire, and without evidence of intentional tampering. Willingham was executed in February 2004 while the charges against Willis were dropped and he was released in October 2004.

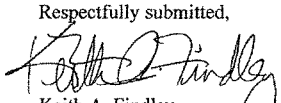
After a first trial ending in a hung jury, Jeffrey Rodriguez was convicted in 2003 in California of armed robbery and sentenced to 25 years to life. His conviction was based largely on forensic expert testimony presented by a prosecution expert that a stain found on Rodriguez's jeans was "indicative" of motor oil, evidence critical to establishing Rodriguez's presence at the crime scene. By "indicative" the criminalist later said he never meant to give the impression that the stain contained motor oil, only that it was consistent with motor oil. The problem with the testimony, however, was that the stain was also consistent with hundreds of ordinary household products, including soap and ordinary cooking oil, a detail the expert failed to mention in his testimony before the jury. In Rodriguez's case, the expert's mischaracterization suggested a strong—but false—connection between the defendant and the crime scene. After Rodriguez had served nearly six years, his

conviction was reversed after re-testing by two different laboratories successfully challenged the expert's testimony.

It is not sufficient that our criminal justice system have only a handful of scientifically validated forensic techniques among the full complement of tools used for criminal investigations. When a forensic discipline is not used within its scientific parameters or when it is not standardized, justice is distributed unfairly and unevenly. Jeffrey Rodriguez was able to receive accurate forensic testing at one trial, but not the other. Ernest Willis and Cameron Todd Willingham were both sentenced to death for arsons that were later found to be accidental fires, but only one man lives exonerated today. To ensure that justice is equally administered and protected and that public safety is improved for all communities, and to increase public confidence in the integrity of convictions, we must make certain that every forensic tool used to make a criminal case is worthy of its use in court. In order for this major task to be completed thoroughly, properly, and precisely, all thirteen recommendations of the NAS report must be implemented in full. We are at a pivotal moment in the history of criminal justice and we call upon this Congress to embrace this responsibility. Anything less than total and true reform will continue to jeopardize public safety and erode our American Justice System.

Thank you for the opportunity to submit these comments.

Respectfully submitted,



Keith A. Findley
President, Innocence Network
Clinical Professor, University of Wisconsin Law School
Co-Director, Wisconsin Innocence Project

http://judiciary.authoring.senate.gov/hearings/testimony.cfm

United States Senate Committee on the Judiciary

< Return To Hearing

Statement of

The Honorable Al Franken

United States Senator
Minnesota
September 9, 2009

STATEMENT OF SENATOR AL FRANKEN ON "STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES"

Thank you, Mr. Chairman, for holding this incredibly important hearing. We incarcerate more people than any other industrialized nation. In fact, we incarcerate more people than any nation, period. We have 2.3 million prisoners behind bars—compare that to China, which has four times our population but only 1.6 million prisoners. We also have the world's highest incarceration rate, six times higher than the world's median rate. Even though we have 5% of the world's population we have 25% of its inmates.

These are worrying figures for any country, let alone the world's leading democracy. But they're especially troubling when we consider that the forensic techniques used to prosecute and convict many of these individuals have come under serious question.

Earlier this year, pursuant to a congressional mandate, the National Academy of Sciences released a report evaluating the scientific integrity of the forensic techniques used daily in thousands of crime labs around the country—including DNA analysis, fingerprinting, firearms identification, and hair fiber analysis.

The report, which was published after two years of research and review, had a damning conclusion, which I will restate here. It concluded that "[w]ith the exception of nuclear DNA analysis [?], no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source." "The fact is that many forensic tests [?] have never been exposed to stringent scientific scrutiny."

For example, the National Academy's report revealed that there is currently no objective, uniform method of fingerprint analysis or standard for fingerprint identification. In fact, in the United States, the standard for identification—how many points match between two prints—has been "deliberately kept subjective" to allow for maximum flexibility by the examiner. This means that one examiner can require just 6-points of comparison before declaring a match, while another can require 14 points.

Bad forensic techniques result in false convictions. That's obvious. In a review of 242 DNA exonerations, the Innocence Project found that a large number of the cases involved unvalidated or improper forensic science. The number of false convictions is surely higher, however, since 90% criminal cases actually do not involve biological evidence that can irrefutably exonerate someone through DNA testing.

What's less obvious is that bad forensics keep the real criminals on the streets. Of the 242 DNA post-conviction exonerations nation-wide, the real perpetrators were identified in 105 cases. In those 105 cases, while innocent people were in jail, the real perpetrators committed and were convicted of 90 serious, violent offenses, including 56 rapes and 19 murders. False convictions are a threat and tragedy, both for the innocent and for every law-abiding citizen in this nation.

In 2006, Supreme Court Justice Antonin Scalia declared that there has not been "a single case—not one—in which it is clear that a person was executed for a crime he did not commit. If such an event had occurred in recent years, we would not have to hunt for it; the innocent's name would be shouted from the rooftops."

Sadly, after the execution of Cameron Todd Willingham, that day has come.

The Fifth and Fourteenth Amendments guarantee that all Americans will not be deprived of "life, liberty, or property, without due process of law." This due process right applies to states, and it applies to the federal government. And if it means anything, it means that the tools we use to determine innocence or guilt must be based on sound, rigorous science. Until we can be confident of that, I think we should ask ourselves whether it would be appropriate to impose a nationwide moratorium on the death penalty. Can we as a law-abiding nation execute anyone without being 100% certain that they are guilty? Can we risk another Cameron Todd Willingham?

I look forward to hearing from all of the witnesses today.

Thank you, Mr. Chairman.

Written Testimony of Brandon L. Garrett, Associate Professor of Law, University of Virginia School of Law

Before the United States Senate
Committee on the Judiciary

"Strengthening Forensic Science in the United States"

September 14, 2009

I am an associate professor of law at the University of Virginia School of Law. My scholarship focuses on criminal law and procedure. In 2007, I spoke before the National Academy of Sciences' (NAS) Committee exploring the needs of the forensic science community, and presented preliminary data concerning the role that invalid forensic science testimony played in the trials of people who were wrongly convicted and then exonerated by post-conviction DNA testing. In 2009, Peter Neufeld and I published an article presenting the results of the completed study. As the Senate Judiciary Committee considers the landmark recommendations included in the NAS Report, "Strengthening Forensic Science in the United States: A Path Forward," it is useful to look back at the consequences of not adequately regulating the use of forensic science in the laboratory or in the courtroom.

Crucial recommendations in that NAS Report address not only wholesale reforms to improve the reliability and accuracy of forensic science, but also its presentation in reports and in the courtroom. The NAS Report recommends that an independent federal agency, a "National Institute of Forensic Science," establish and enforce the use of

"standard terminology" for report writing and testimony.[1] Those recommendations that an independent scientific oversight body be established are important—and the trials of the innocent and then exonerated show us why.

Traditionally, there has been almost no oversight of what scientists *write* in their reports rendering conclusions and what they *say* in the courtroom once the court deems the method used valid and reliable. To look at the problem of forensic science testimony in the courtroom, the attached study, published in 2009 in the Virginia Law Review, examined for the first time criminal trial transcripts in the cases of DNA exonerees.[2]

The study found that in the bulk of trials of innocent defendants—82 cases or 60%—forensic analysts called by the prosecution provided invalid testimony at trial—that is, testimony with conclusions misstating empirical data or wholly unsupported by empirical data. This was not the testimony of a mere handful of analysts: this set of trials included invalid testimony by 72 forensic analysts called by the prosecution and employed by 52 laboratories, practices, or hospitals from 25 states.

The numerous examples of invalid testimony described at length in the attached study are shocking. All of the trial testimony can be read at a UVA Law Library research webpage.[3] Exonerees had invalid testimony in their trials concerning a range of forensic disciplines, such as bite mark comparison, hair comparison, fiber comparison, conventional serology, DNA testing, and voice analysis.

Forensic scientists made remarkable statements during these criminal trials. Forensic analysts compared crime scene shoe prints and told jurors that "the individual

---

[1] *See* Comm. on Identifying the Needs of the Forensic Science Cmty., Nat'l Research Council of the Nat'l Acads., Strengthening Forensic Science in the United States: A Path Forward S-14 (2009), available at http://www.nap.edu/catalog.php?record_id=12589 [hereinafter Strengthening Forensic Science].

[2] Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 Va. L. Rev. 1 (2009) (attached to this testimony).

[3] http://www.law.virginia.edu/html/librarysite/garrett_exoneree.htm.

who walked with these shoes has the same walking gait" as the defendant. Analysts compared hairs left at the crime scene with those of the defendant and testify that they had seen that particular hue "in less than 5 percent of the hairs" they have examined. Or they noted how unusual a hair appeared, saying, "I haven't seen a hair like that before. Not a human hair." They observed blood types that did not match the defendant, but still testify, "Bacterial contamination can give you what is called false positives." Analysts described bite marks and then testified that without a doubt, the defendant's teeth "inflicted the patterns described on the body." Analysts testified that "it would be approximately 5.9 percent" of the population that could have been the rapist, when in fact the blood test results were totally inconclusive.

All of this trial testimony was unscientific and invalid. No empirical data exists on frequencies of hair color, or tooth configurations, or wear patterns on soles of shoes. There is no sound evidence that bacteria can selectively alter blood types. But all of this invalid testimony was offered in serious felony trials. Often the defense lawyers did not realize that the science was flawed. Judges did not intervene in the rare case that a defense lawyer did protest. In each case, the defendant was convicted. And in each case, the defendant was innocent. After they served years and sometimes decades in prison, DNA testing proved their innocence. Nor were these defendants alone. Over the past two decades, 242 people have been exonerated by post-conviction DNA testing. Those exonerees spent an average of twelve years in prison for rapes and murders. Seventeen were almost executed. Eventually, scientific advances in DNA testing helped to secure their release.

The DNA also revealed starkly how frequently other less robust and less reliable forensic disciplines, often presented to the jury in an invalid manner, played a role in many of those wrongful convictions. Unfortunately, DNA alone will not solve this problem. While it has replaced some traditional forensics, in the vast majority of criminal investigations, DNA testing is not used. The DNA also often identified not just an innocent person, but also the true guilty party. Many had committed additional rapes and murders after the arrest of the wrong person. Police will better identify and apprehend the real perpetrators of crimes if we improve forensics.

There is no reason to think that the invalid testimony present in so many exonerees' trials was somehow unique just to the trials of the innocent. Although it would be very disturbing if so many analysts had somehow targeted the innocent, it is far more likely that most reached conclusions in these cases that were no different than those they commonly expressed on the stand. Indeed, in a very preliminary look at similar serious rape and murder trials during the same time period, we found roughly the same incidence of invalid, unscientific testimony. These data do not tell us whether less serious criminal cases, non-rape cases, or more recent cases, for example, share the same flaws. Nor does the study make causal claims regarding the degree to which invalid testimony contributed to wrongful convictions. Not only do we not know how jurors reached their verdicts, but these convictions were almost always supported by non-forensic evidence. However, juries may give special weight to testimony by forensic scientists; the Supreme Court has cautioned that "[e]xpert evidence can be both powerful and quite misleading because of the difficulty in evaluating it."[4] Thus, there is every reason to think that a National Institute of Forensic Science would have a substantial and important

[4] Daubert v. Merrill Dow Pharmaceutical, 509 U.S. 579, 595 (1993).

task to accomplish the promulgation of scientific standards to govern conclusions expressed by analysts on the stand and in reports.

The adversarial process can not adequately prevent such invalid testimony, as the NAS report emphasized. That process largely failed to police this invalid testimony. Defense counsel rarely cross-examined analysts concerning invalid testimony and rarely obtained experts of their own. In the few cases in which invalid forensic science was challenged, judges seldom provided relief. And most cases never go to a trial; no adversarial process ensures that conclusions in laboratory reports are accurate.

Nor has the advent of DNA technology solved the problem of invalid forensic testimony. DNA has replaced some, but not most, traditional forensic methods. Although DNA testing is now widely available in the kinds of sexual assault cases chiefly examined here, it is used in a small minority of criminal investigations. Several recent exonerations involved invalid trial testimony concerning DNA testing. Furthermore, the incidence of faulty use or mischaracterization of the underlying data cannot be known without retesting or reexamination of the underlying forensic evidence. In very few exonerees' cases did analysts later reexamine the evidence, although in those few, gross errors were uncovered.

No national or widely accepted set of standards exists for forensic science written reports or testimony. No entity promulgates such standards or ensures that all analysts adhere to standards for permissible scientific conclusions. In some disciplines there continues to be no consensus on the boundaries of permissible trial testimony. Some disciplines have issued non-binding guidelines, but guidelines that offer no criteria for reaching conclusions. Furthermore, the forensic disciplines have created no means to

enforce any scientific standards. These are all reasons why it is crucial that the entity that does promulgate such standards be one that is staffed by independent scientists.

Indeed, the study did not examine the use of what the NAS Report described as wide variation in terminology used by forensic analysts to express their conclusions, a lack of quantification of uncertainty in reaching such conclusions, and problems "with using imprecise reporting terminology" that can "be misunderstood to imply individualization."[5] Many more exonerees' cases included such imprecise testimony, concluding that hairs, fibers, or other evidence could be "associated with" the defendant or was "consistent with" having originated from the defendant. For example, if a set of hairs are "consistent" with the defendant's hairs, what probative value does that statement have? Could millions, thousands, or hundreds of people possess hairs with the same microscopic characteristics? Such questions can not be answered, because no adequate empirical research has been conducted on the frequency of hair characteristics, and therefore such testimony is potentially highly misleading. We did not deem such testimony invalid for the purposes of our study, which focused on claims not adequately supported by empirical evidence, but did not focus on reliability or questions of precision in terminology. Separate and important questions remain whether such vague testimony should be admissible.

Further, many exonerees' trials involved techniques such as bite mark comparison and hair comparison that have not been validated and which, according to the NAS Report, require further research before their probative value can be known. As that Report stated, "[w]ith the exception of nuclear DNA analysis . . . no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of

[5] *See* Strengthening Forensic Science at 5-26.

certainty, demonstrate a connection between evidence and a specific individual or source."[6]

The problems apparent in these innocent defendants' trials have been long recognized, stretching back for decades, and yet as the NAS described, no scientific body has intervened to establish a set of scientific standards or to ensure the integrity and quality of forensic science. If we are to convict people, guilty or innocent, based on forensic evidence, then our criminal justice system deserves rigorous scientific assurances that such evidence is reliable and presented accurately. The integrity of our criminal justice system demands no less. National standards promulgated by an independent scientific entity would reduce the number of wrongful convictions and enhance the likelihood that forensic science can help to identify perpetrators. The NAS Committee report examining the needs of the forensic science community provides a historic opportunity for legislators, lawyers, and scientists to finally implement such oversight mechanisms to ensure the accurate use of forensic science in the courtroom.

Should federal legislation focus only on funding the basic research desperately needed to develop reliable forensic methods, but not on establishing an independent scientific entity that would create detailed scientific standards needed to define the limits of those methods and the conclusions that can be reached in reports and testimony in the courtroom, invalid testimony and miscarriages of justice will continue to tax our criminal justice system and society.

[6] *Id.* at S-5.

STATEMENT OF

PAUL C. GIANNELLI

WEATHERHEAD PROFESSOR OF LAW
CASE WESTERN RESERVE UNIVERSITY

BEFORE THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

HEARING ON THE

NATIONAL ACADEMY OF SCIENCES REPORT:

STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD

SEPTEMBER 9, 2009

Mr. Chairman and members of the Committee, thank you for inviting me to this hearing. While serving in the Army during the Vietnam War, I was assigned to the forensic medicine program at the Armed Forces Institute of Pathology (1972), located at Walter Reed Hospital. At the same time I received a masters degree in forensic science from George Washington University (1973). I then taught a course on scientific evidence at the Army JAG School in Charlottesville, Va. (1973-75). In my current position at Case Western Reserve University in Cleveland (1975 to present), scientific evidence has been my area of research interest for over three decades. (My law degrees (J.D. 1970; LL.M. 1975) are from the University of Virginia.)

The publication of the National Academy of Sciences' Report, *Strengthening Forensic Science in the United States: A Path Forward* (2009)[1] is one of the most important developments in forensic science since the creation of the first crime laboratory in this country in the 1920s. The Report is both comprehensive and insightful. Its findings are well-documented, and the need for a new approach — one rooted in science — as outlined in the Report, is critical. In sum, I believe this is an exceptional Report. The NAS Report's recommendations, if adopted, would benefit law enforcement and prosecutors in the long run. It would allow forensic science to develop a strong scientific basis and limit evidentiary challenges regarding the reliability of forensic evidence.

Importance of Forensic Evidence

I want to stress the importance of scientific evidence in the criminal process. It is often superior to other forms of proof. Forty years ago, the Supreme Court noted that "fingerprinting is an inherently more reliable and effective crime-solving tool than eyewitness identifications or confessions and is not subject to such abuses as the improper line-up and the 'third degree.'" Davis v. Mississippi, 394 U.S. 721, 727 (1969). More recently, the DNA exoneration cases have highlighted the problems with eyewitness identifications, jail informant testimony, and false confessions. *See Report of the ABA Criminal Justice Section's Ad Hoc Innocence Committee to Ensure the Integrity of the Criminal Process, Achieving Justice: Freeing the Innocent, Convicting the Guilty* (Paul C. Giannelli & Myrna Raeder eds. 2006). According to the Innocence Project, there are now over 240 exonerations.

However, the exoneration cases also exposed problems with scientific evidence. *See* Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 Va. L. Rev. 1 (2009); Paul C. Giannelli, *Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs*, 86 N.C. L. Rev. 163 (2007).

I want to focus my remarks on what I believe is the crucial issue: the lack of empirical

---

[1] In the interest of disclosure, I want to note that I made a presentation at one of the NAS Committee's meetings and served as one of the twenty or so reviewers for the report. With two other professors, I am currently preparing a chapter on forensic evidence for a reference manual on scientific evidence that will be published by the Federal Judicial Center in conjunction with the NAS.

research in some forensic identification disciplines and how to address this deficiency.

Lack of Empirical Research

According to the NAS Report: "Among existing forensic methods, only nuclear DNA analysis has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between an evidentiary sample and a specific individual or source." *Id.* at 100. Another passage reads: "[S]ome forensic science disciplines are supported by little rigorous systematic research to validate the discipline's basic premises and techniques. There is no evident reason why such research cannot be conducted." *Id.* at 22.

Common identification techniques — which rely on the examiner's subjective judgment — lack sufficient empirical support. For example, the Report commented:

- "Sufficient studies [on firearms identification] have not been done to understand the reliability and repeatability of the methods." *Id.* at 154;
- "The scientific basis for handwriting comparisons needs to be strengthened." *Id.* at 166;
- Research is needed "[t]o properly underpin the process of friction ridge [fingerprint] identification." *Id.* at 144;
- "[T]estimony linking microscopic hair analysis with particular defendants is highly unreliable." *Id.* at 161; and
- "There is no science on the reproducibility of the different methods of [bitemark] analysis that lead to conclusions about the probability of a match." *Id.* at 174.

Chapter 5 of the Report documents these conclusions in detail. My research is in accord. *See* Paul C. Giannelli & Edward J. Imwinkelried *Scientific Evidence* (4th ed. 2007).

Judicial Opinions

Similar concerns can be found in court decisions for more than a decade. After the Supreme Court's decision in Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579 (1993), some lower courts began to question how expert testimony was being presented at trial:

- "Testimony at the *Daubert* hearing indicated that some latent fingerprint examiners insist that there is no error rate associated with their activities . . . . This would be out-of-place under Rule 702 [governing admissibility of expert testimony]." United States v. Mitchell, 365 F.3d 215, 246 (3d Cir. 2004).
- "The more courts admit this type of toolmark evidence without requiring documentation,

proficiency testing, or evidence of reliability, the more sloppy practices will endure; we should require more." United States v. Green, 405 F. Supp. 2d 104, 109 (D. Mass. 2005).

- "The government has had ten years to comply with *Daubert*. It should not be given a pass in this case." United States v. Crisp, 324 F.3d 261, 272 (4th Cir. 2003) (fingerprint and handwriting case) (Michael, J., dissenting).

- The firearms identification "examiners testified to the effect that they could be 100 percent sure of a match. Because an examiner's bottom line opinion as to an identification is largely a subjective one, there is no reliable statistical or scientific methodology which will currently permit the expert to testify that it is a 'match' to an absolute certainty, or to an arbitrary degree of statistical certainty." United States v. Monteiro, 407 F. Supp. 2d 351, 372 (D. Mass. 2006).

- "Based on the *Daubert* hearings . . . , the Court very quickly concluded that whatever else ballistics identification analysis could be called, it could not fairly be called 'science.' . . . [T]he Government did not seriously contest the Court's conclusions that ballistics lacked the rigor of science and that, whatever else it might be, its methodology was too subjective to permit opinions to be stated to 'a reasonable degree of ballistic certainty.'" United States v. Glynn, 578 F. Supp. 2d 567, 570-71 (S.D. N.Y. 2008).

- "This court has been unsuccessful in its attempts to locate *any* indication that expert hair comparison testimony meets *any* of the requirements of *Daubert*." Williamson v. Reynolds, 904 F. Supp. 1529, 1558 (E.D. Okl. 1995), *aff'd*, 110 F.3d 1508 (10th Cir. 1997).

- "[F]orensic document examination, despite the existence of a certification program, professional journals and other trappings of science, cannot, after *Daubert*, be regarded as 'scientific . . . knowledge.'" United States v. Starzecpyzel, 880 F. Supp. 1027, 1038 (S.D.N.Y. 1995).

Moreover, within months of the NAS Report's release, Justice Scalia cited it, noting that "[s]erious deficiencies have been found in the forensic evidence used in criminal trials." Commonwealth v. Melendez-Diaz, 129 S. Ct. 2527, 2537 (2009).

Independent Scientific Research

However, the most thorough and well-reasoned reports in the field have come from *independent* scientific investigations:

- National Research Council, *On the Theory and Practice of Voice Identification* (National Academy Press 1979).

- National Research Council, *DNA Technology in Forensic Science* (National Academy Press 1992).
- National Research Council, *The Evaluation of Forensic DNA Evidence* (National Academy Press 1996).
- National Research Council, *The Polygraph and Lie Detection* (National Academy Press 2002).
- National Research Council, *Forensic Analysis: Weighing Bullet Lead Evidence* (National Academy Press 2004).[2]
- Office of Technology Assessment, U.S. Congress, *Genetic Witness: Forensic Uses of DNA Tests* (1990).

This independent scientific expertise is the reason that the FBI laboratory turned to the National Academy of Sciences when it sought review of voiceprints, DNA, and comparative bullet lead evidence. I assume that Congress asked the NAS to conduct the present study for the same reason.

National Institute of Forensic Sciences

The creation of a National Institute of Forensic Sciences (NIFS) — Recommendation 1 in the Report — is essential. An independent agency, steeped in the traditions of science, is required. In addition to independence and strong scientific credentials, a new entity should be dedicated *solely* to forensic science. It should not be encumbered with multiple missions. Once in place, NIFS could quickly focused on the agenda outlined in the NAS Report.

Moreover, NIFS would have the prestige to attract top scientists to the field and to influence universities to conduct peer-reviewed research and to establish rigorous educational programs. In contrast, an entity that is part of an agency in another department will not attract the requisite level of talent.

Finally, there are many talented, conscientious examiners working in crime laboratories throughout this country. These examiners need to be supported; they need funds for better equipment, advanced schooling, and continuing education. The underfunding of forensic science in this country has been chronic. In 1967, President Johnson's Crime Commission noted that "the great majority of police department laboratories have only minimal equipment and lack highly skilled personnel able to use the modern equipment now being developed." *President's Commission on Law Enforcement and Administration of Justice, The Challenge of Crime in a*

---

[2] In the interest of disclosure, I want to note that I served as one of the two lawyers on the NAS Committee that wrote this report. The important work, however, was done by the scientists on the committee.

Free Society 255 (1967). In 1974, President Nixon's Crime Commission commented: "Too many police crime laboratories have been set up on budgets that preclude the recruitment of qualified, professional personnel." *National Advisory Commission on Criminal Justice Standards and Goals, Report on Police* 304 (1974).

Forensic science has been a stepchild in the law enforcement community and an orphan in the scientific community. NIFS offers the best hope for placing forensic scientists on a par with other scientists. Its creation is essential. Recommendation 1 is the most important recommendation in the NAS Report.

Testimony of Drs. Lyn Haber and Ralph Norman Haber
Before the United State Senate Judiciary Committee
In Support of Legislation to Create a National Institute for Forensic Science
Prepared August 28, 2009

Human Factors Consultants
Ralph Norman Haber, Ph.D., and Lyn Haber, Ph.D., Partners
313 Ridge View Drive, Swall Meadows, California 93514
Website: www.humanfactorsconsultants.com
Ralph@humanfactorsconsultants.com Lhaber@humanfactorsconsultants.com
Telephone: 760-387-2458; Fax 760-387-2459

Scientific Background of Drs. Lyn and Ralph Haber

We are two of the few research scientists who are also trained as fingerprint examiners, and who have been qualified to testify in courts as experimental scientists about the validity and reliability of fingerprint comparison methods in general, and about the application of the method in the instant case.

When we began to study fingerprint methodology, we discovered that the underlying research on the validity and reliability of the method(s) used by fingerprint examiners had never been performed. As research scientists, we simultaneously began to outline a research program to provide this evidence, we presented our analyses to the fingerprint profession, we published our findings and proposals in scientific and professional journals, we wrote a book on fingerprint comparison procedures, we visited fingerprint crime laboratories to urge them to host and collaborate in research studies, and we welcomed opportunities to testify in court when fingerprint evidence was at issue.

Ralph Haber specializes in experimental psychology and human factors as applied to forensic science. He has been a research professor for more than 40 years. He has a Ph.D. degree from Stanford University (1957) and post-doctoral training in the Medical Research Council at Cambridge, England (1970-1971). He has taught at Yale University, the University of Rochester (where he was chairman of the Department of Psychology), and the University of Illinois, where he is now an Emeritus Professor of Psychology. He has received 25 grants and contracts from the National Science Foundation, the National Institutes of Health, research branches of the military and Veterans Affairs, and from the Department of Transportation. He has reviewed research proposals for these governmental agencies, and has served on the editorial boards of a dozen scientific journals. He has published 250 articles and 9 books in experimental psychology and experimental cognition, forensic science and human factors. Nearly 100 of these published articles cover research and analyses of eyewitness testimony and fingerprint comparison methods.

Lyn Haber specializes in linguistic analyses of complex decision-making, language development, interviewing, and human factors as applied to forensic science. She has a Ph.D. from the University of California (Berkeley) in 1970 and further training and degrees at Arizona State University and the University of Illinois. She has taught at Temple University, the University of Rochester, Arizona State University, Stanford

University and the University of Illinois. She has served as a reviewer for governmental granting agencies and scientific journals. She has published 150 articles and books in experimental cognition, forensic science and human factors. Over half of these concern research and analyses of eyewitness testimony and fingerprint comparison methods.

Specifically on fingerprints, the two of us together have written a book, **Challenges to Fingerprints** (October, 2009), published 8 articles, and made 19 presentations to professional fingerprint organizations and to fingerprint examiners in crime laboratories. We have attached copies of our resumes.

In 1988 we established Human Factors Consultants, a two-partner firm providing research and consultation services to the United States government, the United States military, private US business companies, and the legal profession. With respect to the legal profession, we have been retained to consult or provide expert testimony in over 150 cases involving forensic eyewitness and fingerprint identifications. We have been retained in nearly 30 fingerprint cases (half in Federal Courts), and have testified 11 times, 6 of which have been Daubert or Frye hearings on the admissibility of fingerprint evidence.

Testimony to the US Senate Judiciary Committee

Today, a person (with only a high school degree) can be hired (without meeting any predefined qualifications for forensic comparison work) by a crime laboratory (which is not accredited by any organization), and be then trained on-the-job to carry out evidence comparisons (by another technician without certified qualifications to provide training), using local methods and procedures (lacking adoption by their profession or evidence of validity and reliability), be approved by the laboratory to perform independent forensic comparison casework (without passing any external proficiency tests), allowed to represent their profession and laboratory (without being certified by their profession), and to offer testimony in a state or federal court (qualified only on the basis of their employment in that laboratory), testimony sufficient that the jury convicts the defendant. The parenthetical limitations in this paragraph have pertained to daily occurrences in courts in the United States over the last century. Today, the majority of court testimony offered by forensic experts still suffers from these parenthetically stated limitations.

To address the quality control problems inherent in the above paragraph, The National Academy of Sciences (NAS) report on the Forensic Sciences this past spring (2009) recommends the creation of a National Institute for the Forensic Sciences (NIFS). In the remainder of our testimony, we document from evidence drawn from the forensic disciplines the urgent need to implement this NAS recommendation. We are most familiar with the fingerprint comparison discipline, so most of our examples concern fingerprints. The problems apply to all of the areas of forensic evidence.

Our testimony is divided into three parts. First, we describe the outdated and unregulated status of forensic evidence technicians and the laboratories in which they work: the absence of quality control regulations for personnel and workplace. Second, we describe the absence of documentation and research evidence that the methods employed to identify people give accurate results when used properly. Third, we describe how a new National Institute of Forensic Sciences could address these problems effectively and economically.

Part I: Absence of Quality Controls for Personnel and Laboratories

1. Personnel Quality Control: Absence of Hiring and Employment Requirements

At present, with a few exceptions (e.g., the FBI), a crime laboratory will employ anyone whom it decides can be trained to do forensic analyses of evidence. Frequently, examiners-to-be have already worked as a police officer or sheriff (positions which generally do not require a BA degree with specialty in science). Other trainees come from a variety of two and four year college programs, rarely ones with majors in criminal justice or related programs. Fewer than 10% of the evidence technicians listed in the International Association for Identification (IAI) membership have a BA or BS degree, and fewer than 1% have an advanced degree. No data are available about the working examiners who are not members of the IAI.

The IAI, though the Scientific Working Groups for each forensic discipline, as well as the American Society of Crime Laboratory Directors (ASCLD) through its accreditation procedures, lists some recommended backgrounds for examiners, including a BA or BS degree, with specialization in science. However, there is no requirement: there are no teeth in their recommendations, and no way to enforce them. The data listed above indicate there is little compliance with the recommendations.

As a consequence, new trainees differ greatly in their abilities, knowledge and skills. This complicates training curricula and mastery.

2. Personnel Quality Control: Absence of Training Requirements

Only a few crime laboratories, such as the FBI, have developed detailed training curricula, with stringent criteria for assessment. The remaining thousands of laboratories have none. At present, the majority of forensic technicians have been trained on-the-job, under the supervision and tutelage of an employee with more experience. Most laboratories do not require participation in courses offered by other laboratories, organizations or universities.

With rare exceptions, the forensic disciplines have no formal evaluations at the end of training to document that the trainee has mastered the required skills, and is now qualified to work independently. There are no standard criteria for when a trainee can begin casework or testify in court.

The IAI through its Scientific Working Groups has published recommended outlines of training programs for the different forensic areas. However, there are no requirements and no way to enforce their use.

As a consequence, examiners receive different kinds and amounts of training, and vary greatly in their methods, knowledge and skill.

3. Personnel Quality Control: Absence of Training Specialists

At present, none of the forensic areas defines a position of trainer, or specifies qualifications for a person who provides training to new employees or refresher training for more experienced technicians. These highly technical professions do not recognize that to train others is a skill in its own right that has to be acquired, mastered and evaluated. The absence of any reference to training personnel also reflects the absence of commitment to training as a significant part of the forensic disciplines.

As a consequence, the personnel who train forensic technicians vary greatly in the quality, kind and amount of training they provide.

4. Personnel Quality Control: Absence of Proficiency Testing Requirements

With rare exceptions, proficiency testing is not required for forensic technicians. The majority of examiners who belong to the IAI have never been tested for their proficiency. At present, of the 5,000 members specializing in fingerprint examinations, fewer than 10% are proficiency-tested in any given year, and the majority of the examiners taking the test are the same ones who took it in previous years. While the American Society of Crime Laboratory Directors (ASCLD) recommends annual proficiency testing for accredited laboratories, no information is available as to the number of laboratories that administer that such tests, or the number that administer in-house tests manufactured, administered and scored by the laboratory.

The profession does not require proficiency testing and there is no way to enforce a recommendation for such testing.

As a consequence, the majority of examiners cannot document either improvement in their skill or mastery in their field.

5. Personnel Quality Control: Inadequacy Proficiency Tests

The external proficiency test currently used by the IAI and by ASCLD for latent fingerprint examiners fails to meet the requirements for an adequate proficiency test (see Haber & Haber, 2009, for a detailed analysis). The latent print fingerprint proficiency test does not contain test items comparable to typical casework, it samples mainly same-donor pairs of prints (even though different donor pairs make up the majority of casework, and pertain to the protection of innocent persons), there is no measurement of the difficulty of individual items or of the entire test, there is no evidence of the reliability or the validity of the test, it is administered by mail without proctoring, it requires conclusions that are not allowed in casework, it is inappropriately scored, and it provides no guidance for remedial work needed for a low-scoring examiner. The IAI latent fingerprint test is so poorly designed, administered and scored that the results cannot be used to assess the proficiency of latent fingerprint examiners. The proficiency tests used by the IAI for other forensic disciplines are no better.

As a side note, starting in 1995, the FBI created an in-house proficiency test. This test was described in detail by an FBI examiner (Meagher, 2002) in a Daubert hearing in federal court (US v. Plaza, 2002) as an example of a good quality control procedure. Quality control experts, experts in proficiency testing, and fingerprint examiners testified in the same hearings that the FBI's test was worthless. The FBI abandoned this test immediately thereafter.

The forensic disciplines have ignored the necessity for adequate proficiency testing. As a consequence, the vast majority of examiners who testify in court have not been routinely proficiency-tested. The tests in present use fail to meet routine criteria for quality proficiency tests, so that even these few examiners who have been tested cannot offer evidence to the court of their level of skill and accuracy. The forensic disciplines allow the skill levels of their technicians to go unassessed.

6. Personnel Quality Control: Absence of Certification Requirements

Neither the IAI nor any other forensic regulatory organization requires a forensic technician to be certified in order to perform casework, including to testify in court. The IAI provides certification in eight different disciplines, but few forensic examiners are certified.

For example, only about 15% of fingerprint examiners who are members of the IAI are certified, and this number is dropping, not increasing. Since the IAI is the only organization offering certification for fingerprint examiners, and many fingerprint examiners are not members of the IAI, even this low percentage is inflated.

Forensic technicians differ from scientific experts in other fields (such as doctors, or engineers) in that there are no standardized training, supervision and certification requirements.

7. Personnel Quality Control: Inadequate Certification Testing

The forensic professions exercise no quality control over the purposes, design, construction and scoring of their certification tests. The tests manufactured and administered by the IAI are unstandardized. There is no evidence their reliability or their validity (Haber & Haber, 2009), and most of the criticisms listed above of the IAI proficiency tests apply equally to their certification tests. The forensic sciences have ignored the necessity for adequate certification tests. As a consequence, the majority of examiners who testify in court are not certified. The tests in present use fail to meet routine criteria for quality certification tests, so that even these few examiners who have been tested cannot offer evidence to the court of their level of skill and accuracy. The forensic disciplines allow the skill levels of their technicians to go unassessed.

8. Personnel Quality Control: Absence of Requirements for Court Testimony

There are no required qualifications for the members of the various forensic disciplines to testify in court as an expert. Any fingerprint examiner is allowed by the crime laboratory to testify if he or she has the first hand knowledge of the specific case being tried. It is extremely rare that a count challenges the credentials of an employed fingerprint examiner, and we do not know of a single instance in which one was not permitted to testify. As a consequence, examiners who provide forensic evidence vary greatly in their knowledge, skill and experience.

We have reviewed the personnel areas of employment, training, proficiency, experience, certification, and access to court. The forensic disciplines do not regulate the technicians who provide forensic evidence for the criminal justice system. Recommendations are not enforced, and existing evidence shows little compliance.

9. Laboratory Quality Control: Absence of Accreditation Requirements

The IAI estimates that as many as 8,000 laboratories employ forensic technicians to examine forensic evidence for the criminal justice system (Fitzpatrick, 2008). Today, only about 330 crime laboratories performing forensic evidence analyses in the United States have met accreditation recommendations issued by ASCLD or by any other national accrediting organization, fewer than 5%. Further, accreditation recommendations are not required, and laboratories fail to comply yet can remain accredited.

Required accreditation imposes and insures quality control procedures in crime laboratories. Few laboratories, whether accredited or not, have manuals covering their basic operations and work products. These manuals serve to describe requirements for work flow through the laboratory, for supervision of all work, for random sampling of products for accuracy and compliance, and for continued protection to prevent contamination and bias in decision making.

Two examples of poor quality control concern verification of conclusions and correcting errors. Every conclusion made by a forensic examiner has consequences: an identification risks the possibility that an innocent person may be convicted, and conclusions of exclusion, inconclusive or no value risk a guilty person remaining at large. At present, few laboratories verify these conclusions. Of those that do, nearly all laboratories use a non-blind ratification procedure, in which a second examiner is asked to look over the work of the first one and concur in the conclusion. Only a few laboratories require independent replication, in which the case is assigned to another examiner who has no knowledge that it has already been examined or that another examiner reached a conclusion, and those verifications are typically restricted to identification conclusions in high profile cases. Research has documented that non-blind verification fails to catch errors. The FBI's erroneous identification of Brandon Mayfield, in which three additional examiners ratified the identification made by the first examiner, serves as a real-life example.

Because of the seriousness of all errors, good quality control should require that a laboratory carry out an independent replication of all critical conclusions made by examiners.

Error correction is a second example involving poor quality control. When an error is detected, during replication or during review, the laboratory needs explicit policies on how to record the error, investigate its cause, work out changes to prevent such errors in the future, and whether remedial retraining is needed for the examiner(s) who made the error. Because errors are serious, and damaging to the prestige of the laboratory, laboratories have been reluctant to publicize that an error occurred, and currently have no way to learn from them. Most laboratories express this reluctance by not having published error correction procedures in place.

The absence of required accreditation and quality controls means that laboratories vary widely in the accuracy and completeness of their products.

Part II: Research Issues: Method Error and Examiner Error

A fingerprint examiner (or other forensic examiner) performs a comparison and identifies a suspect as the source of the crime scene evidence. What is the probability that he or she made a mistake? To answer this question, the accuracy of this examiner must be known in general; and how accurate the method is that was applied to make the comparison. We showed above that current proficiency and certification tests are inadequate to assess examiner accuracy in casework. In this part, we describe the absence of evidence for the accuracy of the comparison **method.**

Assessment of any method's accuracy requires experiments. The subjects for the assessment must be master examiners, with substantial experience, tested many times, so they are unlikely to make errors through lack of training, experience or carelessness. The method itself must be sufficiently described and the master examiners highly familiar with it. The examiners must make bench notes for each comparison to document that they used this method and followed it correctly. The assessment should be carried out under optimal working conditions (i.e., state of the art equipment, anonymously, without time pressure). Finally, the crime scene evidence samples must represent the full range of the quality and quantity of information found in normal casework evidence to which the method is applied. With such controls,

examiner error is minimized, and the results of the comparisons represent a measure of the accuracy of the method itself over the full range of evidence to which it is applied.

No examples of this experiment have ever been run in the 100 years since the introduction of forensic comparison evidence in the courts. The accuracy of the comparison method is untested and unknown. At present, the experiments cannot even be performed because initial research is needed to satisfy the conditions of such an experiment. No version of an ACE method has ever been described in sufficient detail to decide whether an examiner used the method correctly, and since there are several versions of ACE, it is not clear what version should be tested. No standardized formats for bench notes or reports have been approved by the profession, and no published experiment (or proficiency or certification testing) has required the examiners to provide bench notes. There is no measure of the quantity and quality of information in crime scene evidence, so latent prints cannot be selected against any standard of difficulty or provide a guarantee that they match the range found in casework.

These problems were raised in the NAS (2009) report. The report expressed the same concerns raised here: there is no research being done to demonstrate the accuracy of the methods being used by forensic examiners. We return to this concern in Part III of our testimony. Here we illustrate the consequences for the forensic disciplines of the failures to define the method, to measure the information values of crime scene evidence, and to carry out the necessary research to demonstrate the accuracy of the method.

10. Absence of a Complete Description of the ACE Method

The forensic disciplines use an Analysis-Comparison-Evaluation method (known as ACE). ACE was first described 50 years ago as a general forensic framework, and has been gradually refined, especially in its application to fingerprint comparisons. None of the forensic disciplines has offered a complete description of each of the stages and sub-steps of ACE. None of the dozen textbook descriptions is complete enough for an examiner to follow step by step. The textbooks also differ from each other in significant details, especially those involving quality controls to minimize bias. The manual on how to carry out an ACE comparison for each forensic discipline has never been written.

11: Absence of an Official Description of the ACE Method

In Frye and Daubert court challenges to forensic comparison evidence, the courts look for evidence that both the professional community **and** the scientific community accept the method in use, and agree that it meets the requirements of their respective disciplines. Because the so-called ACE method exists in multiple forms and details, and the forensic disciplines have never approved a particular version as official, the proponents of comparison methods have not able to point to a method that has been adopted by their discipline (Cole, 2006). The NAS report speaks clearly to the lack of acceptance by the scientific community of the methods used by the forensic disciplines.

12. Absence of Validation of the Standards Required By the Comparison Method

The ACE method requires three standards, one to justify the conclusion of value, one for exclusion, and one for identification. Each standard should be defined by the

profession based on physical evidence uncovered during the application of the ACE method.

The **Value Standard**, which is applied at the beginning of the analysis stage of the comparison process, assesses whether the crime scene evidence sample contains enough reliable information (quantity and quality of detail) to match it correctly to the true donor. If the information content fails to meet the value standard, the standard states that no comparisons are to be made against that crime scene sample in order to avoid potential erroneous conclusions. The value standard rests on a physical measurement of the quality and quantity of information contained in crime scene evidence. This measurement has not been defined (see paragraph 14 below). Until the amount of information in the crime scene evidence has been quantified, the value standard cannot be validated to determine the percentage of errors it avoids. In current practice, each examiner uses his or her own subjective standard of value, which means that different examiners can (and do) reach different conclusions about the value of the same crime scene sample.

The **Exclusion Standard** is applied in the comparison stage of ACE. Because there are always differences between evidence samples, an examiner must decide whether any of those differences were not caused by distortion. If a difference did not arise from distortion, then two different people must have made the two samples, and the suspect is excluded as the source of the crime scene sample. The Exclusion Standard is explicitly stated (compared to the other two standards): if even a single difference cannot be explained by distortion, terminate the comparison and conclude that the suspect is not the source of the crime scene sample. However, the sources of distortions have neither been well defined nor measured. Without these measurements, each examiner uses his or her own subjective standard of exclusion, which means that different examiners can (and do) reach different conclusions about the same two samples.

The **Sufficiency Standard** is applied in the evaluation stage of ACE to the amount of similarity found between the two samples (assuming the crime scene sample had sufficient information, and every difference observed between the two samples is attributed to distortion). If the two samples have enough similarity so that the chance that they could have come from two different people is remote, then the examiner concludes an individualization of the suspect as the source of the crime scene sample. However, none of the forensic disciplines has developed and tested a metric of similarity, or determined how much similarity is sufficient to avoid an erroneous identification. Each examiner uses his or her own subjective standard of sufficiency, which means that different examiners can (and do) reach different conclusions about the same two samples.

None of the forensic disciplines has conducted the research necessary to quantify the three standards that underlie ACE. We have described the designs for this research (e.g., Haber and Haber, 2007; 2009), and it is neither difficult nor expensive to carry out. Without it, the standards of the ACE method on which conclusions are based are undefined, and the method itself is incapable of producing valid or reliable conclusions.

13. Absence of Evidence that Examiners Employ ACE

Fingerprint examiners in current practice are not required to document their work by recording bench notes during the examination process. A typical report contains only a conclusion.

One of the major reasons why the details of the stages and sub-steps of a comparison method have to be spelled out concerns protecting the examiner from bias. Recent research has shown that without proper sequencing, examiners are more likely to conclude what they expected to find rather than what was really there (see Haber & Haber, 2009, for examples). The Office of the Inspector General of the Department of Justice (2006) in its report on the erroneous identification by the FBI in 2004 of Brandon Mayfield as one of the Madrid terrorists, concluded that a major contributing factor was that the FBI examiners were biased, and that the FBI failed to follow the appropriate procedures to avoid bias. The NAS report (2009) reviewed other examples where examiners were exposed to bias. The lack of a fully described manual on the ACE method leaves the forensic disciplines open to more "Brandon Mayfield" erroneous identifications by otherwise well trained examiners.

The absence of a specified ACE method and of contemporaneous bench notes mean that different examiners can (and do) follow undocumented, different steps in different sequences. Until contemporaneous, adequate notes are required, no tests can be made of the accuracy of conclusions reached by the application of the ACE method.

14. Absence of an Objective Measure of the Quality and Quantity of Information in Crime Scene Evidence

Every forensic discipline works with a range of quality of crime scene evidence, from unusable for comparison to extremely clear and informative. Without a measurable scale of the amount of information in the evidence, an objective standard of value cannot be established. The forensic disciplines have not developed an objective measure of information quality and quantity.

Without a measurable scale of the amount of information in the evidence, the difficulty level of a proficiency test or a certification test cannot be determined.

15. Absence of Evidence that the ACE method is Reliable and Valid, or has a Known Error Rate

A method to compare fingerprints (or tire tracks, or DNA) can be assessed for its reliability and for its validity. A method's reliability can be demonstrated in two ways. Master examiners apply the ACE method to a variety of latent-exemplar pairs and conclude identification or exclusion. If all the examiners reach the same conclusion about each latent-exemplar pair, the method is reliable: it produces consistent results. Reliability can also be demonstrated by asking a set of examiners to re-compare latent-exemplar pairs from their distant past casework. If the examiners reach the same conclusion today, the method is reliable. Reliability is a measure of **consistency**.

In contrast, validity is a measure of accuracy. The accuracy of the ACE method can be assessed by asking well trained examiners to compare a number of latent-exemplar pairs using the ACE method, pairs for which the true donor is known (whether the donor of each pair is the same or a different person). If the examiners reach **correct conclusions** for each pair of fingerprints (identification when the donor of the two prints is the same; and exclusion when the donor of the two prints is not the same person), the method is shown to be valid.

We have already shown that the conditions required to test the accuracy of ACE have not been met. The method is not completely described, a method has not been officially adopted by the discipline, the method does not does not include validated or objective standards, and the method does not have measures for the information content of the evidence being compared.

In addition to a lack of evidence of the validity of ACE, no evidence exists as to the probability that conclusions based on ACE will be wrong. What is the error rate for the method? Court requirements for the introduction of scientific evidence arrived at by a scientific method (e.g., Daubert) include an established error rate, yet the forensic disciplines continue to attest to conclusions, with an unknown probability of error.

16: Current Practice with ACE Fails to Benefit Society Adequately

According to evidence from research experiments, as well as from estimates provided by forensic examiners, the two kinds of erroneous conclusions possible from forensic examinations are not weighted equally by the profession and do not occur with equal frequency (see Haber & Haber, 2009 for a detailed presentation). An erroneous identification, in which an examiner concludes that the crime scene sample and the sample from the suspect match when in fact the suspect was not the source is treated as an extremely serious mistake. The likely outcome of this error is the indictment, trial and conviction of an innocent person. The number of such instances is unknown, but the data on exoneration of falsely convicted persons suggests it is far from zero. This is a quality control problem of serious consequence for society, and it is the explicit concern of the forensic professions.

An erroneous exclusion, in which an examiner concludes the suspect is not the source of the crime scene sample when in fact the suspect was the source, is not treated as a serious error by the forensic disciplines. Erroneous exclusions effectively also occur when a case is dismissed because the method used for comparison was not powerful enough, or the examiner was not skilled enough to find the similarity. Then, the likely outcome is that guilty person remains at large to commit further crimes. The exact number of these instances is also unknown, but test and research results shows it far exceeds the number of erroneously identified innocent people. In order to avoid erroneous identifications, forensic examiners increase the number of true perpetrators they fail to identify, a one-way quality control solution that greatly weakens the value of forensic evidence for solving crimes. The forensic disciplines rarely expend effort to review exclusions, determinations of evidence of no value, or review inconclusive conclusions. These reviews should be mandatory.

Part III: The Purposes of a National Institute for Forensic Science

The consumers of forensic evidence, the citizens of the United States, would directly benefit from a public safety system committed to the highest quality of processing forensic evidence. The NAS documented an absence of quality controls and adequate scientific support across the forensic disciplines. The report concluded that the highest quality forensic services would obtain if the disciplines were regulated under a single federal agency. The report discussed the use of the Department of Justice, and several other federal agencies, and rejected each of them as lacking the forensic research expertise required, and lacking sufficient independence from the forensic disciplines. The NAS report also considered some of the federal research

agencies, such as the National Institutes of Health, or the National Science Foundation, but noted that these do not have expertise in the forensic disciplines. In their place, the NAS urged that a new and fully independent Institute be created.

Expertise

The NAS envisioned a new institute with primary responsibility for regulation of all of the forensic disciplines, drawing heavily on the combined expertise of examiners, scientists, and researchers. With this expertise, the new institute would increase the quality and regulation of training, proficiency, certification and accreditation. It would develop testing programs to demonstrate the validity, reliability, and error rate of the comparison method. It would establish a better balance of potential errors. There are no human or financial resources to do this now in the forensic disciplines, in federal regulatory agencies, or in federal research agencies.

Our testimony in this document has highlighted the absence of quality controls in the disciplines and the absence of research. Until these quality controls are in place, these disciplines will continue to offer unregulated and uncontrolled evidence to their consumers.

Independence

The importance of severing regulation of the forensic disciplines from the forensic disciplines themselves is the same as for most other programs that serve the public. Whenever regulation is based on principles that sometimes or frequently conflict with self-interest, self-interest trumps what is best for the public at large. When banks are allowed to regulate themselves, self-serving is inevitable. When stock markets are allowed to regulate themselves, self-serving is inevitable. The same with large companies, mortgage lenders, credit card companies, and a host of other entities that serve the public while regulating themselves. Independent regulation increases the effectiveness and quality of product. It also insures that the needs of the consumer come first.

The 100 year history of the forensic disciplines continues to show the inadequacy of their self-regulation in their quality control and research decisions. The forensic disciplines presently lack quality control for personnel, quality control for laboratories, or research support for their methods and procedures. The NAS report attributes these failures to the lack of independence between operations of the forensic disciplines and the quality control of the forensic disciplines.

Design and Regulation of Quality Control Procedures

The NAS report strongly noted the absence of properly designed and consistently administered proficiency tests, certification tests, validated training programs, and the paucity of laboratory accreditation programs and regulation. The principles of quality control, proficiency, certification, training, and accreditation are the same for each forensic discipline. Their design and construction can be combined so that members of each discipline work together with experts in quality control, in training, and testing and assessment. NIFS can assist in the development of cross-disciplinary methods for training, proficiency testing, certification procedures, supervision, and error correction. This strategy is highly cost effective.

Identify Existing Models of Quality Controls and Research

A few states and crime laboratories have developed standardized training curricula with periodic assessment. A few laboratories have put in place rigorous work

flow controls and verification procedures. NIFS does not need to start from scratch. The interaction between examiners and experts in training programs would identify the quality measures now in place. Similarly, basic research has already been performed for DNA. That could serve as a model for the research needed in the other forensic disciplines. NIFS could serve as a center to identify these models.

Identify and Facilitate Research Needs and Funding

A forensic examiner is not trained to design research or to carry it out. Empirical research requires training in research science. Scientists rarely are trained to carry out forensic comparisons. Research on forensic comparisons requires collaboration between forensic examiners working of laboratory settings and research scientists. Little of this work can be performed in university or government settings. This collaboration has not previously occurred except in isolated instances, and the NIFS is needed to bring it about. Part of that brokering includes participation in the review of research designs, reviews of research analyses and interpretations and review of research publications.

A NIFS would help find and develop resources to fund research projects. Part of that funding would be included in the NIFS budget, and part could come from existing sources or outside sources.

Other Benefits of a NIFS

A National Institute for Forensic Sciences would be a forum for exchange of ideas between technicians and researchers, especially at the level of policy making. NIFS would be a forum for exchange between the consumers (police investigators; district attorneys, defense attorneys, criminal court judges), the legal scholars and research scientists, and the forensic examiners in the different disciplines. NIFS could participate with legal scholars and judges to help perfect criteria for admission of forensic evidence in court. NIFS could facilitate development of the interoperability of databases and computer systems within and between the different forensic disciplines. It could help solve the lack of a uniform forensic language to use in court.

In conclusion, as research scientists, ones also trained in one of the forensic disciplines, we urge the Judiciary Committee to recommend passage of legislation to create a National Institute for Forensic Sciences as soon as possible.

Citations

Cole, S. A. (2006). Is Fingerprint identification valid: Rhetorics of reliability in fingerprint proponents' discourse. **Law & Policy, 28,** 109-135.

Fitzpatrick, F. (2008). Whither Accreditation? **Identification News**, vol. 38, #2, April, 2008, pp. 9-10.

Haber, L., & Haber, R.N. (2009). **Challenges to Fingerprints.** Tucson, AZ: Lawyers and Judges Publishing Co.

Meagher, S. (2002). Testimony in U.S. v. Plaza regarding Mr. Plaza motion to exclude the government's latent print evidence. February 24, 2002.

National Academy of Sciences. (2009). **Strengthening Forensic Sciences in the United States: a Path Forward.** Washington, D.C. National Academies Press.

Office of the Inspector General of the United States Department of Justice (S. Fine, Inspector General. (2006**). Review of the FBI's Handling of the Brandon Mayfield Case**. Washington, D.C. US Department of Justice.

US. v. Llera Plaza (I). (2002). 179F Supp 2d 492 (ED Pa, 2002).

CITY OF HOUSTON

Houston Police Department

Bill White, Mayor

1200 Travis Houston, Texas 77002-6000 713/247-1000

CITY COUNCIL MEMBERS: Toni Lawrence Jarvis Johnson Anne Clutterbuck Wanda Adams Michael Sullivan M.J. Khan, P.E. Pam Holm Edward Gonzalez
James Rodriguez Peter Brown Sue Lovell Melissa Noriega Ronald C. Green Jolanda "Jo" Jones CITY CONTROLLER: Annise D. Parker

September 8, 2009

Harold L. Hurtt
Chief of Police

The Honorable Patrick Leahy
Committee on the Judiciary
United States Senate
433 Russell Senate Office Building
Washington, DC 20510

Dear Senator Leahy:

The purpose of this correspondence is to provide you with a historical account of the Houston Police Department Crime Lab, reforms implemented and potential solutions for addressing the challenges in forensics.

Historical Perspective

In November 2002 investigative news reports criticized forensic analysis performed by the DNA Section of the Houston Police Department Crime Lab. As a result of the news reports, management requested an independent audit of the DNA section by the Texas Department of Public Safety. The audit revealed deficiencies that resulted in the suspension of DNA testing.

The Internal Affairs Division was assigned to investigate the employees of the Crime Lab for criminal and administrative violations. The investigations were reviewed by the District Attorney's Office for criminal misconduct. Two Grand Juries reviewed the evidence and no indictments were returned. Thirty investigations were completed resulting in written reprimands up to terminations. Additionally, An Assistant Chief of Police, the Crime Lab Director, and a DNA supervisor resigned or retired in lieu of termination.

In early 2003, three outside DNA labs were employed to conduct DNA re-testing of cases performed by the HPD Crime Lab employees. Additionally, in 2003 the National Forensic Science Technology Center (NFSTC) was hired to assist in the evaluation of various aspects of the Crime Lab's operations including competency testing of employees and temporary management of the Lab. In October 2003 a permanent Crime Lab Director Irma Rios was hired to manage the Crime Lab operation and lead the Crime Lab through the successful completion of

the accreditation process. Effective September 2005 the State of Texas mandated that Crime Labs accredited.
We discovered 280 boxes of crime lab evidence that was improperly labeled and stored. No evidence, to date, has been found related to any active investigation but evidence was discovered that related to 29 capital defendants that created concern.

The evidence has been catalogued and tagged, cases supplemented, and returned to the original investigative units for final review and disposition. For an additional level of oversight the District Attorney's Office and the Texas Rangers were involved during this process.

In September 2004, I sought an independent review of the Crime Lab and Property Room. A Stakeholder committee was formed to select and oversee the progress of an independent investigator. The committee included various community leaders, civil rights advocates, defense attorneys, forensic scientists, and academics. In March 2005 we entered into a contractual agreement with Mr. Bromwich to perform the independent investigation. The entire Bromwich Report can be found at http://www.hpdlabinvestigation.org.

Three main elements were addressed during the investigation and included the following:

- Historical operations of the Crime Lab and Property Room. This included a review of over 3500 cases from individual sections within the Crime Lab prior to accreditation
- Serology incarceration cases. These cases included testing performed during the period of 1980 through 1992.
- Review of current operations. A comprehensive assessment of the current operations of the Crime Lab and Property Room with the purpose of making recommendations to improve the operation.

For transparency quarterly reports were released to the public and posted on a website dedicated to the Independent Investigation. A Final Report was issued June 2007 and a Summary of Recommendations was issued August 2007.

Independent Investigator's Final Report

The final report consisted of a review of approximately 3500 cases and 100 interviews at a cost of $5.3 million. It was important that a full and frank public disclosure about the Crime Lab's past be made in order to build a foundation of trust and credibility with the public. The investigation uncovered that for a 15-year period preceding the DNA/Serology section's closure in December 2002, the following historical problems existed:

- **Lack of Support and Resources for the Crime Lab.** Inadequate resources and attention paid to the Crime Lab by command staff.
- **Ineffective Management within the Crime Lab.** There was a lack of strong and effective leadership and inadequate management of the strong and difficult personalities within the Crime Lab.
- **Lack of adequate Quality Control and Quality Assurance**. Technical reviews were lacking and many of the standard operating procedures, when available, were cobbled

together. There were gaps and failures in quality control and technical reviews of analysts' work, problems with contamination and interpretation of test results in the DNA testing and insufficient and misleading reporting of analysts' results.

Reforms Implemented

Thoroughly understanding the issues that led to the Crime Lab crisis set the stage for local, state and national reforms. The state legislature mandated Accreditation statewide. The deficiencies noted in the independent audits began an urgent effort to overhaul our Crime Lab.

The Crime Lab's testing procedures, practices, policies, equipment, facility and personnel were overhauled. In 2005, the Crime Lab received national accreditation from the American Society of Crime Lab Directors-Laboratory Accreditation Board (ASCLD-LAB) in Controlled Substances, Firearms, Toxicology, Questioned Documents and Biology. In 2006, the Crime Lab received its accreditation in DNA and Trace analysis. The Crime Lab continues to undergo external audits and reviews by outside consultants. New laboratory equipment and technology have been purchased and robots are being evaluated for DNA testing.

Staffing criteria has been upgraded, with an emphasis on experience, certifications and educational credentials. Managers have been hired with experience in laboratory management and forensic science. We have imposed rigorous training requirements, including yearly ethics training. Some of our current staff members have been elected to local and national forensic boards and committees, and some have published in forensic journals.

A comprehensive Quality Assurance Program has been implemented to review operating procedures, competency of employees and provide a "checks and balance" measure in the form of testimony monitoring, proficiency testing, and re-testing of evidence.

The Crime Lab continues to cooperate fully with the Innocence Project by making evidence available for review and testing.

Significant Events

The HPD Crime Lab has come under intense scrutiny following the re-examination of several high-profile cases resulting in the exoneration of individuals.

Factors that contributed to the problems included:

1. Lack of being able to conduct DNA tests because they were not available at the time;
2. Mistakes made by personnel due to lack of training, allocations of resources, quality assurance, and supervisory oversight;
3. An eyewitness misidentifies a suspect. When evidence is available and processed properly, it should eliminate misidentification by eyewitnesses.

Property Room / Operational Efficiency

In 2009 a new 53,000 sq. ft. property room was built at the cost of $73 million. The new facility has state of the art equipment such as bar-coding, moveable shelving, and refrigerated space for storage of biological evidence.

Backlogs and Case Assessment & Interpretation Strategies

Adding more staff is not necessarily the only solution to reducing backlogs and increasing the quality of work performed. A strong long term agenda must be implemented using advancing technologies and case assessment strategies. These strategies begin from the time an officer is called to a scene and include proper collection, preservation, and processing of evidence based.

Many police agencies are submitting significant amounts of evidence to Crime Labs that result in little or no significance to the case resulting in backlogs. A strategy of case assessment should be used to tackle these backlogs. Best evidence and best test should be agreed upon by officers, attorneys, and crime lab staff prior to the processing of evidence. This process enables decisions to be made that will deliver a value for the money and will meet the needs of the end users. This process is used in the United Kingdom and is one that should be explored more diligently in the United States. We can choose to do our work the same way and get the same results or change the way we do business. Advancing technologies such as Laboratory Information Management Systems using bar coding, robotics, automation, and databases are key to streamlining operations and improving the quality of work.

How did we get here?

The question that I hear often is "how did we get here?" Initially, crime labs were run by trained police officers who may have known policing well, but certainly lacked knowledge in advancing technologies surrounding the capture, storage and identification of DNA evidence. The limited scientific knowledge of prosecutors, defense attorneys and judges further compounded the problem of not asking the right questions and not understanding limitations lab results and conclusions drawn by the scientists. In instances where there was scientific fraud or sloppy work, they did not have the knowledge to identify it.

The scientific aspects of ever evolving technology required that trained scientists be brought in to run our labs, scientists with no law enforcement or legal training. A knowledge gap between law enforcement, attorneys, judges and scientists resulted in a significant vulnerability. Crime Labs have been understaffed, underfunded, and worked performed in facilities that have been retrofitted into Crime Labs with inefficient evidence processing layouts.

Professionals involved in the criminal justice system, including the end users, need training to ensure the optimal use of advancing technologies in forensic testing. High standards are necessary to protect both public safety and individual rights. That's why accreditation is so important.

Accreditation requires that labs adhere to industry standards to ensure the quality and integrity of data and the competency of the lab and, more importantly, external audit processes help us identify vulnerabilities and create an opportunity for improvement. We have realized that well-defined and consistent guidelines and standards combined with checks and balances are a must in today's forensic labs.

Conclusion

The Houston Police Department Crime Lab has undergone extensive review from numerous sources and will continue to do so into the future. We have opened ourselves up to everyone and have withheld no information concerning any aspect of our Lab or its operation. Restoring the public's faith in the integrity of the crime lab and the criminal justice system as a whole is a challenge that we are fully committed to accomplishing.

Sincerely,

Harold L. Hurtt
Chief of Police

hlh:hlh

Attachment

Reference material

STAKEHOLDER COMMITTEE MEMBERS

Adrian Garcia
- City Council Member
- Chair of the Public Safety Committee

Fran Gentry
- President of the NAACP

Sylvia Gonzalez
- Director of LULAC

Rusty Hardin
- Local Attorney- Rusty Hardin and Assoc.
- Former Prosecutor for Harris County

Dr. Richard Li
- Asst. Professor- Sam Houston State University Forensic Science Program

Dr. Ashraf Mozayani
- Laboratory Director, Harris County Medical Examiner's Office
- Diplomat Certification- American Board of Forensic Toxicology

Annise Parker
- City Controller, Houston, Texas

Frank Parish
- Attorney, Justice For All- Parents of Murdered Children

Dr. Wayne Riley
- Baylor College of Medicine: VP and Vice Dean for Health Affairs and Government Relations
- Ben Taub Hospital Asst. Chief of Medicine

Dr. Ben Roa
- Baylor College of Medicine: Director DNA Diagnostic Laboratory
- Asst. Professor, Molecular and Human Genetics

Kent W. "Rocky" Robinson
- Local Attorney- Partner: Andrews Kurth
- President of the Houston Bar Association

Dr. Richard Ward
- Dean and Director, Sam Houston State University College of Criminal Justice

Dr. Don Woods
- Dean, Texas Southern University School of Public Affairs

http://judiciary.authoring.senate.gov/hearings/testimony.cfm

United States Senate Committee on the Judiciary

< Return To Hearing

Statement of

The Honorable Patrick Leahy

United States Senator
Vermont
September 9, 2009

Statement Of Senator Patrick Leahy (D-Vt.),
Chairman, Senate Judiciary Committee,
Hearing On "Strengthening Forensic Science In The United States"
September 9, 2009

In March, this Committee began our examination of the serious problems in forensic science that can go to the heart of our criminal justice system. Today, we hear from representatives of the professional communities that must work together to help solve these problems.

Much important work is done through forensics, and those with us today should be proud of their good work. Scientific advancements can help prove guilt and can also exonerate the innocent. We need to do all we can to ensure that forensic science rises to the highest scientific standards and has the maximum possible reliability.

Unfortunately, since the report and testimony from the National Academy of Sciences earlier this year, we have heard even more about the severity of the problems before us. The current issue of The New Yorker includes an article that presents strong evidence that in 2004 the unthinkable may have happened: An innocent man may have been executed for a crime he did not commit, based in large part on forensic testimony and evidence.

Soon this Committee will turn to reauthorizing and strengthening the Innocence Protection Act, which provides important tools to prevent that kind of tragedy. The key point for today's hearing is that the prosecution of Todd Willingham discussed in that New Yorker article rested largely on forensic evidence, in that case burn analysis, that may not have had any scientific basis. Our criminal justice system, particularly in the most serious cases, must rest on facts.

Also this summer, the Supreme Court held in the case of Melendez-Diaz vs. Massachusetts that forensic examiners must present evidence in court and be subject to cross examination, rather than simply submitting reports of their findings. This Supreme Court holding stems from a recognition that forensic findings may not always be as reliable as we would hope, or they might appear.

Unlike the image that so many of us see on television shows like "CSI," forensic scientists too rarely get to review crime scene evidence in sleek, ultra-modern, state-of-the-art laboratories. Ironically, the so-called "CSI effect" may be doing harm by suggesting that forensic sciences are well funded, and that their results are almost always infallible. As it turns out, that is not the reality examined by the National Academy of Sciences.

According to the latest available statistics from the Justice Department, in 2005, the backlog of forensic exams was more than 350,000 nationwide, up 24 percent from just three years earlier. One out of every five labs does not meet the standards for accreditation set by the National Academy of Crime Lab Directors. As the National Academy of Science report makes clear, we cannot allow these nationwide deficiencies in forensic sciences to continue.

It is critically important to our criminal justice system that we have accurate, timely forensic science, so we can find and punish the guilty, and exonerate the innocent. It helps no one if we imprison the wrong person. What helps is when we take perpetrators of serious crimes off the streets. We cannot simply wait for the next scandal to break or for the backlogs to grow worse. We must pay attention now and work together to find solutions. I look forward to working with Senator Sessions, Senator Klobuchar, and the other interested members of this Committee on this priority.

Today we will hear testimony from Dr. Eric Buel, the respected Director of the Vermont Forensic Laboratory. Vermont's lab has done consistently excellent work that has helped to solve many important cases, but Dr. Buel nonetheless recognizes the need for more standards, more research, and more funding. I am also glad to welcome back to the Committee Peter Neufeld, co-director of The Innocence Project, whose work in individual cases and in bringing important changes in the law has been so helpful. I also look forward to the insights of fellow prosecutors and law enforcement officers who are on the front lines.

The report issued by the National Academy of Sciences earlier this year is detailed and far-reaching, and can provide a foundation for building broad consensus for change. At its core, the report calls for mandating national standards for establishing and enforcing "best practices." It points to a need for standards for the certification of individual examiners and for the accreditation of their laboratories. The report also calls for us to invest in the research underlying modern forensic science. I hope we can explore today how best to make those important changes.

In addition, there are areas of significant controversy, including the report's recommendation of another major new government agency and for the total separation of forensics from law enforcement. I hope we will be able to put aside those differences for now in order to focus on the many areas of consensus.

Just as the President now is calling for us to work together toward a reformed health care system rooted in medicine, I hope we can work together toward strengthening our forensic system rooted in science. We need to ensure that forensic science and evidence is a solid foundation for the credibility and integrity we must demand from our criminal justice system.

# # # # #

Testimony of
Barry D. Matson

Committee on Judiciary, United States Senate

September 9, 2009

Mr. Chairman and members of the Committee, I want to thank you for the honor of appearing before you, to discuss the National Academy of Sciences Report, *Strengthening Forensic Sciences in the United States: A Path Forward.* It is especially significant that we appear before you on a subject so vital to the future of law enforcement, prosecution and the administration of justice everywhere.

I am a career prosecutor. My name is Barry Matson. I am the Deputy Director of the Alabama District Attorneys Association and the Chief Prosecutor for the Alabama Computer Forensic Laboratories. Prior to my current position, I was the Chief Deputy District Attorney in Talladega County, Alabama for 16 years. Talladega County is not unlike the vast majority of jurisdictions in America. We were, and are, faced with every manner of drug crime, violent crime, public corruption and gut wrenching homicides. Our trial dockets are growing exponentially. We continually face these challenges with integrity, a strong work ethic, and a deep seeded passion to protect the public and to do justice. Mr. Chairman and members of this committee, we, and no one else, are the only person in the criminal justice system charged with the responsibility of seeking justice. We know, *"A prosecutor is held to a higher standard than that imposed on other attorneys because of the unique function [we] perform in representing the interest, and exercising the sovereign power, of the state . . .* "People v. Hill, 17 Cal 4th 800 (1988).

In my testimony today I will endeavor to give voice to the 'every day' prosecutor struggling with too few resources, expanding case loads as well as agenda driven criminal defense lobbies. We are also dealing with what we call the "CSI" effect, as well as well intended but inexperienced and misguided academicians. We applaud Congress for directing the National Academy of Sciences to undertake the study that led to this report. It is not in spite of the fact we are prosecutors that we welcome a serious critique of the forensic science process, it is because we are prosecutors. But like many endeavors, those with agendas have made an impact not only on this report, but now on courtrooms all over this nation.

The absence of prosecutors on the National Academy of Sciences Committee on Forensic Sciences has not been lost on those of us serving everyday in the trenches of America's courtrooms. The failure of the Committee to seek the consultation of state and local prosecutors in its 'eight' separate meetings is glaring, and overlooks one of the criminal justice systems most vital elements.

Mr. Chairman, you well know the role of the prosecutor in the American system. As far back as 1816 Courts have said that a prosecutor . . . "*is to judge between the people and the government; he [she]is to be the safeguard of the one and the advocate for the rights of the other; he [she] ought not to suffer the innocent to be oppressed or vexatiously harassed, any more than those who deserve prosecution to escape; he[she] is to pursue guilt; he[she] is to protect the innocence; he [she]is the judge of circumstances; and according to their true complexion, to combine the public welfare and the [safety] of the citizens, preserving both' and not impairing either; he [she]is to decline the use of individual passions and individual malevolence, when he [she]cannot use them for the advantage of the public; he[she] is to lay hold of them where public justice, in sound discretion, requires it.*" Fouts v. State, 4 Tenn. 98, 99 (1816).

Even though, as a prosecutor, I am part of the executive branch of government, I stand in the gap *between* the citizen and his or her government. Make no mistake about it; I am, like my colleagues, a tough prosecutor and I vigorously seek justice for the victim and the community. However, that toughness is tempered with honesty, fairness and a simple desire to do what is *right*.

Mr. Chairman, one thing that has been grossly overlooked in all of this process is the fact that prosecutors and forensic science professionals do more to free the innocent and safeguard the liberties of our citizens than any defense *project* or academician will accomplish in a career. Those entities have no burden or have taken no oath to seek the truth. Conversely, they are required to suppress the truth when it serves the best interest and needs of their client.

Have regrettable incidences occurred in the forensic setting? Yes. Is it to the level that some entities and special projects would have us believe? Absolutely not. As long as human beings are involved we will endeavor to do the very best we can, but no system will be perfect. However, the NAS report before you seems to erroneously focus upon perceived biases in the forensic and law enforcement communities. Forensic technicians and scientists are said to be rife with cognitive bias. This report says they demonstrate this bias by ignoring base rate information in seeking to please supervisors, or by basing results on suggested questions or how the data is presented. Some passages suggest that forensic scientists might simply see 'things' that do not exit, and that they skew the outcome of cases by intentionally presenting their findings in an unfair way to produce a particular result. [Page 4-9 and 4-10] If we are to follow this logic, we must ask this question Mr. Chairman. When a fingerprint examiner tells us that a suspect is excluded as the source of the latent print, should we now charge them anyway because the examiners cognitive bias may have affected the

examination? Or when the drug toxicology report tells us the drugs in the possession of the defendant were not controlled, should we assume that they were actually illegal substances and incarcerate the individual? Obviously the answer is a resounding, no. These are silly questions, but they make a point that is overlooked by this report. In other words, this report suggests that the only time forensic sciences is wrong or inaccurate is when the conclusion by the scientist or technician points to the guilt of the accused. If the evidence does not, then everything is okay.

As we speak, in courtrooms in the respective states of all Senators on this Committee, a prosecutor is trying to do the right thing. As a seeker of truth, that prosecutor must be able to take every possible tool into the courtroom. If she does not have the forensic evidence juries have come to expect from a satiation of crime scene television and defense bar demands, she is bludgeoned with pleas of "where are the fingerprints", or "where is the bullet?" If that prosecutor *has* such evidence, and it is relevant and admissible, she must now defend that evidence from the defense lawyers' attacks using this NAS report.

Mr. Chairman, it is vital that you know the negative impact that this report has already had on prosecutors trying to find the truth. In every jurisdiction across this country, former convictions and current prosecutions are being challenged by using the words of the NAS report to attack forensic science evidence. This is true even though the report made efforts to say that *no judgment is made about past convictions and no view is expressed as to whether courts should reassess cases that already have been tried.* But the report went on to say [However] . . . there are serious issues regarding the capacity and quality of the current forensic science system; yet, the courts continue to rely on forensic evidence. . . *The report concludes that every effort must be made to limit the risk of having the reliability of certain forensic science methodologies judicially certified before the techniques have been properly studied and their*

accuracy verified. We ask this committee, how could these words not be used to attack prior and current prosecutions where *any* forensic science discipline has been utilized?

We in the criminal justice arena know that most forensic evidence is rare. None is more rare than fingerprint evidence because they are only 'chance impressions' and the depositing of a latent fingerprint depends on many variables. When we don't have fingerprint evidence, we must constantly counter the defense attack that we *have no* fingerprint evidence. This defense argument of, "if only we had fingerprints" is heard every day. Now, in the rare cases where we do have fingerprint evidence, we are being faced with the NAS report as defense exhibit number (1).

Mr. Chairman, I feel compelled to address another issue raised by this report that touches on an expertise that I possess as a prosecutor, digital evidence. To give this perspective, two years ago the Alabama District Attorneys Association in conjunction with the US Department of Homeland Security, the US Secret Service, the State of Alabama and others, created the National Computer Forensics Institute, (NCFI). This is the first national institution dedicated exclusively to the training of state and local law enforcement, prosecutors and judges in all areas of digital evidence in the criminal justice system. In the very short time we have been operational, we have already trained [at no cost to the student] over 600 law enforcement officers, prosecutors and trial judges from 49 different states and Guam and Puerto Rico. In addition, with the help of Alabama's congressional delegation, we began the only state-wide system of computer forensics labs in the United States, known as the Alabama Computer Forensics Laboratories, (ACFL). I have been the Chief Prosecutor for the ACFL for the past 4 years and we have tried several hundred cases generated from these types of investigations. The NAS report before you includes the process of preserving and extracting

digital evidence under the category of "sciences", when in fact, it is truly more of a methodology employing various computer software.

The report does make several observations regarding the needs of the digital forensic community. The reports says: *Three holdover challenges remain: (1) the digital evidence community does not have an agreed certification program or list of qualifications for digital forensic examiners; (2) some agencies still treat the examination of digital evidence as an investigative rather than a forensic activity; and (3) there is wide variability in and uncertainty about the education, experience, and training of those practicing this discipline.*
I would first make the point that computer forensics or digital forensics is the fastest emerging and one of the most significant tools that law enforcement has in our investigative arsenal. Drug deals are now set up, via text messaging. We are finding web browser searches by murder defendants which demonstrate prior planning of the murder, and how they will kill their victim. We also routinely find emails between bank employees showing their detailed plans to defraud the institution. These are invaluable pieces of evidence to investigators and ultimately to the trier of fact. .

As for the training and certification, the NCFI, is uniquely situated to fulfill the recommendations of the NAS report. The NCFI was conceived, designed, built and functions solely as a training and education facility for digital evidence. I mention this facility to demonstrate that there are institutions available that are already meeting many of the challenges mentioned in the NAS report.

We welcome the recommendations in the NAS report. We believe that some of these will serve to strengthen forensic sciences for years to come. However, we absolutely recognize and vehemently disagree with the portions that are agenda driven attacks upon well founded investigative techniques. These same techniques or sciences are used everyday to find truth in every

type of case. As an investigative tool, every discipline of forensic sciences has not simply led to a conviction, but has delivered the truth. I know this truth, and I sleep very well at night knowing that dedicated prosecutors, forensic technicians and scientists working in independent or law enforcement agencies apply their craft to see that justice is done, the innocent exonerated, and the guilty are held responsible for their crimes.

Thank you for the honor of addressing this committee.

Respectfully Submitted, the 9th day of September, 2009

Barry D. Matson
Deputy Director, Alabama District Attorneys Association, (ADAA)
Chief Prosecutor, Alabama Computer Forensic Laboratories. (ACFL)

The NAS Report on Forensic Science: A Glass Nine-Tenths Full (This Is About the Other Tenth)

D. Michael Risinger*

Some of the participants in this symposium have been involved in a decades-long struggle to get those who control the production and utilization of forensic science expertise to admit the various weaknesses of some of the techniques involved, both in theory and in practice, and to take steps to strengthen the reliability of those techniques and their products.[1] The NAS Committee Report[2] is in some ways the culmination of those efforts, and has made it now untenable to dismiss criticisms as simply the cavils of uninformed academics with nothing better to do.

A couple of years ago when the NAS Committee process got started,[3] if you had offered me this report, and told me that I could take it as it is, or await the results of the committee process, with its hopes for better but risks for worse, I would have grabbed this report in a heartbeat. In this sense the report is a glass nine-tenths full, and is to be celebrated as such. But then there is the other tenth, the tenth that may as an unintended consequence, delay needed reform significantly and unnecessarily. The rest of what I have to say will concentrate on what I

* John J. Gibbons Professor of Law, Seton Hall University School of Law. My thanks to Lesley Chenoweth Risinger for comments both substantive and editorial.

[1] For the story of my own involvement in this effort since the early 1980s (and that of my colleagues Mark Denbeaux and Michael Saks) see D. Michael Risinger, *Goodbye To All That or A Fool's Errand, by One of the Fools: How I Stopped Worrying About Court Responses to Handwriting Identification (and Forensic Science in General) and Learned to Love Misinterpretations of* Kumho Tire v. Carmichael, 43 TULSA L. REV. 447, 447–58 (2007).

[2] The official title of the report is STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD. It is a report of the Committee on Identifying the Needs of the Forensic Science Community, which is identified on the title page as a Committee of the National Research Council (NRC) (a joint endeavor of the National Academy of Sciences (NAS), the National Academy of Engineering (NAE) and the Institute of Medicine. *See id.* at iii. In addition, the title page suggests some formal conjunction with both the NRC Committee on Science, Technology and Law, Policy and Global Affairs, and the NRC Committee on Applied and Theoretical Statistics. However, the body of the Report makes clear that the Committee was the result of a 2006 Congressional charge to the NAS, that the Committee was formed in response to that charge to the NAS, and that the report is the work primarily of that Committee. *Id.* at P-1, S-1. It has become commonplace to refer to the Committee on Identifying the Needs of the Forensic Science Community simply as the "NAS Committee" and the report simply as the "NAS Committee Report, " and that convention has been followed in this paper.

[3] The NAS Committee was formed in the Fall of 2006. NAS Committee Report, *supra* note 2, at S-1.

think the most significant part of this unwise tenth—the decision not to push strongly for the immediate adoption of masking and sequential unmasking protocols.

The NAS Committee's Recommendation 5 reads as follows:

> The National Institute of Forensic Science (NIFS) should encourage research programs on human observer bias and sources of human error in forensic examinations. Such programs might include studies to determine the effects of contextual bias in forensic practice (e.g., studies to determine whether and to what extent the results of forensic analyses are influenced by knowledge regarding the background of the suspect and the investigator's theory of the case). In addition, research on sources of human error should be closely linked with research conducted to quantify and characterize the amount of error. Based on the results of these studies, and in consultation with its advisory board, NIFS should develop standard operating procedures (that will lay the foundation for model protocols) to minimize, to the greatest extent reasonably possible, potential bias and sources of human error in forensic practice. These standard operating procedures should apply to all forensic analyses that may be used in litigation.[4]

The general structure and language of this recommendation reminds me of what Sir Humphrey Appleby of the classic BBC comedy series "Yes, Minister" used to tell the minister for whom he worked when Sir Humphrey wanted to frustrate the minister's policy proposals: "Yes, Minister, that might be accomplished, in the fullness of time, at the appropriate juncture, after due consideration, taking all things into consideration." I can summarize Recommendation 5 pretty succinctly: "More research is needed. Don't do anything until then." My friend Neil Cohen (himself a graduate of MIT) is fond of saying that many people in the sciences are biased in favor of the answer "More research is needed."[5] Beyond the resulting grant proposals, there are often defensible reasons for such a stance. In basic research situations, where no decisions concerning immediate actions affecting other people directly are involved, this approach manifests a commendable caution. But in the case of masking protocols in forensic science practice, this approach is unwise, for a number of reasons.

The first reason this "await more research" approach is unwise is that the general empirical record is already exceptionally strong and clear in regard to the likely effects of domain-irrelevant information whenever humans are used as evaluators or interpreters, which is the situation that characterizes much of forensic science, and particularly its most troublesome parts. These likely effects are erroneous results, and often erroneous results that are difficult to detect.

Bluntly put, any information not necessary to the exercise of one's expertise will distort results. And the more such domain-irrelevant information engages emotions and desires, the

---

[4] NAS Committee Report, *supra* note 2, at S-18.

[5] For a more elaborate exposition relative to this point, see Neil B. Cohen, *The Gatekeeping Role in Civil Litigation and the Abdication of Legal Values in Favor of Scientific Values*, 33 SETON HALL L. REV. 943, 949–54 (2003).

stronger the distortion will be. These are among the best established and supported general propositions of modern cognitive psychology,[6] and they have given rise to a great improvement in the methodology of research and application in much of science.[7] Their methodological implications can be generalized into what I like to call Rosenthal's Rule: any process using a human as a perceptor, rater, or interpreter should be "as blind as possible for as long as possible."[8]

Think of domain-irrelevant information as an infectious agent, and the increasing impact of such factors as the desire to be useful in crime solution, authority-subordinate relationships, law enforcement team identification, and the seriousness and horror of an individual crime as factors fostering greater virulence for irrelevant information infection.

When the microbial theory of infection was first developed in the mid-19th century by Pasteur, Lister, Koch and others, Lister, a surgeon, strongly advocated the use of disinfecting agents during surgery.[9] Many of the surgeons of the day, not surprisingly, resisted.[10] They were successful in most of the procedures they undertook, and they were respected for it. It took quite a number of years for the transition to become general. Those surgeons were good people, who wanted to help others, but they were proud of the way they already did things, which delayed necessary change.[11] Many in the forensic science community today are in the same position. But necessary improvements in practice should not be delayed to accommodate them. If the

---

[6] The relevant empirical literature is vast. The state of the relevant literature as of 2002 is summarized in D. Michael Risinger, Michael J. Saks, William C. Thompson and Robert Rosenthal, *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 CAL. L. REV. 1, 6–27 (2002). More recent literature includes, *e.g.*, Karl Ask and Par Anders Granhag, *Motivational Sources of Confirmation Bias in Criminal Investigations: The Need for Cognitive Closure*, 2 J. INVESTIGATIVE PSYCH. AND OFFENDER PROFILING 43 (2005), Emily Balcetis and David Dunning, *See What You Want to See: Motivational Influences on Visual Perception*, 91 J. PERSONALITY AND SOC. PSYCH. 612 (2006), Li Zhaoping and Nathalie Guyader, *Interference with Bottom-up Feature Detection by Higher-level Object Recognition*, 17 CURRENT BIOLOGY 26 (2007) and Emily Balcetis and Rick Dale, *Conceptual Set as a Top-down Constraint on Visual Object Identification*, 36 PERCEPTION 581 (2008).

[7] Risinger et al., *supra* note 6, at 47.

[8] Robert Rosenthal, *How Often Are Our Numbers Wrong?* 33 AM. PSYCHOLOGIST 1005, 1007.

[9] *See* Franklin C. Clark, *A Brief History of Antiseptic Surgery*, 5 MED. LIBRARY AND HISTORICAL J. 145, 166–69 (1907).

[10] "Despite Lister's success, opposition to antiseptic surgery throughout the 1870s and 80s was widespread. Surgeons (and obstetricians) of the day could not believe that anything as small as a bacterium could cause such disaster. Acceptance would mean that surgeons, with their contaminated hands and instruments, had been the cause of endless suffering and death. Opponents argued that antiseptic surgery did not always prevent infection and that traditional techniques often worked, with no infection." Richard H. Kessin and Kenneth A. Forde, *How Antiseptic Surgery Arrived in America*, 28 P&S, Winter 2008, http://www.cumc.columbia.edu/news/journal/journal-o/winter_2008/antiseptic.html.

[11] *Id.*

intendment of Recommendation 5 was to delay the implementation of masking protocols until research is conducted that will convince the current generation of forensic practitioners of the necessity of such protocols, it is a doomed hope, because no research results are likely to convince the majority of them.

Which brings us to the second reason why "awaiting more research" is an unwise course in regard to the adoption of masking protocols in forensic science practice. Despite claims by many forensic practitioners that their training gives them immunity from the biasing effects of domain-irrelevant information, there is good evidence that they are no more successful in guarding against such distortions by willing them away more than any other group ever studied. In fact, quite the opposite is likely to be the case, given the institutional context of forensic practice. Indeed, there are a large number of authenticated anecdotes collected by myself and my co-authors indicating the peculiar vulnerability of forensic practice in this regard.[12] Perhaps the most notorious specific example is the Brandon Mayfield case.

After the Madrid train bombing in March of 2002, the Spanish authorities lifted a latent print from a plastic bag associated with the bomb. It was, I believe all agree, a very difficult, smudged and "partial" partial print. A hard job. The latent was submitted to Interpol by the Spanish National Police, and by Interpol to the FBI Latent Print Unit for investigation.[13] An IAFIS search threw up twenty rank-ordered candidates from its criminal database.[14] The fourth ranked set of prints belonged to Brandon Mayfield,[15] who just happened to be a convert to Islam, associated with a mosque in a suburb of Portland, Oregon where some members of a group of convicted Islamic terrorists (the so-called Portland Seven) had once worshipped, and who had actually been the attorney for one of the Portland Seven in a child custody matter that arose as a

[12] See Risinger et al. supra note 6 at 27-42.

[13] U.S. Dep't of Justice Office of the Inspector General, A REVIEW OF THE FBI'S HANDLING OF THE BRANDON MAYFIELD CASE (2006) (hereinafter DOJ IG's Report), 29–30.

[14] The Integrated Automated Fingerprint Identification System (IAFIS) is the FBI's computerized fingerprint search system. No claim is made that it makes "identifications" by itself, but merely that it identifies and sorts out prints with sufficient similarity to a latent print to be considered proper candidates for further analysis. The system rank orders the candidate prints it selects, and can be set to return varying numbers of candidate prints for further analysis. In the Mayfield case, forty to fifty total prints were returned in separated sets of ten to twenty from each of three data bases, one from non-criminal print sources, one from "suspected terrorist" print sources, and one from criminal print sources. The first two candidate sets were examined and the prints in them eliminated. In the twenty-member set generated from criminal sources, Mayfield's were fourth, but they were the prints found to match by the initial FBI examiner. That examination was then confirmed through two levels of non-blind confirmation examination. *See id.* at 30–34. It should be noted that IAFIS searches generate natural evidence lineups as a result of a trawl through the database looking for prints that match the criteria programmed in from the latent print under examination. This potentially creates a whole constellation of problems rarely seen when comparisons are undertaken as part of an ordinary criminal investigation. *See* Itiel E. Dror and Jennifer L. Mnookin, *The Use of Technology in Human Expert Domains: Challenges and Risks Arising from the Use of Automated Fingerprint Identification Systems in Forensics* (2009) (Manuscript under review by the journal LAW, PROBABILITY AND RISK).

[15] Mayfield's prints were in the criminal database as the result of a 1985 arrest for burglary of an automobile when he was 19, a charge later dismissed. DOJ IG's Report, *supra* note 13, at 31.

result of his arrest.[16] The Madrid latent print was attributed to Mayfield, which turned out to be wrong. The FBI examiners involved asserted that none of this information about Mayfield was known to them at the point of original attribution. The Department of Justice Inspector General accepted this.[17] Others are perhaps more skeptical of this rather large coincidence.[18]

---

[16] There has been a fair amount of misinformation in various places in the press and on the web concerning Mayfield, Mayfield's mosque, and Mayfield's relationship to the "Portland Seven." A good source of accurate information about the latter is Mitchell D. Silber and Arvin Bhatt, RADICALIZATION IN THE WEST: THE HOMEGROWN THREAT, a report put out by the New York City Police Department and available at http://www.hsrgroup.org/images/stories/Documents/NYPD_Report-Radicalization_in_the_West.pdf. After the death of his father in 2000, "Mike" Hawash, a not very devout member of the suburban Bilal Mosque of Palestinian descent (the same mosque where Mayfield also worshipped), turned to orthodox Islam. *Id.* at 59. He now insisted on being called "Maher" Hawash, and relatively rapidly fell under the influence of one Habis Abdulla Al Saoub, a former Soviet-era member of the Afghani mujahedeen who was preaching jihad. Hawash left the Bilal Mosque (a rather liberal mosque—see the description by a student researcher at http://pluralism.org/research/profiles/display.php?profile=73555) and began attending the Masjid as-Saber, mosque, known for its more fundamentalist "Salafi" views. It was from this mosque (which Mayfield was never associated with) that al Saloub rounded up six others to go to Afghanistan to fight the American invaders. Interestingly, of the seven, five were African Americans. (It should be noted that two of these, the brothers Muhammad Bilal and Ahmad Bilal, had also attended the Bilal Mosque at some point.) Only al Saloub and Hawash were of Middle Eastern descent. Silber and Bhatt, *supra*, at 61, 63. The seven attempted to enter Afghanistan through China in 2001, but were stopped by Chinese authorities. Six of the seven returned to the United States, where they were ultimately charged with and convicted of various charges. Al Saoub was killed by Pakistani forces in 2003.

In 1986, at the age of 20, Mayfield married an Egyptian woman whom he had met on a blind date, and Mayfield then converted to Islam. He was an enlisted man in the Army at the time. He subsequently went to college and, through ROTC, became an officer. After two years of active duty as an officer, he suffered a shoulder injury and was medically discharged in 1994. He subsequently went to law school and became a member of the Oregon bar in 2000, where he started a practice concentrating on emigration and other civil law issues chiefly among the Muslim population. Mayfield's only connections to the Portland Seven seem to be that his family attended the Bilal Mosque, and that after the arrest of Jeffrey Leon Battle, another of the Portland Seven, in October of 2002, Mayfield represented Battle in a child custody dispute precipitated by the arrest. *See generally* affidavit of FBI Special Agent Richard K. Werder, in support of the material witness warrant pursuant to which Mayfield was arrested, available at http://www.bordc.org/threats/court/mayfieldmww.pdf; and the "Brandon Mayfield" entry in Wikipedia, http://en.wikipedia.org/wiki/Brandon_Mayfield.

[17] DOJ IG's report, *supra* note 13, at 11.

[18] Mayfield's suit against the government alleges that the information was known at the point of initial misidentification. *See Mayfield v. United States,* 504 F. Supp. 2d. 1023, 1027 (2007). A person could be forgiven for substantial skepticism concerning the accuracy of the Inspector General's conclusions. There is no doubt that the initial examiners who were called in on a Sunday for an emergency examination of these prints knew in general what the case in front of them was. See DOJ IG's report, *supra* note 13, at 30. It is also clear that the FBI maintained at least some electronically searchable database in which Mayfield's name was associated with the Portland Seven. This is how the FBI analyst identified only as the CONUS 4 analyst discovered these connections three days after the identification was declared by Latent Print Unit. *See id.* at 35. So the information was at least potentially available to the Latent Print Unit analysts, but they all denied having access to it. The DOJ Inspector General accepted this. It would not be the first time that an Inspector General's report went only as far as it was compelled by overwhelming circumstances to go. *See, e.g.*, the IG's refusal to find willful falsity in the face of

Nevertheless, whatever the truth of that proposition, a special international review committee led by Robert Stacey, who was then chief of the FBI laboratory's quality assurance and training unit (and who addressed the NAS Committee on behalf of the American Society of Crime Laboratory Directors' Laboratory Accreditation Board) concluded:

> [t]he power of the [computer-aided selection of candidate prints], coupled with the inherent pressure of working on an extremely high profile case, was thought to have influenced the examiner's initial judgment and subsequent examination. This influence was recognized as confirmation bias (or context effect) and describes the mind-set in which the expectations with which people approach a task of observation will affect their perceptions and interpretations of what they observe.[19]

Further investigation by the Inspector General of the Department of Justice concluded that learning that the person they initially identified was a convert to Islam with the other characteristics described above caused the FBI examiners to be unwilling to reconsider their judgments when Spanish police disagreed with the FBI.[20]

A third reason it is unwise to "await more research" is that, beyond anecdote, there is already a fairly robust record of formal testing of such matters in the context of forensic practice, which uniformly tracks the results that would be expected from the large body of general research. To date there have been four published studies based on experiments involving visual hair comparison, handwriting identification and fingerprint identification. All were well designed, and all yielded the results one would have predicted from the general theory, and the vast research upon which it is based.

The first study was conducted by Dr. Larry S. Miller of East Tennessee State University in 1984.[21] Twelve trained document examiners were divided into two groups of six.[22] Each

---

compelling evidence to the contrary in the investigation of the Explosives Unit of the FBI Lab. *See* Office of the Inspector General, U.S. Department of Justice, The FBI Laboratory: *An Investigation Into Laboratory Practices and Alleged Misconduct in Explosives-Related and Other Cases* (1997) (U.S. Doc. J. 1.14/2:L 11/2), available at www.usdoj.gov/oig/fbilab1/fbil1toc.htm.

[19] Robert B. Stacey, *Report on the Erroneous Fingerprint Individualization in the Madrid Train Bombing Case*, 54 J. FORENSIC IDENTIFICATION 706 (2004).

[20] DOJ IG's report, *supra* note 13, at 12.

[21] Larry S. Miller, *Bias Among Forensic Document Examiners: A Need for Procedural Change*, 12 J. POLICE SCI. AND ADMIN. 407 (1984).

[22] *Id.* at 409–10. The details given there were graciously supplemented by Dr. Miller in a series of e-mails and telephone calls in February 2008, during which period he checked his original test materials and documentation and answered various questions put to him. My thanks to Dr. Miller for his generous cooperation. A more extensive description of the study design is given in D. Michael Risinger, *Appendix: Cases Involving the Reliability of Handwriting Identification Expertise Since the Decision in* Daubert, 43 TULSA L. REV. 477, 481–82 (2008).

group was given materials from a check forgery case in which ground truth was known by reference to other evidence. One group was given the "request" writing of only one person, which resembled the writing on the check pictorially. They were further told that there were two witnesses who had watched the checks signed, and had identified that suspect. The second group was given the same request writing, plus request writing from two other persons, and told nothing else. All six of the examiners in group 2 eliminated all three suspects as the writer of the checks. Four examiners in group 1 concluded that the "suspect" had written the questioned signatures on the checks. The fifth examiner reported an "inconclusive" but said that the request exemplars bore indications of disguise.

The second study was also conducted by Dr. Miller.[23] Fifty-six hair identification tests were prepared. Half the tests reflected the usual practice of presenting a known hair from a "suspect" and a single "questioned" hair from the crime scene, and asking if the two "matched" (a "show-up" condition). The other half of the tests presented five "known" hairs from "suspects" to be compared to the "questioned" hair from the crime scene, and asked if the hair from the scene matched any of the suspects (a "line-up" condition). In every test, the "crime scene" hair did not come from any of the "suspects," though the hairs of all the "suspects" were selected to present characteristics not obviously dissimilar to the crime scene hair. Fourteen qualified examiners[24] were given four tests each, two from each set of test designs. Erroneous declarations of "match" were found in 3.8% of the responses to the "line-up" condition, but in 30.4% of the responses to the "show-up" condition.

In 2005, Dr. Itiel Dror and colleagues published the first of his studies that have demonstrated the vulnerability of even the most hallowed of traditional forensic identification techniques, fingerprint comparison, to substantial distortion by exposure to domain-irrelevant context information. In this first study,[25] five experienced fingerprint examiners were asked by a colleague to evaluate the Mayfield prints after it was known that the FBI had misidentified them. In reality, they were given prints they themselves had previously found to match in actual cases. Four of the five came now came to a different result. One now said that the latent was too small and smudged to reach a conclusion. And three now concluded that the latent didn't match the known (when they had come to the opposite conclusion in the real case).

---

[23] Larry S. Miller, *Procedural Bias in Forensic Examinations of Human Hair* 11 LAW & HUMAN BEHAV. 157 (1987).

[24] Once again, Dr. Miller graciously supplemented the description of the test conditions in a series of telephone calls and e-mails in mid-June and early July of 2009. Although all the test subjects were full or part-time students at East Tennessee State University where Dr. Miller teaches, some already worked in law enforcement, and all had completed a course in visual hair comparison under instructors who regularly gave such training professionally, and whose students regularly went on to testify in court on the basis of that training. Although at this remove in time Dr. Miller is unsure whether or not some of the test subjects had already given visual hair comparison testimony in court, in the normal course all would have been testifying to their results in court within a short period of time.

[25] Itiel E. Dror, David Charlton and Ailsa E. Peron, *Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications*, 156 FORENSIC SCI. INT'L 74 (2005).

One response to this study might be that it involved only a small number of fingerprint examiners, and that the malleator[26] was just too unusual to establish much about effects under more normal conditions. Anticipating such objections, Professor Dror undertook a replication using more normal context cueing.

In this study,[27] six experienced fingerprint examiners were given eight sets of two prints each by their supervisor. All of the print pairs given each examiner were from previous cases where that examiner had declared that there was a sufficient basis to declare a match (four each) or an exclusion (four each). In addition, each of these cases had been rated as to difficulty by the examiner when originally performing the comparison. In four of the test cases presented (two of previous "match" [one hard, one easy] and two of previous "exclusion" [one hard, one easy], no extraneous context information was provided, merely a request for comparison. In the other four cases (similarly distributed), not uncommon context information was given ("suspect has confessed, etc."). The test thus resulted in 48 decisions (6 examiners x 8 comparisons each). Of those 48 decisions, 6 were inconsistent with the previously rendered decision in the actual case (12.5%). Two of the six examiners gave results completely consistent with their previous decisions. The other four did not. Three of the four remaining examiners changed one decision each, and the other examiner changed three. Four of the changes were in tests where context information was supplied, and two were in cases where no context information was supplied Five of the switches were in cases rated as difficult, but the one switch in an easy case (from match to exclusion) was in a case containing context information suggesting exclusion.

Finally, there is the study reported by Langenburg, Champod and Wertheim in the May 2009 issue of the Journal of Forensic Sciences.[28] This study arguably provides some support for the basic proposition that expectancy-inducing information can bias the results of forensic science examinations. Perhaps more importantly, however, the ambiguity of its results shows how the current environment of awareness in the forensic science community can make research extremely difficult to design, conduct and interpret. And this makes attaining the required

---

[26] "Malleator" is a frank neologism. There is no handy word for a stimulus that induces observer bias. However, in eyewitness research, there is a practice of referring to the effects of stimuli that raise the confidence of witnesses in their eyewitness identifications (independent of their actual perception and memory) as "confidence malleation," apparently a backformation from the adjective "malleable" (a term derived from the Latin word "malleus," meaning hammer.) *See, e.g.*, Michael R. Leippe and Donna Eisenstadt, *Social Influences on Eyewitness Confidence*, in R.M. ARKIN, K. C. OLESON AND P. J. CARROLL, EDS, THE UNCERTAIN SELF: A HANDBOOK OF PERSPECTIVES FROM SOCIAL AND PERSONALITY PSYCHOLOGY (forthcoming, 2009). The noun form "malleator" fills the need for a term referring to such a stimulus.

[27] Itiel Dror & David Charlton, *Why Experts Make Errors,* 56 J. FORENSIC IDENTIFICATION 600 (2006). Readers wishing to pursue the implications of this research further are directed to Itiel E. Dror and Robert Rosenthal, *Meta-analytically Quantifying the Reliability and Biasability of Forensic Experts,* 53 J. FORENSIC SCI. 4 (2008) and Itiel E. Dror and Peter Fraser-Mackenzie, *Cognitive Biases in Human Perception, Judgment and Decision Making: Bridging Theory and the Real World* in D. KIM ROSSMO, ED., CRIMINAL INVESTIGATIVE FAILURES (2009).

[28] Glenn Langenburg, Christophe Champod, and Pat Wertheim, *Testing for Potential Contextual Bias Effects During the Verification Stage of the ACE-V Methodology when Conducting Fingerprint Comparisons*, 54 J. FORENSIC SCI. 571 (2009).

research record envisioned by the proponents of waiting for more research before adopting masking protocols (whatever this target research record is) even more unlikely in anything like a foreseeable future.

At the 94th International Association for Identification Conference held in Boston (2006) the experimenters (all well-known fingerprint experts) asked for volunteers to participate in a study on "variations in examiner opinions." Forty-three fingerprint practitioners volunteered. These 43 were divided randomly into three groups, a "high bias" group, a "low bias" group, and a "control" group. The subjects were told nothing about the nature of their own group, or of the other groups. The test materials consisted of a set of six side-by-side comparisons of a rolled print and a "latent" print (fingermark), which had been classified by the experimenters as presenting easy, medium, and difficult tasks (one each for "same source" pairs and one each for "different source" pairs). The participants in all groups were asked to provide opinions about whether the latent came from the same source as the rolled print, in the following terms: "individualization" (the two prints came from the same source to the exclusion of all others), "exclusion" (the images could not have come from the same source finger) and "inconclusive" (all other circumstances). All were provided with the basic tools currently used for analysis of fingerprints represented by digital images (which is neither uncommon nor unacceptable). However, beyond this, the three groups were given different instructions.

The control group was given no context information, and simply asked to give conclusions and fill out a worksheet based on the so-called ACE-V methodology.[29] The low bias group was given a previously filled out ACE-V worksheet. They were told that these were the opinions of a latent print examiner trained to competency, and in providing their own evaluations were required to say whether or not they agreed with those of the previous examiner. Four of those bias prompts were accurate, one suggested that the difficult comparison that showed prints from different sources were in fact from the same source, and one suggested that exclusion of medium difficulty should be classed as "inconclusive." The high bias group got the same worksheets and instructions as the low bias group, but in addition they were given a live presentation by a renowned expert explaining and defending the conclusions on the worksheets (both the four accurate and the two inaccurate prompts).[30]

The results certainly seem to show that something influenced the two bias-state groups responses. Those 28 subjects gave 30 inconclusive results, as opposed to a total of 5 for the 15 unbiased controls (more than three times as many per capita). However, by adopting the "inconclusive" response, the bias-state group avoided any affirmative errors, while the control group committed four affirmative errors (giving definitive conclusions inconsistent with ground truth). But the reason for these results is supremely unclear, for the simple reason that a high percentage of the subjects in the "bias-state" groups figured out the point of the experiment.[31]

[29] The acronym stands for "assess," "compare" "evaluate" and then "verify." *Id.* at 571. The first three steps are undertaken by the initial examiner. The latter "verification" step is done by another examiner. As the authors state, their study "focuses on the potential bias during the verification stage." *Id.*

[30] All details of the design of the study given in this paragraph and the preceding paragraph are to be found in Langenburg et al., *supra* note 28, at 572–73.

[31] *Id.* at 573.

Thus, their flight to the "inconclusive" option whenever anything appeared the least bit unclear to them may not have been so much a result of the biasing stimulus, but rather the result of a desire not to fall prey to the obvious attempt to test the results of a biasing stimulus in the wake of the Mayfield debacle. So the meaning of the data on biasing generated by this study must remain forever unclear.[32]

So why I have I spent so much time on this study? Because it demonstrates the fourth reason not to "await more research": the extreme difficulty of performing research on the vulnerability of forensic science practice to bias in the future. This was not a particularly badly designed study. But it illustrates that, even when one can obtain co-operation of forensic scientists in undertaking such research, given the understandable suspicions of all forensic practitioners who might take part in such a study, that the effects of biasing stimuli are part of the study, the results must necessarily be compromised by this variable, unless the study is administered as part of normal casework, which can only be done with the cooperation of laboratory administrators who have little incentive to co-operate in such research. So "await more research" may actually equate with "never."[33]

---

[32] The authors forthrightly recognize the limitations of the study under the circumstances, *id.* at 573, 580-585, but offer interpretations of its results nonetheless, accounting for the much of the resulting data under an assumption that increased "alertness" in the bias groups guarded against error. Let us simply say that this account is not altogether convincing. It should be noted, incidentally, that the authors use the phrase "blind testing" throughout to mean only "blind verification" in the two-stage ACE-V process, and not anything broader. It is easy to misinterpret some of their (very weakly warranted) conclusions and recommendations if this is not kept clearly in mind.

It is also appropriate to note here that the study also gave the test exercises to parallel groups of "novices," who were not novices, exactly, but undergraduates with an interest in forensic science who had been given a very short course in fingerprint comparison. The experts did impressively outperform the "novices," and the novices were much more vulnerable to errors apparently induced by the biasing prompts (almost certainly because of less intense suspicion of the test objective in the light of the Mayfield case). In a sense it is these data that are most interesting, and provide empirical reason to believe that there is in fact a robust expertise at work, even if we do not have a good theoretical account of its underlying taxonomic and statistical bases. This is the "black box" approach to verification of expertise. *See* D. Michael Risinger with Michael J. Saks, *Science and Nonscience in the Courtroom:* Daubert *Meets Handwriting Identification Expertise*, 82 IOWA L. REV. 21, 40–41; Jennifer L. Mnookin, *Of Black Boxes, Instruments, and Experts: Testing the Validity of Forensic Science*, 2008 EPISTEME 343 (2008). However, we must not overlook that hidden among the data is the following fact: for the control group, that is, the fingerprint experts who performed their evaluations as they would if they were the initial examiner working a case, unaffected by whatever odd and imperfectly accounted-for variables affected the "bias-state" groups and set them to fly to "inconclusive" responses, there was a 20% error rate for one difficult test (No. 4, the difficult "same source" exercise, where three of the fifteen examiners made an erroneous exclusion), which gave an overall error rate for difficult tasks of 10%, and an overall error rate for all tasks (90 decisions [15 x 6 decisions each], four errors) of 5.5%.

[33] Perhaps this is the appropriate place to note the existence of Lisa J. Hall & Emma Player, *Will the Introduction of an Emotional Context Affect Fingerprint Analysis and Decision-making?* 181 FORENSIC SCI. INT'L 36 (2008). This "study" by two fingerprint examiners from the London Metropolitan Police and the Surrey Police (UK) claims to be something of a replication of Dror, Charleton & Peron, *supra* note 25, using less dramatic malleators, and arriving at a different conclusion as to effect. (The existence of a proper replication, Dror & Charlton, *supra* note 27 and accompanying text, goes unaccountably unnoted). However, the Hall & Player study design is ridiculous, in that all

Finally, assuming such research can be done (and as we have seen, this is a big assumption), awaiting more research might make sense if it were cost free. But we should not await such research before adopting masking protocols, given the costs and benefits of such adoption. Masking protocols eliminate errors while being cost-free when it comes to the loss of defensible in formation (and they are not monetarily very expensive to initiate either). Let me expand a bit on the first point. In other areas, such as eyewitness identification line-up design, there is an ever-present worry that any proposed reform procedure will merely change decision thresholds, thereby merely trading one kind of error (false identifications) for another (reliable identifications lost). Whatever the merits and demerits of such arguments, there is no rational argument that can establish a way in which the criminal justice system loses any relevant, reliable, or otherwise defensible information by masking out domain-irrelevant information.

This is because the claim being made for the informational result of the process in question (whether it is forensic science or eyewitness identification) is that the result is derived from the special knowledge of the witness acting upon the raw data stimulus (bitemark, fingerprint, human appearance). To the extent that the results differ because of the impact of extraneous information, what is claimed for the information is no longer true. Think of a bitemark expert who always insists on knowing the results of DNA testing on saliva from the bite before giving a conclusion concerning whether the suspect's teeth match. The bitemark expert's results would always then match the DNA results. The bitemark examiner might be said to be virtually always right, but not as the result of any claimed bitemark expertise. Results are *never* made epistemically better, and are often made worse, by such domain-irrelevant information.

Of course, to lay the foundation for proper control of such distorting observer effects, one has to know what information is pertinent to the exercise of a particular claim of expertise, and what information forms no part of that expert claim. Failure to observe this boundary was one of the main points of criticism in the DOJ Inspector General's assessment of the problems with the product of the FBI Lab explosives unit in the 1990's. But to accomplish this, what is needed is not more research, but a simple analytic reflection on what kinds of information are clearly not called for by virtue of the claims of the area, and which are relevant, under what conditions, and in which order. The last is necessary because information necessary to one part of a process can

---

of the 70 examiners tested knew both that they were taking a test, and (in that condition) knew that the nasty context information they were presented with was there in order to see if their judgment was affected by it. They knew, therefore, that the context information was fiction. It is hardly surprising that under these test conditions, no effect was found. See the response by Dr. Dror, ____Forensic Science International____ (forthcoming). This may be the harbinger of a wave of such faux-research that may be precipitated by the NAS Committee Report, aimed at creating the appearance of a research record primarily to be used in publicity, and in court. Such problematical results-driven research is hardly unprecedented. See D. Michael Risinger and Michael J. Saks, *Rationality, Research and Leviathan: Law Enforcement-Sponsored Research and the Criminal Process*, 2003 MICH. ST. L. REV. 1023, 1036–50. See also the sad saga of the Mecklenberg Report, well described in Keith A. Findley, *Innocents at Risk: Adversary Imbalance, Forensic Science and the Search for Truth*, 38 SETON HALL L. REV. 893, 960–64 (2008). So the irony is that properly designed research on observer effects in forensic science practice is now almost impossible to do effectively, but faux-research may become more common.

be unnecessary and distorting if seen at an earlier part of the process, before initial judgments or characterizations for which it is unnecessary are made.

What such an approach would look like is well-illustrated by a recent letter commentary in the Journal of Forensic Sciences authored by a group (of which I was a very small part) led by Dan Krane, a forensic DNA expert from Wright State University in Ohio.[34] This outlines a process of "sequential unmasking" to deal with such problems in characterizing DNA profiles in mixed samples, and in forensic science generally. The strength of the information flow structure outlined here is that it maintains an avenue of consultation with case detectives through a responsible intermediary, and provides all necessary information that the analyst needs in the least distorting order. If DNA people can make progress on this protean problem without waiting for more research, so can others. As was said in a follow-up to a response to the original commentary[35] (which response also called for awaiting "more research"[36]), "We agree that there is a need for empirical research on the extent to which (and the circumstances under which) observer effects can influence the interpretation of DNA results. We also think it would be foolish to assume, in the absence of such research, that observer effects are not a problem in DNA interpretation. Observer effects are a basic phenomenon of human psychology. It is time for forensic scientists to join the rest of the scientific community in recognizing this problem and in taking obvious, common-sense steps to deal with it, such as the sequential unmasking procedure we have proposed."[37]

This need not and should not await further research, and I believe that the NAS Committee Report has done something of a disservice in suggesting otherwise.

---

[34] Dan E. Krane, Simon Ford, Jason R. Gilder, Keith Inman, Allan Jamieson, Roger Koppl, Irving R. Kornfeld, D. Michael Risinger, Norah Rudin, Marc Scott Taylor, and William C. Thompson, *Sequential Unmasking: A Means of Minimizing Observer Effects in Forensic DNA Interpretation*, 53 J. FORENSIC SCI. 1006 (2008).

[35] Krane et al., *Author's Response*, 54 J. FORENSIC SCI. 501 (2009).

[36] Jeffrey D. Wells, *Commentary on Krane et al.*, 54 J. FORENSIC SCI. 500 (2009).

[37] Krane et. al., *supra* note 35 at 501.

Written Statement of
THE NATIONAL ASSOCIATION OF CRIMINAL DEFENSE LAWYERS

before the
Senate Committee on the Judiciary

Re: "Strengthening Forensic Science in the United States"
September 9, 2009

Who we are:

The National Association of Criminal Defense Lawyers (NACDL), a professional bar association founded in 1958, is the preeminent organization in the United States advancing the mission of the criminal defense bar and criminal justice reform. NACDL's direct membership and network of more than 90 local, state and international affiliates comprise tens of thousands of practicing criminal defense lawyers, public defenders, active-duty U.S. military defense counsel, law faculty, and judges. NACDL embraces a public service agenda, with an institutional mission to ensure due process, safeguard fundamental constitutional principles, and advocate for rational and humane criminal justice policies.

How we use science:

At the core of NACDL objectives is the protection of innocent people from wrongful accusation and conviction, and the guarantee to all individuals accused of crimes fair trials based on reliable evidence. The reliance by criminal defense attorneys on trustworthy scientific evidence is a very important fact that is often overlooked in discussions about the forensic science community. Criminal defense attorneys – and more directly, the accused who they represent – are stakeholders in the system who depend on scientific evidence as an objective, valid, and reliable means for determining the truth, including the jury deciding whether to convict an accused. Scientific evidence is not used solely by law enforcement. Scientific evidence is used by the defense in post-conviction actual innocence proceedings, and even more frequently, in criminal trials. The Innocence Project has used DNA evidence to exonerate hundreds of factually innocent people. NACDL members have handled hundreds of thousands of criminal trials in which evidence from the whole spectrum of forensic science disciplines was

involved. Through investigation and at trial, the defense uses scientific evidence to exonerate the wrongfully accused, to demonstrate the deficiencies of law enforcement investigations, and to ensure that no person is convicted on unreliable evidence in any form.

NACDL has grown increasingly concerned about the integrity of the forensic science system in the United States. For this reason, NACDL welcomed the work and conclusions of the National Academy of Sciences as reported in *Strengthening Forensic Science in the United States: A Path Forward*[1] (NAS Report). After its long and careful review, the NAS Committee provided thirteen "inexorably interconnected" recommendations. Congress should consider each of these recommendations with the same degree of seriousness of purpose that led to each recommendation and should be mindful of their inter-relationship. *Strengthening Forensic Science in the United States* provides our Nation's leadership with the essential framework necessary for the forensic science system to produce accurate and reliable science, and hence fair and accurate verdicts, in our courtrooms.

The forensic science system:

NACDL recognizes and appreciates that there are many dedicated and committed forensic science examiners who work tirelessly to conduct the overwhelming number of scientific examinations that are conducted in criminal investigations every day. The forensic science system, however, has failed to support the good intentions of these dedicated forensic science examiners.

---

[1] *Strengthening Forensic Science in the United States: A Path Forward*, Committee on Identifying the Needs of the Forensic Sciences Community: Committee on Applied and Theoretical Statistics, National Research Council, National Academy of Sciences, 2009.

As highlighted by the NAS Report, our current forensic science system lacks the scientific underpinnings and validation of methodologies, standardization, and quality assurance measures that are necessary to ensure the reliability of the results and conclusions of the hard-working examiners in our forensic science laboratories. Calls for improvement of the forensic science system are not a criticism of individual examiners, but a recognition that the examiners work in a flawed and inadequate system. Reform of the system is necessary to enable forensic science examiners to do the independent, objective and reliable scientific work that they want to do and that we criminal defense attorneys need to defend our clients from serious accusations that can lead to years of imprisonment or even death. The good intentions of individual forensic science examiners are not enough to ensure that only reliable scientific evidence is presented in every case in which science can help determine the truth. Additional efforts are needed to address the lack of rigorous scientific underpinnings and protocols that raise doubts as to the reliability of certain theories and techniques now used by forensic science examiners. There is also a need to address disparities in the standards, practices, and education of forensic science examiners.

Forensic science is helpful to the criminal justice system only when it produces accurate and reliable scientific results. Conclusions derived from unsound scientific methodologies, subjective assessments, or deficient procedures can obscure the truth, misrepresent the facts, and lead to injustice. Results obtained without strict adherence to quality control measures can mislead investigators, attorneys, judges and jurors, wasting resources and destroying lives.

What needs to be done:

- Scientist-led oversight

Some improvements to the forensic science system can be accomplished in steps and through the cooperative efforts of professional organizations and the individual efforts of forensic science laboratories; nevertheless, the essential reform that will ensure the scientific integrity of forensic science techniques will require a restructuring of the current system. NACDL agrees that Congress should establish an independent federal entity to promote the development of forensic science into a mature field of multidisciplinary research and practice and to achieve meaningful forensic science reform. Federal, scientist-led, oversight is necessary to develop and enforce the mandatory and rigorous accreditation and certification requirements, best-practice standards, and ethical codes that are needed and to ensure that the statistical and empirical studies necessary to ascertain the validity of all forensic science techniques and theories have been conducted.

Despite the fact that the NAS Committee fully considered and rejected placement of this authority in the Department of Justice (DOJ), some have advocated for the Department of Justice to serve this oversight function. Oversight by the Department of Justice is not the answer. The Department of Justice is not a scientist-led entity. The forensic science system requires a paradigm shift to make science the guiding principle of forensic science. Law enforcement cannot be the primary function of forensic science.

Science does not belong to law enforcement any more than the need for objective, unbiased evidence belongs exclusively to the prosecution. Science – and the knowledge it provides – belongs to us all. The forensic science system must stand separate and apart from law

enforcement, guided only by the principles of objective, accurate and reliable science, and beholden to no other concern or master.

Accordingly, law enforcement ties to forensic science laboratories must be severed. Publicly-funded forensic science laboratories should be independent departments with separate budgets. The vital work and objectivity of forensic science must not be vulnerable to the bias, or subject to the control, of only one side in the criminal justice system. Severing ties to law enforcement will serve another goal as well. Defense access to forensic science resources must not be limited by law, policy, or managerial attitude. Forensic science must be equally available and accessible to all participants in the criminal justice system, in practice, as well as in theory.

- Research

Another measure essential to the integrity and usefulness of forensic science is the assessment of the validity of the many forensic science techniques whose scientific underpinnings have been called into question. This research will take time to complete and should begin as soon as possible. Funding and infrastructure, including the establishment of a research agency dedicated to forensic science, are needed to stimulate interest in forensic science by independent researchers in the academic arena. Independent, highly qualified research scientists must assess the statistical and empirical underpinnings of forensic science and work on the development of protocols and mechanisms for ensuring that science is properly practiced in forensic laboratories. These measures should be implemented as soon as possible.

The reality is that we simply do not know whether certain forensic science techniques or theories are reliable and yield accurate results. The quality of the products of the forensic science system is uncertain. Our criminal justice system demands more. The NAS Report highlights several techniques for which questions of scientific validation have been raised. And

questions have been raised about other forensic science techniques and theories, such as the elements of arson investigation, the subject of an unsettling article asserting the innocence of an executed man recently in The New Yorker[2] and Shaken Baby Syndrome, which some have dubbed the "next innocence project." Each forensic science technique or theory for which serious questions about reliability have been raised must be subjected to a rigorous assessment of its scientific underpinnings. This research must be conducted by research scientists, not forensic science practitioners, and must be regarded as a priority. Scientists must review the research supporting the underlying assumptions and results of those forensic science techniques and theories about which serious questions have been raised to answer two questions: first, whether the assumptions are valid; and second, whether an error rate has been or *can* be correctly calculated for the particular technique. This research and validation cannot be done by the forensic science community alone but must draw from the richness of the greater scientific community housed in our Nation's impressive research universities and scientific institutions.

Some have argued that the use of forensic science in the courtroom will be jeopardized by research into the scientific underpinnings of questioned forensic science techniques and theories. On the contrary, it is the refusal to acknowledge these questions, and to do the research necessary to answer them, that threatens to undermine the entire system. The questions will not end until they have been answered by science.

NACDL's members do not presume to substitute their knowledge of the injustice inflicted by unreliable forensic science for the rigors of scientific scrutiny. Instead, NACDL's position is that serious questions about some forensic science techniques and theories do exist and they must be answered by science.

---

[2] Grann, D. "*Trial by Fire: Did Texas Execute an Innocent Man?*" The New Yorker, Sept. 7, 2009, p. 42-63 (discussing the case of Cameron Todd Willingham).

If we do not act immediately to answer these questions we risk, at best, bringing disrepute and distrust on the entire forensic science system, frustrating the justice system, and promoting injustice.

- Accreditation/Certification

Several of the NAS recommendations focus on the accreditation of laboratories and the certification of forensic science examiners. Even if a particular forensic science discipline has established scientific foundations, mandatory accreditation and certification requirements are essential to maintaining quality control and competency in forensic science laboratories. The requirement of accreditation for all public and private laboratories that perform scientific testing for which the results are intended to be used in court is a worthwhile step. A central federal entity should oversee this mandatory accreditation by setting the standards for accreditation based on careful research by independent scientists and by regulating the inspections and reviews necessary for accreditation. These requirements must extend to the pattern identification type units that have not sought accreditation in the past and have not been subject to scientific oversight.

Similarly, the NAS Report recommendation of mandatory certification of all public and private laboratory examiners who conduct scientific testing is another good step forward. Certification should also be available to experts outside the laboratory systems as a means to establish competency and to institute a requirement for continuing education to ensure experts maintain current knowledge in their field. Of course, the certification requirement for crime laboratory examiners must not be used in any way to bar academics and other independent researchers from testifying in court. The defense bar frequently requires the assistance of these independent experts to understand and explain to judges and juries forensic science evidence in

court. The scrutiny of academic and research scientists has illuminated issues that may never have been detected or acknowledged.

Additionally, the accreditation and certification processes and procedures must be transparent; they must be open to inspection and review. The criminal justice system depends upon public confidence in the process and the openness of its proceedings. Public confidence in the merits of accreditation and certification will be minimal if no one knows what is necessary to achieve that status.

What will not work:

NACDL supports the complete reform efforts advanced by the NAS Report as a stakeholder in the forensic science community, and as an organization comprised of the daily representatives of those accused persons who stand to be the most affected by weaknesses in forensic science. The values of science and justice require the implementation by a national entity of the NAS Report's central and overriding recommendations for independent validation research, independent development of standards, and independent oversight.

In response to the NAS Report, some have suggested that reform – particularly research to determine the scientific validity of questioned forensic science techniques – is unnecessary because the adversarial system of criminal proceedings is sufficient to ensure that only reliable scientific evidence is admitted into court and that a criminal trial can accurately determine the scientific validity of a forensic science technique. Regrettably, while the adversarial system can produce anecdotal evidence of problems with some forensic science techniques, such as the arrest and jailing of attorney Brandon Mayfield on a fingerprint misidentification in the Madrid train bombing investigation, experience has generally proven otherwise. Each post-conviction

DNA exoneration grounded in an error in the development or presentation of forensic evidence is an example of the historical inability of the criminal justice system to determine the validity of forensic science.

Faith in the adversarial process, in contrast to the hard work of reform, ignores the role of the scientific method in determining sound principles and trustworthy techniques. This misplaced reliance ignores the scientific approach that imbues scientific evidence with its objective reliability, and it replaces the scientific method with the entirely different concerns, procedures, and inefficiencies of a criminal trial. Criminal trials – which do not follow and cannot replace the scientific method – are simply not the place to test the validity and reliability of the forensic disciplines. The criminal justice system is unequipped to remedy the systemic problems in the forensic science community.

The disparity in resources for the prosecutorial function and those available to the defense function is substantial. Most public defender budgets are insufficiently funded. Public defenders frequently cannot obtain experts with sufficient expertise to effectively assess the results of a particular forensic methodology or the application of that methodology in a particular case. Funding requests are too often controlled by judges who accept forensic results without question. Because they fail to understand the issues and deficiencies of the evidence to be challenged, they fail to approve funds for experts to consult with defense counsel. Without access to experts, the defense cannot bring to the courtroom the assistance of scientists and independent scholars who have sufficient skill and expertise to advance the criminal justice system's use of forensic methodologies.

In addition to limited access to scientific experts, defender organizations lack sufficient resources to allow for ample litigation of individual cases. The current crushing caseloads of

many offices prevent meaningful litigation of the more complicated issues associated with forensic evidence in most cases. Simply put, a lawyer with a pretrial caseload of hundreds of cases does not have sufficient time to vigorously litigate scientific issues in any case, let alone every case. And the sole practitioner who accepts a court-appointed case is even more under-resourced and ill-prepared to address forensic science in that case. While some federal, state, and local crime laboratories may be overworked and underfunded, the prosecution still has more scientific resources to turn to than those persons afforded indigent defense.

Finally, in addition to resources, reform in the forensic science system will require training in science for attorneys and judges. The criminal justice system requires an integrated system of science and the law. The NAS Report articulated the limitations and failings of our current forensic science system. The necessary reforms and opportunities for change, however, will not be accomplished by scientists alone. The legal profession must be a part of the solution. The elevation of forensic science cannot happen without the elevation of scientific education in the profession. Until a balance in resources and an elevation in the knowledge base are achieved, the adversarial system will continue to fail to determine the scientific validity of questioned forensic science techniques, fail to produce fair trials, and fail to ensure that science serves to protect the innocent from a wrongful conviction.

Why it matters:

In the criminal justice system we depend on physical evidence, including the scientific analysis of that evidence, to help us to determine the reliability of the other evidence in the case: the eyewitness testimony, the statements of potentially biased witnesses, and the alleged

confessions of defendants. Science is the objective means by which we can gauge the veracity of human accounts. Science is essential to determining truth.

The reliability of science does not depend on the accuracy of the criminal justice system. The accuracy of the criminal justice system, however, does depend on the reliability of science.

Failings in the forensic science system affect all participants in the criminal justice system. Failings in the forensic science system threaten public confidence in the reliability of verdicts and outcomes of trials. Hence, failings in the forensic science system affect all of society. For all of us, the need for reform is plain and the time for reform is now.

TESTIMONY OF PETER NEUFELD
CO-DIRECTOR, THE INNOCENCE PROJECT
SENATE JUDICIARY COMMITTEE HEARING
STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES
SEPTEMBER 9, 2009

Thank you Chairman Leahy, Ranking Member Sessions, and members of the Committee. My name is Peter Neufeld and I am the co-director of the Innocence Project, affiliated with the Cardozo School of Law, which co-director Barry C. Scheck and I founded in 1992. The project is a national litigation and public policy organization dedicated to exonerating wrongfully convicted people through DNA testing and reforming the criminal justice system to prevent future miscarriages of justice, while at the same time enhancing public safety. I am extremely pleased to participate in this hearing reviewing the recommendations and conclusions of the National Academies of Science's (NAS) report *Strengthening Forensic Science in the United States: A Path Forward.* I am grateful for the invitation to testify before you today to share how faulty forensic science has impacted the work of the Innocence Project and our response to the NAS report.

The Innocence Project, the law enforcement community, prosecutors, and members of this committee all share the same core beliefs – that wrongful convictions are contrary to the basic principle of criminal justice; that forensic science plays a vital role in solving crime; that many forensic disciplines are in need of further validity and reliability research; and that valid and reliable forensic analyses will strengthen prosecutions, assist law enforcement in investigations, and improve public safety by ensuring that the true perpetrators of crime are identified and punished. We are proud to have collaborated frequently with police and prosecutors to identify and prosecute the real perpetrator. The first priority of our work and our advocacy has always been enhancing the truth seeking

function and reliability of criminal justice, which in turn advances the cause of public safety.

The development of DNA testing has allowed the Innocence Project to help exonerate 242 factually innocent Americans – 17 of whom were on death row awaiting execution. These 242 exonerees represent how the American criminal justice system can fail the people she was designed to protect. Once exonerated, we then deconstruct the wrongful convictions looking for common causes while distinguishing "one off" situations. Our research into these wrongful convictions yielded a stunning insight: unvalidated and/or improper forensics was the second-greatest contributing factor to those miscarriages of justice. Those cases demonstrate what the members of the NAS committee unanimously recognized: that the lack of scientific underpinning in commonly used non-DNA forensic science has the significant potential to mislead the criminal justice system away from the real perpetrators of crime.

When a crime's true perpetrator is not identified, communities are less safe: among the first 241 post-conviction DNA exonerations nationwide, the real perpetrators were identified in 105 cases. In many of those cases, the real perpetrator had gone on to commit additional violent crimes while an innocent person was in prison. These perpetrators were convicted of at least 90 serious, violent crimes – including 56 rapes and 19 murders – that they committed after innocent people were convicted for their earlier crimes. Many more were implicated in violent crimes but were never convicted because the statute of limitations on the crime had run out. Each one of these rapes, murders and other violent crimes could have been prevented if law enforcement had the tools to identify the correct suspect in the first place.

Although DNA is unparalleled in its ability to dispositively prove innocence or guilt, biological evidence that can be subjected to DNA testing is only available and affords proof in a minority of violent crimes. Some crime lab directors estimate that a mere 10% of the cases lend themselves to DNA testing; consequently, DNA testing cannot help us identify the truth in the remaining 90 percent of cases, many of which involve some form

of forensic evidence. Therefore, the need to be as sure as possible about the validity and reliability of non-DNA forensic evidence is essential for public safety and critical to the integrity of criminal justice.

However, the NAS report alarmingly observes that many of the commonly used non-DNA forensic assays have not been scientifically validated, and there is no formal apparatus in place to do so for new and emerging forensic technologies. Many forensic techniques – such as hair microscopy, bite mark comparisons, latent fingerprint comparisons, firearm/tool mark analysis and shoe and tire print comparisons – have never been sufficiently validated to permit an examiner to assert that a particular defendant is the "source" of the trace or impression evidence recovered from the crime scene. Moreover, there has been almost no research to establish the limits and measures of performance and to address the sources of variability and potential for inadvertent bias, despite the fact that these types of studies are routine in other applied sciences such as medicine and engineering. Finally, even for forensic disciplines that have been properly validated, imprecise or exaggerated expert report writing and testimony can lead to the admission of erroneous or misleading testimony.

In contrast, DNA typing had its start in the nation's premier academic research centers, and scientists validated its analytical methods before it was ever applied to the investigation of crime. When it was in its relative infancy, the NAS embarked on not one but two thorough reviews of empirical data to establish standards for the interpretation of casework results and set limits on what an analyst could reliably and scientifically say about the probative value of the DNA results. From research lab to clinical lab and from clinical lab to crime lab, forensic DNA testing developed under the same scrutiny given to medical devices. So when it entered the courtroom, there was already a tremendous body of basic and applied research reported in peer reviewed literature in highly respected scientific journals, amassed over a number of years, to support and validate it.

In contrast to DNA, most of the assays and techniques used in law enforcement – for example, tool mark and bite mark comparisons – have no other application. They were

developed for the purpose of investigation, prosecution and conviction and took on a life of their own without being subjected to the rigors of the scientific process. Simply as a matter of process, they often came on line in casework and in courts without following the fundamental principles of the scientific method described in Chapter 4 of the NAS report. Their assertions are accepted and repeated as fact, leaving juries with the false impression that the evidence is more scientific than it is.

In medicine, The National Institutes of Health (NIH) and National Science Foundation (NSF) serve the vital function of developing research agendas and funding a body of basic and applied peer reviewed research studies. Once that research has been completed and extensively reviewed, another conflict free entity – the Food and Drug Administration (FDA) – evaluates the newly developed product to test its reliability and to set standards and parameters for its use with patients before it is brought on line. Then, when the approved device gets to the clinical laboratory, the Clinical Laboratory Improvement Act mandates quality assurance practices to protect the integrity of the results in each laboratory.

However, many forensic disciplines are not buttressed by a vast body of basic and applied research; nor are their data presented in the premier peer review publications. For many of the pattern, trace and impression evidence forensic disciplines, there was no funding for basic academic research or even a research agenda created by an entity free of the appearance of conflict of interest to test for validity and reliability.

For the vast majority of forensic assays and techniques, there never was a conflict-free competitive grant program funding basic and applied research, nor an independent assessment of validity or reliability, nor enforceable standards in place to insure the integrity of the result in a laboratory setting. No entity comparable to the FDA ever scrutinized the forensic devices and assays, nor were crime laboratories subject to mandatory accreditation and forensic service practitioners subject to certification. Enforceable parameters for interpretation of data, report writing, and courtroom testimony have also never been developed. Yet as I speak, and despite the findings of the

NAS report, these assays and technologies are being used in investigations, prosecutions and convictions daily in this country despite their potential to mislead police, prosecutors, judges and juries away from the real perpetrators of crime.

Inadequate science leaves evidence open to attack and may mean that police, prosecutors, judges and juries across the country are at risk of being mislead away from the real perpetrators of crime. It erroneously steers the course of investigations, thus needlessly pursuing false leads and wasting precious resources and creating the need to reopen and renew investigations and litigate post-conviction appeals. That leads to countless manpower hours lost and significant, needless resource costs to law enforcement.

Conventional wisdom once stated that a sound defense and cross-examination would enable courts to properly assess the strength of forensic evidence. However, the NAS report unequivocally states, and the post-conviction DNA exoneration cases clearly demonstrate, that at least in criminal cases, the courts have not functioned well as gatekeepers of questionable scientific evidence, and given the lack of scientific knowledge among judges and legal practitioners, "judicial review, by itself, will not cure the infirmities of the forensic science community."[1] Moreover, we cannot expect the courts to sort through or overcome the patchwork of standards, or to assess for themselves the reliability of a device or technique, no matter how widely used. Because of the fragmentation of the criminal justice system and in particular the fragmentation of the forensic science community, given the lack of a sound scientific foundation for many forensic technologies and assays, 50 states may be operating under 50 definitions of "science" – and therefore 50 standards of justice.

It is essential that the validity of forensic techniques be established upstream of the court, before any particular piece of evidence is considered in the adjudicative process. There is simply no substitute for requiring the application of the scientific method to each forensic assay or technology, as well as parameters for report writing and proper testimony, as

[1] Strengthening Forensic Science in the United States: A Path Forward, Committee on Identifying the Needs of the Forensic Science Community, The National Academies Press (2009), p. 12.

part of the formal system of vetting the scientific evidence we allow in the courtroom. Indeed, for our justice system to work properly, standards must be developed and quality must be assured before the evidence is presented to the courts.

In *Melendez-Diaz v. Massachusetts*, the Supreme Court recently ruled that laboratory reports are considered testimony, and as a result defendants have the right to cross-examine the crime lab personnel who created them. Writing for the majority, Justice Scalia cited the NAS report's analysis of the shortcomings of forensic sciences in explaining the court's ruling:

> "Confrontation is one means of assuring accurate forensic analysis...[it] is designed to weed out not only the fraudulent analyst, but the incompetent one as well. Serious deficiencies have been found in the forensic evidence used in criminal trials. One commentator asserts that '[t]he legal community now concedes, with varying degrees of urgency, that our system produces erroneous convictions based on discredited forensics.'"[2]

The legitimate concerns about the burdens this decision may pose would be significantly alleviated by an improved forensic science system. The prosecutor's reliance on forensic assays that had been properly validated and of demonstrated reliability, carried out by crime lab personnel complying with enforceable standards would give both defense attorneys and prosecutors clarity about the particular strength of evidence being introduced in the courtroom. The participation of scientists who have no stake in the outcome of a court proceeding will not only raise the rigor of the science but will also boost public confidence, which, as the NAS report notes, is important because "if juries lose confidence in the reliability of forensic testimony, valid evidence might be discounted, and some innocent persons might be convicted or guilty individuals acquitted."[3]

---

[2] *Melendez-Diaz v. Massachusetts*, 557 U.S. ___ (2009), p. 13.
[3] Strengthening Forensic Science in the United States: A Path Forward, Committee on Identifying the Needs of the Forensic Science Community, The National Academies Press (2009), p. 37.

The NAS notes that, despite these ongoing problems, neither the FBI nor the National Institute of Justice (NIJ) have, over the years, "recognized, let alone articulated, a need for change or a vision for achieving it."[4] Although the FBI and NIJ were aware of the lack of evidence-based validation for several forensic disciplines going back many years, through both Democratic and Republican administrations, no corrective action was taken. For over 40 years, the FBI used composite bullet lead analysis in its investigations; it was only after the NAS released a report that found bullet lead analysis to be "unreliable and potentially misleading"[5] that it was retired in the summer of 2005. Much of the research sponsored by the NIJ over the years in non-DNA forensic disciplines assumed validity.

The NAS report recognized the critical mission of DOJ to enforce the law, defend the interests of the United States according to the law, and the essential role law enforcement institutions play in that mission. However, the NAS concluded: "The entity that is established to govern the forensic science community cannot be principally beholden to law enforcement. The potential for conflicts of interest between the needs of law enforcement and the broader needs of forensic science are too great."[6] Unfortunately, the Scientific Working Group (SWG) system that the DOJ relies on to set forensic standards illustrates that, despite their good faith, that potential conflict of interest exists. Largely composed of professionals who are active members of the law enforcement community or forensic laboratories, there is not only an overlap between SWG membership and the groups to whom SWG guidelines are directed, but SWG members represent the very organizations for which the SWG is supposed to set standards and practices. Judge Harry Edwards, Senior Circuit Judge and Chief Judge Emeritus for the U.S. Court of Appeals for the D.C. Circuit, and the Co- Chair of the NAS report, underscored this point in his testimony before this Committee on March 18, 2009, saying that SWGs are, "as a general matter, of questionable value."[7]

---

[4] Ibid., p. 16.
[5] Forensic Analysis: Weighing Bullet Lead Evidence. The National Academies Press (2004), p. 5.
[6] Strengthening Forensic Science in the United States: A Path Forward, Committee on Identifying the Needs of the Forensic Science Community, The National Academies Press (2009), p. 17.
[7] *Hearing before the Senate Judiciary Committee on Strengthening Forensic Science in the United States: A Path Forward*, 111th Cong., 1st Session, Testimony of Judge Harry T. Edwards, pp. 4 and 5.

In clinical science, the people who stand to benefit from a new product entering the marketplace are not given the authority to make grant award decisions at NIH or the authority to pass judgment on the product's efficacy at the FDA. If the pharmaceutical companies took the reigns of the research or product certification process, there is no doubt that the drugs or devices will become approved and put online for distribution more quickly. However, healthy inquiry would give rise to questions as to how comprehensively the products were reviewed given the benefit the reviewers would receive from their passage. For the same reasons we do not allow automobile makers to set vehicle performance standards. There is no justification for the nation accepting a lesser standard of oversight and conflict free independence for criminal justice than for the public's health.

It is critical that we all understand the real world consequences of the forensic problems. These were not incidents reflective of one bad actor, or one wayward jurisdiction; our review of the nation's DNA exonerations showed that 72 forensic analysts from 52 different labs, across 25 states had provided testimony that was inappropriate and/or significantly exaggerated the probative value of the evidence before the fact finder in either reports or live courtroom testimony.[8] According to the NAS report, the shortcomings in education, training, certification, accreditation, and standards for testing and testifying that contributed to wrongful convictions in those cases threaten the integrity of forensic results across virtually all non-DNA forensics.[9]

The NAS cited Brandon Mayfield's case as one that should "surely signal caution against simple, and unverified, assumptions about the reliability of fingerprint evidence."[10] Brandon Mayfield was arrested as a material witness in the Madrid Bombings of March 2004. Several FBI fingerprint experts "matched" his print to fingerprints lifted from a plastic bag containing explosive material found at the crime scene and swore in affidavits that they were "100% certain" that the prints belonged to Mayfield. When the Spanish

[8] Garrett, Brandon L. and Neufeld, Peter J.,Invalid Forensic Science Testimony and Wrongful Convictions(March 16, 2009). Virginia Law Review, Vol. 95, No. 1, (2009), p. 9.
[9] Strengthening Forensic Science in the United States: A Path Forward, Committee on Identifying the Needs of the Forensic Science Community, The National Academies Press (2009), p. 4 and 5
[10] Ibid., p. 105.

police ultimately arrested the real source of the fingerprint, the FBI initially defended their "mistake" as the result of poor digital image. Obviously, the two FBI experts could not have been 100% certain if the image was poor.[11] Several major investigations followed, including one conducted by the Inspector General of the Department of Justice that found that mistakes were made, in part, because the FBI which does not require a pre-determined minimum number of characteristics to draw a conclusion.[12]

Roy Brown was convicted of a 1991 murder and spent 15 years in prison for a crime he did not commit. His conviction was secured in large part by unvalidated and improper forensic bitemark analysis, which has been shown to have "a disturbingly high false-positive error rate."[13] Despite the fact that a leading forensic odontologist examined the bitemarks before trial and excluded Roy, the prosecution moved forward with testimony from a local dentist who stated that the seven bitemarks found on the victim's body were "entirely consistent" with Roy. Although that mark had two more upper teeth than he had, Roy was sentenced to 25 years to life.

While in prison, Roy suffered from liver disease and was in need of a liver transplant for which he was not eligible as an inmate. Dying in prison, he was determined to continue his fight for freedom. After obtaining legal documents through the Freedom of Information Act, Roy found material not disclosed to the defense at the time of trial that enabled him to solve his own case. He wrote to Barry Bench, the man who was implicated in those documents, and told him that DNA would identify him as the murderer once he secured post-conviction DNA testing. Bench committed suicide five days after the letter was mailed. Roy's freedom did not come until 2007, when DNA testing conclusively proved that Barry Bench committed the crime. A few days after his release, Roy received a liver transplant and lives today as a witness to how unvalidated and unreliable forensic evidence can not only take a person's freedom, but nearly his life.

---

[11] Ibid., p. 105, footnotes 75 and 76, which indicated that contextual bias and confirmation bias played an important role in the misidentification.
[12] Office of the Inspector General, Oversight and Review Division, U.S. Department of Justice. 2006. *A Review of the FBI's Handling of the Brandon Mayfield Case*, p.11.
[13] C. Michael Bowers, Problem-Based Analysis of Bitemark Misidentifications: The Role of DNA, 159S *Forensic Science International*, S107 (2006).

Unlike Mayfield and Brown, reform will come too late for Cameron Todd Willingham. Willingham was convicted of intentionally setting fire to his house in which he and his three young daughters resided. The three girls perished in the fire. Since there was no real motive attributed to Willingham, the most significant issue in the case was whether the post-fire observations of the debris supported a finding of arson as opposed to accident. Willingham was convicted in 1993 of capital murder and sentenced to death on the strength of expert testimony provided by the state's arson investigator. He was executed by the State of Texas in 2004. The arson investigator's conclusions were based on "generally accepted," albeit an unscientific, understanding of accelerants. In the last five years, those conclusions were proven to be without scientific basis by the top arson investigators in the nation, all of whom concluded that the fire was accidental in origin. Based on evidence uncarthed and published last week[14], the state of Texas most likely executed an innocent man. With your support, we will minimize the possibility that tragedies like Cameron Todd Willingham, Brandon Mayfield and Roy Brown and those endured by the nation's other 241 – and counting – exonerees and their families will be needlessly repeated, and we will significantly enhance the quality of justice in the United States.

The NAS report provided a critical wakeup call regarding the serious shortcomings that exist in the analysis of forensic evidence and laid out a roadmap to addressing the major improvements in the forensic system necessary to ensure the most accurate evidence – and therefore justice – possible. However, while the report's findings were a source of alarm about the criminal justice system's forensic practices, we must recognize that it provides the system with a tremendous opportunity. Namely, its recommendations will allow us to increase the accuracy of criminal investigations; strengthen criminal prosecutions; bring justice to victims; conserve resources so law enforcement can dedicate them toward finding true perpetrators; and protect the innocent from wrongful conviction.

[14] Gann, David, "Trial by Fire," *The New Yorker*, September 7, 2009.

Therefore, the Innocence Project supports the NAS report's primary recommendation that a National Institute of Forensic Science (NIFS) be established. We believe that there is an approach to the creation of a NIFS that is cost effective, and that does not create needless bureaucracy, by making use of existing federal and state resources. To ensure this agency's objectivity and scientific integrity, and to prevent any real or perceived institutional biases or conflicts of interest, it is paramount that NIFS be a non-partisan, independent agency.

For that reason, the Innocence Project suggests that NIFS be established within the Department of Commerce. The Commerce Department has existing expertise in research and standard setting through the National Institute of Standards and Technology (NIST). Housing NIFS at the Department of Commerce will allow scientists to conduct the science research and standard setting in the best traditions of the scientific method with the independence that will ensure the integrity of the forensic evidence used to guide the criminal justice system.

We agree with the NAS report that "[g]overnance must be strong enough – and independent enough – to identify the limitations of forensic science methodologies and must be well connected with the Nation's scientific research base in order to affect meaningful advances in forensic science practices."[15] Therefore, the Innocence Project would urge Congress to consider establishing NIFS outside of NIST, so that it has the sufficient stature within the Department to conduct its critical work without interruption.

The Innocence Project strongly believes that this body cannot operate in a vacuum. A system must be established that would solicit, encourage, and incorporate the suggestions and recommendations of the entire universe of affected stakeholders. NIFS will need the expertise of law enforcement to set the priorities on which tools are most important and therefore should be tackled first, for example. It will need to work with constituencies from throughout the criminal justice system to ensure that its standards are phased-in in a

[15] Strengthening Forensic Science in the United States: A Path Forward, Committee on Identifying the Needs of the Forensic Science Community, The National Academies Press (2009), p. 2-19.

way that is practical and achievable and to minimize disruption to the system.

NIFS should focus on three critical priorities: (1) basic and applied research to assess validity and reliability of existing forensic assays, devices and technologies and to discover new forensic technologies, (2) establish national standards for application of assays, devices and technologies to insure quality and integrity of results, and (3) implementation of standards and broader quality assurance through accreditation and certification programs. It should identify research needs, establish priorities, and precisely design criteria for identifying the validity and reliability of various extant and developing forensic assays and technologies. We believe that NIFS could work with the NSF to create new competitive grants, or reallocate existing grant monies, toward forensic science research that could be conducted at colleges and universities throughout the country.

Using the data generated by research, this entity should then undertake a comprehensive assessment of the validity and reliability of each assay and technology to develop standards by which the practitioners must adhere and under which their reporting and courtroom testimony must operate. The Innocence Project would then support the promulgation of standards by rulemaking to ensure that the public is given adequate notice and opportunity to comments on proposed standards.

We also believe that the Department of Justice, working with NIFS' standards, be responsible for ensuring compliance and enforcement. A central part of that endeavor must include mandatory accreditation and certification. Laboratories that seek accreditation must have quality controls and quality assurance programs to ensure their forensic product is ready for the courtroom. Individual practitioners must meet certain training and education requirements, continuing education, proficiency testing, and parameters for data interpretation, report writing and testimony. So that the DOJ does not needlessly undertake a significant expansion of its responsibilities, existing independent accrediting and certifying bodies could handle the accreditation and certification processes, with the approval of DOJ.

Voluntary accreditation of laboratories and voluntary certification of analysts have, of course, been part of the forensic system for years. However, many of the accredited labs and certified practitioners have, nevertheless, been reporting results that the NAS concludes – and DNA exonerations have confirmed – have never been scientifically validated for their accuracy or precision. Accreditation only provides assurance that protocols for laboratory operations, evidence handling, personnel management, review of lab reports, and monitoring of testimony takes place; and certification only monitors education, experience, training, and completion of a skills-based test. Neither practice is determinative of the correctness of the forensic product.

Because of both a lack of resources and the current fragmented allocation of funding streams, most crime labs are focused on eradicating backlogs in addition to new casework. In addition, current funding is not adequate to allow necessary research to be conducted to improve the various disciplines. This both delays justice and hinders the ability of a practitioner to conduct his or her work as well as possible. Therefore, the Innocence Project would support an assessment of the resource needs of the forensic science community – and those who employ forensic evidence – to allow us to fully grasp the magnitude of the problem and work to make sure that suitable funds are appropriated to address the work that needs to be done.

Additionally, we believe that a program promoting the research and development of both existing and new forensic disciplines will create new industries and jobs, and promote public-private partnerships, just as the development of DNA technologies and their applications has done.

Society as a whole benefits when the most reliable and probative evidence is used to ascertain truth. Implementation of the National Academy's recommendations will make criminal investigations and prosecutions more scientific and thus more reliable. Public safety will be enhanced, and, perhaps most importantly, justice will be more assured.

Written Testimony of

Matthew F. Redle
County and Prosecuting Attorney
Sheridan County, Wyoming

Submitted to the

Senate Committee on the Judiciary
United States Senate

Regarding the Hearing on

"Strengthening Forensic Science in the United States"

Hearing Date: September 9, 2009

Submission Date: September 8, 2009

My name is Matthew F. Redle. I am the duly elected County and Prosecuting Attorney of Sheridan County, Wyoming. I am also Wyoming's State Director to the National District Attorneys Association (NDAA). NDAA represents state and local prosecutors across the country. It is in my capacity as a member of the Board of Directors of the National District Attorneys Association that I appear before the Committee today.

The quality and reliability of forensic evidence is a matter of great interest to prosecutors throughout the country. As prosecutors we are obligated to act as "ministers of justice." We are charged with doing the right thing and doing so in the right way in our pursuit of justice. In many instances we are the end consumer of forensic science services. The evidence generated by this nation's crime laboratories often provide information critical to our prosecutorial decision making, from charging through consideration of post conviction matters. Often such evidence serves as a critical link in a chain of proof leading to conviction. Frequently that evidence is offered in the most serious of cases. The reliability and integrity of that evidence is vital if we are to effectively execute our duty to seek justice.

When a crime is committed within our communities it is not enough that someone is arrested. The person arrested must be the right someone. Our victims do not ask that someone, anyone pay for the crime committed against them. They ask that the right someone, the person responsible be brought to justice. Like our colleagues in law enforcement, we know that the arrest of the wrong person allows the true perpetrator to continue to victimize others. The excellent work of our nation's forensic scientists is critical to ensuring we get the criminal off the street and the victims can be assured that justice has been rightly served. All prosecutors want the best forensic science analysis available. The better the information available the greater the likelihood that our judgment will be better informed. We recognize that the best system of justice is one that exonerates the innocent before trial. Our interest, therefore, is keen.

The publication of the National Research Council report: *Strengthening Forensic Science in the United States: A Path Forward* has provided an agenda for a healthy discussion about the future of forensic science in this country. Though "the devil is always in the details," many of the recommendations found in the report have merit. We believe that many of these recommendations can effectively be implemented within a framework that already exists between the Department of Justice, existing accrediting agencies, and to a lesser degree NIST. One of the more important areas addressed in the report is the clear need for increased funding for our nation's forensics laboratories. Too often, justice is delayed because the forensics community lacks the resources

to effectively and efficiently process the evidence submitted to them. Focus on increased non-DNA related forensics funding will have the best and most immediate impact on our justice system of the many recommendations of the report. The unfortunate truth is that well educated and extremely skilled forensic scientists still require proper equipment and facilities to conduct their work efficiently and effectively. If the report does nothing but shed light on the tremendous resource needs of the community, it will have accomplished a noble goal.

In addition, we support laboratory accreditation of all forensic laboratories as a means of insuring reliable testing and analysis as recommended in the National Research Council report. By anyone's measure, the effort to encourage laboratory accreditation has already proven to be a success. The first laboratory accreditation began in 1982 as a voluntary program conducted under the auspices of American Society of Crime Laboratory Directors (ASCLD).[1] Subsequently ASCLD created a separate accreditation group to conduct such laboratory accreditations. That group, the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) conducts accreditation evaluations of laboratories. Those laboratories have been inspected and found to meet national standards designed to ensure that evidence is properly examined and reported. Once a laboratory is accredited it is subject to a regimen of periodic performance audits and other evaluation measures.

At the start of 1998, 56% of DNA labs were accredited and 18% had applied.[2] "As of January 1, 2001, 63% of laboratories were accredited by an official organization, and 19% had applied for accreditation or had a pre-accreditation inspection by an accredited laboratory."[3] In May of 2004, ASCLD/LAB reported it had accredited 256 laboratories. As of April 1, 2009, ASCLD/LAB reports that it had accredited 359 crime laboratories, including 181 state laboratories, 117 local laboratories, 22 federal laboratories, 12 international laboratories and 27 private laboratories.[4] It is our understanding that this number represents 90% of public crime laboratories in this country. We support efforts to implement the form of accreditation recommended by the report and note that the process to convert to that accreditation standard is already ongoing. We do not see the need for additional and potentially overbearing and harmful bureaucracy to accomplish the goals laid out in the report surrounding accreditation.

---

[1] Peterson and Leggett, *"The Evolution of Forensic Science: Progress Amid the Pitfalls,* 36 Stetson L. Review 621, 632 (2007).
[2] Bureau of Justice Statistics Bulletin, *Survey of DNA Crime Laboratories, 1998,* 3 (USDOJ February 2000).
[3] Bureau of Justice Statistics Bulletin, *Survey of DNA Crime Laboratories, 2001,* 3 (USDOJ January 2002).
[4] See http://www.ascld-lab.org/legacy/aslablegacylaboratories.html.

Likewise, we support certification of laboratory scientists and analysts as a further method of insuring reliability and quality of forensic evidence. We are mindful that quality control standards are integral to trustworthy testing results. In large part, the accreditation process currently underway through existing accrediting bodies places a large amount of focus on quality assurance and quality control standards. However, that does not mean we can't do more. Such procedures are perhaps the greatest protection against human error, forensic fraud or examiner bias. In the same vein, quality forensic science service should be made available to defense counsel. In an adversarial system, the critical scrutiny of an opposing party is an essential component to quality assurance and quality control. As in accreditation, certification is a critical step, but one that must be conducted with great thought and consideration to the potential impacts the process could have on particular segments of the community, including but not limited to small and rural forensic service providers. Efforts to streamline this process will be critical.

As prosecutors we support a peer reviewed research agenda that examines the validity of assumptions underlying forensic disciplines where necessary. We support a research agenda that will improve whenever possible both the quality of scientific analysis and the capacity of our labs to meet the demand for reliable scientific evidence. Likewise we endorse research into sources of human error in forensic analysis including contextual bias and countermeasures to avoiding such errors in the future. We do not believe our support of research in anyway invalidates current best practices merely because we believe research will benefit the community.

While we support efforts in all of these areas, we do not endorse or support many of the claims and concerns that the NAS uses as a basis for the need for better forensic sciences. I do not believe you will find anyone here today that does not believe the forensic sciences have room for improvement. No discipline is infallible; however the media and opponents of the current system have gone so far as to indicate the system is "broken" and that anyone involved is biased and conducting or using bad science in bad faith. NDAA strongly disputes this claim. While we agree that steps can and should be taken to make the system better, we will not support efforts to label our justice system as broken or proposals that will serve to delay justice under false pretenses of fixing an allegedly broken system.

As mentioned above, NDAA supports in principle many of the recommendations in the report of the National Research Council. However, we have serious reservations concerning the recommendations

directed at the creation of a new federal agency, referred to in the report as the National Institute of Forensic Science (or NIFS) and recommendation # 4, to the extent that recommendation #4 would require public crime laboratories to be divorced from law enforcement or public safety agencies. It is to this recommendation that I will focus the balance of my attention.

As I begin this discussion, let me first say that the issues that were a basis for many of the concerns in the report are an infinitesimal exception to the rule that forensic scientists are qualified, unbiased individuals committed to science, facts and the truth. We believe that many of the criteria we lay out below the forensic science community also supports and is working to put in place as we speak. It is our belief that in terms of the integrity and reliability of forensic evidence it is more important how a laboratory is run rather than where it is located. As I mentioned earlier, we believe that the keys to creating a scientifically reliable crime laboratory lie in adherence to scientifically validated protocols that encompass recognized best practices. It is important that laboratories integrate rigorous quality assurance and quality control measures into the laboratory operation. Such qualities include, but are not limited to, the laboratory accreditation and personnel certification programs mentioned before; internal peer review procedures; maintenance of appropriate testing documentation to facilitate internal and external peer review of individual case testing; external and internal performance audits; regular proficiency testing as a check on both personnel and protocol performance; and corrective action procedures when proficiency testing or casework errors are discovered.

It also seems almost self evident that the culture within the laboratory is important to its performance in this regard. The values within the lab should promote the integrity of the testing process as a means of ascertaining the truth. That culture should promote the autonomy of the laboratory. Those values should necessarily be respected within the larger agency. Laboratory management and personnel can, and should, be free of undue internal or external pressures that would otherwise adversely impact the objective performance of their work.

The final step toward a laboratory that produces reliable quality testing and analysis is the provision of sufficient resources to meet the mission of the laboratory. This seems to be one of the lessons of some of the laboratory scandals of the recent past. If laboratories are not provided sufficient resources to meet the demands for service that confront them, some personnel within a laboratory may resort to

reprehensible "shortcuts" such as "dry-labbing"[5] in which reports are written and results given without testing having been conducted.[6] Again, we believe this to be the exception rather than the rule, but we also believe resources are the key.

We do not believe removing laboratories from law enforcement or prosecution sponsorship is warranted. First, the cost of removing and relocating crime laboratories would be enormous. Approximately 80% of public crime laboratories are housed within law enforcement agencies.[7] Further, the cost of removing laboratories from sponsoring law enforcement agencies would necessarily include finding new, suitable accommodations. Undoubtedly those accommodations would require retrofitting of various features to meet safety and certain ventilation requirements at not inconsiderable cost.

Second, removal of laboratories from law enforcement sponsorship does not in anyway guarantee a reduction in examiner error, forensic fraud or contextual bias beyond what might be achieved with a rigorous quality control program. Public laboratories have experienced instances of "forensic fraud" but such misconduct is not solely the province of the public laboratory. The names of the "mountebanks"[8] within public laboratories who violated their ethical obligations are well known in the field: Fred Zain, Joyce Gilchrist, and in my part of the country, Arnold Melnikoff. It is worth noting that these three frequent examples were able to avoid detection for as long as they did, at least in part due to a failure to adhere to proper quality control checks. Notably there was apparently little in the way of internal peer review procedures; there was a failure to maintain or require appropriate testing documentation; and there was an apparent lack of external and internal performance audits.[9] In the case of Mr. Zain, there was apparently ample evidence warranting some question of his proficiency in conducting examinations, but no apparent corrective action was ever taken.

However such failures or frauds are found independently of police laboratories. One of our panelists, Professor Paul Giannelli has twice written articles with recommendations regarding the regulation and

---

[5] This appears to have been a factor in the recent scandals involving the Houston Police Department laboratory. See also: Peterson and Leggett, *"The Evolution of Forensic Science: Progress Amid the Pitfalls,* 36 Stetson L. Review 621, 634 (2007).

[6] *Id,* at pp. 651-53.

[7] Peterson and Leggett, *"The Evolution of Forensic Science: Progress Amid the Pitfalls,* 36 Stetson L. Review 621, 629 (2007).

[8] The phrase was apparently first used by Professor James Starrs, *Mountebanks Among Forensic Scientists,* Forensic Science Handbook, vol. 2 (Richard Saferstein ed., Prentice Hall 1988).

[9] See: Giannelli, *Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs,* 86 North Carolina Law Review 163 (2007). Cooley and Oberfield, *Increasing Forensic Evidence's Reliability and Minimizing Wrongful Convictions: Applying DaubertIsn't the Only Problem,* 43 Tulsa L. Rev. 285 (2007).

independence of forensic laboratories. In his first article,[10] Professor Giannelli offered examples of several infamous instances of forensic fraud, which included Zain. Several examples involved misconduct on the part of employees in public laboratories, either in this country or in the United Kingdom. However, three of the individuals cited in Professor Giannelli's article enjoyed the independence suggested by the report recommendation.

Dr. Ralph Erdman[11] was a Texas pathologist who served as a contract medical examiner in more than forty Texas counties. In 1992 Dr. Erdman was convicted of 7 felonies for falsifying autopsy results. The evidence suggested as many as 100 faked autopsies. In many Texas cities the autopsies are performed by medical examiners or coroners who are full-time government employees, but jurisdictions in rural areas contract with pathologists for such services. Lubbock County paid Dr. Erdmann more than $140,000 a year under such a contract, and he collected as much as $600 per autopsy elsewhere. Dr. Erdman's fraud came to light when an autopsy report listed the weight of a decedent's spleen. Relatives of the deceased subsequently reported that the spleen had been removed several years earlier.[12]

Dr. Michael West,[13] a dentist, did not limit his testimony to bite marks but rather offered opinions with respect to tool marks, shoeprints, fingernail and knife wound comparisons. West claimed to have invented a system he called "The West Phenomenon" in which he donned yellow goggles and with the aid of a blue laser, claimed he could identify bite marks, scratches, and other marks on a corpse that no one else, including other experts, could see. West said his method could not be photographed or reproduced and therefore made his opinions unassailable from attack by other experts.

Dr. Louise Robbins[14] is cited by Professor Giannelli for her "Cinderella Analysis" in which she was able to match the insole of shoes found at a crime scene with insoles obtained from suspects. Dr. Robbins, a university professor in anthropology, is reported to have testified for the prosecution in several cases in which William Bodziak, a shoeprint expert for the FBI and author of *Footwear Impression Evidence*, apparently testified on behalf of the defense. In one reported case she testified that size nine tennis shoes found at a scene were a match to a

---

[10] Giannelli, *The Abuse of Scientific Evidence in Criminal Cases: The Need for Independent Crime Laboratories*, 4 Virginia Journal of Social Policy and the Law 439 (1997).
[11] Giannelli, *The Need for Independent Crime Laboratories*, id. at p. 449-53.
[12] Roberto Suro, *Ripples of a Pathologist's Misconduct In Graves and Courts of West Texas*, New York Times, (Nov. 22, 1992).
[13] Giannelli, *The Need for Independent Crime Laboratories*, id. at p. 453 -57.
[14] Giannelli, *The Need for Independent Crime Laboratories*, id. at p. 458- 62.

defendant's footprint exemplars despite the fact that the defendant wore a size 10 ½ or 11 shoe.

In these three instances each of the "experts" was independent of any law enforcement agency. Obviously such independence did not deter their misconduct. Neither is testimony of a scientifically questionable nature limited only to criminal courts. Peter Huber's book, *Galileo's Revenge: Junk Science in the Courtroom* (Basic Books, 1991) examined the admissibility of "scientific evidence" of questionable validity in the civil law tort system.

Relocation would not likely result even in a different perception with respect to the perceived bias of labs or laboratory personnel. First, law enforcement as the "first responder" to reports of crime and the entity charged with its investigation, will always provide the bulk of the forensic science "business." As investigators law enforcement officers are charged to identify and collect physical evidence. Whether public or private, labs may be unjustifiably accused of having a certain financial stake in keeping their law enforcement "customers" happy. For a private lab the accusation may be more directly aimed at profits derived from services provided to police agencies. For a public laboratory, the claim might be that the public laboratory must justify its budget to a budgetary authority based upon numbers of cases handled and cannot risk losing such cases to some other facility.

Second, regardless of whether a "relocated" or substitute private lab is involved, working relationships would inevitably spring up among personnel from law enforcement, prosecution and the laboratory. This is no different than the working relationships that might develop between investigators and sexual assault nurse examiners. It is unlikely to affect professional judgment in virtually all instances, but nevertheless the claim may be made.[15] The most effective means available to rebut such

[15] In Wyoming we have two principal laboratories for testing criminal evidence, the Wyoming State Crime Laboratory, an agency within our Division of Criminal Investigation under the office of our Attorney General, which provides basic crime laboratory services: DNA profiling, fingerprint examination, firearms examination, chemical identification of drugs and the like, etc. The other laboratory is the Chemical Testing Program in the Department of Health which provides toxicology services for criminal investigations including driving while under the influence offenses and for analyzing urinalysis samples for probationers and parolees under the supervision of the Department of Corrections. In both instances, the laboratories are perceived by most members of the criminal defense community as being "prosecution" or "law enforcement" labs. This is true despite the fact that by statute the State Crime Laboratory is obligated to provide laboratory services to the office of the State Public Defender or to otherwise "needy" defendants. In the past there have been instances of member of the public defenders' office that have availed themselves of these services. Usually this occurred only after defense counsel developed their own working

claims it would seem is not by touting independence but by careful observation of the quality assurance and quality control measures referred to above that permit their own external peer review by a defense expert.

In his original article Professor Giannelli made some of these same points when he wrote:

> "As noted above, this proposal is not a panacea. It does not affect defense experts or prosecution experts not affiliated with a crime lab. Nor does it address lawyer incompetence in the use of scientific evidence. Nevertheless, it is a substantial step in the right direction."[16]

Finally, we should consider the gains that might be lost by removing laboratories from law enforcement offices. The number of law enforcement-based labs tripled in size during the 1970s after Congress created the Law Enforcement Assistance Administration (LEAA) in 1968 to assist law enforcement in recognizing, collecting and analyzing physical evidence.[17]

> It has been suggested that:
> "Independent crime labs are a solution, but whether they are politically viable seems doubtful, and they would present some disadvantages." **fn.453**[18]

The accompanying footnote went on to list the disadvantages as follows:

> **fn. 453.** For example: Increasing the laboratory's geographical or organizational remoteness, however, can limit the effectiveness of the laboratory's participation in the investigative phases of a case, when its scientific input may have the greatest chance of contributing to justice.[19]

---

relationship with personnel of the lab. This should not be understood as indicating there was a perception of a countervailing bias. To the contrary, it appears that such was the result of a confidence that developed in the integrity of the laboratory scientist or examiner.

[16] Giannelli, *The Need for Independent Crime Laboratories*, id. at p. 478.

[17] Peterson and Leggett, *"The Evolution of Forensic Science: Progress Amid the Pitfalls,* 36 Stetson L. Review 621, 625 (2007).

[18] Giannelli, Wrongful Convictions and Forensic Science: The Need to Regulate Crime Labs, 86 North Carolina Law Review 163, 228 (2007).

[19] It is axiomatic that an investigation should always follow the evidence. The value of participation by a laboratory in the investigative phase is often overlooked. This is particularly true today when many labs due to a lack of resources must frequently triage testing or examination until a case is scheduled for trial. Testing during the investigative phase can shape and inform an investigation. An investigator cannot follow the evidence when the significance of that evidence is unknown. As Professor Giannelli rightly points out,

> Remoteness also makes the police department less able to direct the efforts of the laboratory toward the cases that the department considers most important...."[20] [Citations omitted].

A final disadvantage may be found in studies done by the LEAA at a time when the number of crime laboratories were growing at a rapid pace. Those studies demonstrated that police investigators made greater use of physical evidence when forensic laboratories were located more closely to the law enforcement agency.[21] The appropriate identification and collection of items of apparent evidence always has the potential to appropriately inculpate the guilty offender or exculpate the wrongly accused or convicted. It would be unfortunate for all involved if the legacy of this recommendation were to be a return to poorer evidence collection training and practices.

> "We have learned the lesson of history, ancient and modern, that a system of criminal law enforcement which comes to depend on the 'confession' will, in the long run, be less reliable and more subject to abuses than a system which depends on extrinsic evidence independently secured through skillful investigation." *Escobedo v. Illinois,* 378 U.S. 478, 488-89 (1964).

Under the circumstances it might seem wiser to focus the money it would cost to relocate laboratories out of existing accommodations in law enforcement or prosecution agencies into better education, training, equipment, and facilities for everyone involved in forensic sciences. Instead such resources could better be spent in ways that truly enhance the quality of evidence coming from those laboratories.

Chairman Leahy, Ranking Member Sessions, members of the committee, thank you again for the opportunity to present the position of

---

from time to time the results of forensic testing are helpful to investigators in directing the course of the investigation.

[20] This last point is illustrated by an example where "importance" was not measured in terms so much or seriousness of the offense under investigation but rather by the number of serious offenses that could be solved by resort to scientific methods, and arguably thereby prevent other crimes. The example is the Denver DNA burglary project. For more information about this project go to http://www.denverda.org/DNA/Denver_DNA_Burglary_Project.htm or see: The DNA Field Experiment: Cost-Effectiveness Analysis of the Use of DNA in the Investigation of High-Volume Crimes, Urban Institute Justice Policy Center, Roman, Reid, Reid, Chalfin, Adams, Knight, April 2008. DNA Solves Property Crimes (But Are We Ready for That?), Nancy Ritter NIJ Journal No. 261, October 2008. Using DNA To Solve High-Volume Property Crimes In Denver: Saving Money, Lowering Crime Rates and Making Denver Safer, Ashikhmin, Berdine LaBerge, Morrissey and Weber, The PROSECUTOR, Volume 42 / Number 3, July / August / September 2008, NDAA.

[21] Peterson and Leggett, *"The Evolution of Forensic Science: Progress Amid the Pitfalls,* 36 Stetson L. Review 621, 625-26 (2007).

the National District Attorneys Association today. I look forward to your questions.

United States Senate

Senate Committee on the Judiciary

Strengthening Forensic Science in the United States

A Path forward

Written Testimony of

Norah Rudin, PhD
(Forensic Consultant)

Keith Inman, M.Crim
(Senior Forensic Scientist, Forensic Analytical Sciences, Inc., and Assistant Professor, California State University, East Bay)

Mr. Chairman, Members of the Senate Judiciary Committee:

Thank you for the opportunity to provide this written material as a supplement to the hearing held on September 9, 2009. We are forensic scientists with approximately 50 years of combined experience attending crime scenes and autopsies; collecting and analyzing physical evidence associated with violent crimes; providing written and testimonial evidence; validating, writing, and reviewing forensic science protocols and methods; reviewing the work product of dozens of forensic science laboratories throughout the world; authoring textbooks and peer-reviewed journal articles; and teaching forensic science at the University level. A curriculum vitae for each of us is provided as separate documents.

In February 2009 the National Research Council of the National Academies issued their report, *Strengthening Forensic Science in the United State: a Path Forward.* Although the report shocked much of the general public, for many associated with the judicial system, and even for some forensic scientists, its revelations are inescapable. Although some in the forensic community have been sounding the alarm bell for years, our profession, as a whole, has been chosen stagnation over progress, deliberate ignorance over enlightenment. Given the grave consequences of our work – deprivation of liberty or life on one hand, allowing violent offenders to remain at large on the other – aspiring to anything short of the highest scientific standards fails to serve the best interest of justice. In addition to the obvious impact of questionable forensic work on the safety and security of the populace, an indirect consequence to society at large manifests in an erosion of trust that the judicial system will function fairly and objectively.

Over more than a century of practice, the efficacy of forensic science rarely has been questioned. As Judge Harry T. Edwards' (co chair of NRC group) stated in previous comments to this committee:

> *Rather, I simply assumed, as I suspect many of my judicial colleagues do, that forensic science disciplines typically are grounded in scientific methodology and that crime laboratories and forensic science practitioners generally are bound by solid practices that ensure that forensic evidence offered in court is valid and reliable. I was surprisingly mistaken in what I assumed. The*

> *truth is that the manner in which forensic evidence is presented on television - as invariably conclusive and final - does not correspond with reality.*

Judge Edwards further comments on the lack of universally-accepted scientific practices, including:

> *... The frequent absence of solid scientific research demonstrating the validity of forensic methods, quantifiable measures of the reliability and accuracy of forensic analyses, and quantifiable measures of uncertainty in the conclusions of forensic analyses; ...*

These observations go to the heart of the NRC committee's disillusionment with forensic science, and must be addressed if the profession is to regain the professional capital it historically has enjoyed. We take these ideas one at a time.

As so often happens, "validation" has become a buzzword fed to the court as part of an automatic admissibility package. First, it is necessary to appreciate the difference between attempting to confirm the validity of an existing method, and performing fundamental research to determine the capabilities and limitations of a method. The former assumes the validity of the method, then sets out to prove it, directly antithetical to the scientific method; the latter is what is required, especially in the historical disciplines comprising comparison evidence, such as fingerprints, bullet striations, and shoeprints. True validation forms the basis for a set of interpretation guidelines that support a conclusion incorporating, among other things, the limitations of the procedure (and the evidence) and the uncertainty associated with the result. Unfortunately, the intractable response of the forensic community has been simply to support current practice, by proposing "validation" of existing methods, rather than taking a step back and performing fundamental inquiries into the nature of physical evidence. Unfortunately, this is a Band-Aid approach guaranteed merely to obscure a deep fundamental problem within forensic science.

Second, the idea of quantifying the uncertainty in various aspects of forensic analysis leads directly to a fundamental issue in the justice system, the inherent tension and conflict between science and the law. While the law must definitively resolve the specific issue at hand with, science can only make provisional conclusions, always subject to update based on new information, and always subject to at least some level of ambiguity. At its very core, science eschews the type of certainty required by law; rather, science seeks to measure uncertainty.[1] However, because of its long and intimate relationship with the legal system, the applied science described by the adjective forensic has been subtly co-opted by the law; its practitioners have succumbed to the paradigm of the legal system, providing opinions of individualization and identification under the guise of fact, instead of insisting that science be their primary allegiance. Forensic science must seek its scientific roots if it has any hope of retaining, or perhaps, gaining, credibility going forward. Individualization, identification, source attribution, or any other inference of unique common origin is not only unnecessary, it is scientifically unsupportable[2]. Further, such inferences of source must

---

[1] Ten myths of science: Myth #5 ; Science and its Methods Provide Absolute Proof
http://www.bluffton.edu/~bergerd/NSC_111/TenMyths.html

[2] Cole, S., Forensics without uniqueness, conclusions without individualization: the new epistemology of forensic identification *Law, Probability and Risk* 2009;

properly remain with the trier of fact; the forensic scientist must restrict herself to quantifying the uncertainty attached to the observation that two items appear to be indistinguishable by the tests performed.

Another observation made by Judge Edwards is:

> *...the paucity of research programs on human observer bias and sources of human error in forensic examinations;*

Although the forensic community has made some progress in accepting observer bias as fundamental to the human condition, many retain the misguided notion that subconscious bias may be overcome by education, understanding, of simply brute force of will[3,4]. While further research into this issue, is clearly necessary, specifically with regard to the specific circumstances encountered in forensic science, no reason exists to delay the implementation of sequential unmasking protocols[5] designed to minimize the opportunity for such bias to affect conclusions derived from forensic analyses.

Another of Judge Edwards' points we would like to address is:

> *...the lack of autonomy of forensic laboratories (which are often subject to the administrative control of law enforcement agencies or prosecutors' offices;*

As evidenced by this quote, the problem of undue influence over forensic laboratories by law enforcement is oft-perceived to be simply administrative in nature. Consequently, the proposed solution is to remove the laboratory from the chain of command. This is the situation for all of the government laboratories cited as "independent" by Judge Edwards in the addendum to his comments. While these laboratories are separated administratively and financially from law enforcement, they do not function as truly independent laboratories; they still perform work only for prosecutorial agencies. In our experience, including specific knowledge gained from reviewing some of the aforementioned laboratories, administrative separation does nothing to alter the loyalty to, or perceived affiliation with, law enforcement. To shift that particular paradigm, a laboratory would need to accept work from both prosecution and defense. The criminalists would need to be challenged to act as truly independent scientists, actively seeking alternative explanations for the data, and providing true transparency into their work. The model for this is provided by a few (although not nearly all) private laboratories which perform fee-for-service work for any professional client. Although we do not suggest complete privatization as a solution to this issue, elements of it could be applied to the government laboratory system to foster greater neutrality and openness.

One strong suggestion by the NAS committee is to mandate accreditation of laboratories that perform forensic work. The call for accreditation has been adopted as a chant by, not only the forensic community,

---

[3] http://www.swgfast.org/SWGFAST_Position_Statement_NAS_2009_08_03.pdf

[4] Budowle, et. al., A Perspective on Errors, Bias, and Interpretation in the Forensic Sciences and Direction for Continuing Advancement, *J. Forensic Sci.*, 54:798, 2009

[5] Krane, D., et al., Sequential Unmasking, A Means of Minimizing Observer Effects in Forensic DNA Interpretation, *J. Forensic Sci.*, 53:4, 2008

but other stakeholders, suggesting it as almost a systemic cure-all. We could not disagree more with the notion that accreditation is a universal panacea. While uniform regulation and oversight is useful to create an underlying infrastructure upon which quality casework can be performed, it is neither designed to, nor has the capacity to, guarantee the veracity of results and conclusions produced by forensic laboratories. Like "validation," "accreditation" has been reduced to a buzzword that conveys a false sense of security to the courts and to the public. Yes, accreditation for all laboratories testing physical evidence should be required, but it is really only one piece in the middle of a complex jigsaw puzzle, as the following analysis will demonstrate.

Long before evidence ever reaches the laboratory, it must be identified and collected. The best analysis can never compensate for the failure to collect relevant evidence or store it properly. In many jurisdictions, law enforcement personnel, rather than criminalists, are assigned to process crime scenes. They often receive minimal training and the work force is subject to rotation and turnover. We must direct more attention to training the officers that perform this critical work. And we must realize that collecting evidence requires a much more sophisticated approach than just donning a pair of latex gloves and moistening a swab to collect a bloodstain. Even at this early stage in the process, a hypothesis, or better yet competing hypotheses, must be articulated, and the individual tasked with collecting evidence must search for relevant evidence with intelligence. Blindly collecting what appears to be obvious physical evidence will almost certainly leave important clues at the scene.

In the laboratory, the really important decisions bookend the actual analysis (and it is only the analytical procedures on which accreditation focuses). Prior to testing, the criminalist must decide which items of evidence should be analyzed, using which protocols; he must determine which screening tests should be performed before a piece of evidence is consumed using an analytical procedure. The most accurate and reliable test can be performed, but if it answers an irrelevant question, the results are useless. As an example, your doctor listens to your complaints, examines you, and orders five tests. The laboratory conducts them all correctly, in duplicate, gives results that include an error range, and also provides information about the range of normal values, in complete compliance with their SOP and QA guidelines (in other words, meeting all of the requirements of accreditation). But if the doctor has ordered the wrong tests, the results of those tests will at best be worthless, and at worst lead the doctor in the wrong direction, resulting in a diagnosis that is incorrect, and potentially harmful.

The interpretation of results after the analysis comprises the other bookend. As we have discussed previously, interpretation of laboratory results must be supported by true scientific validation that determines the capabilities and limitation of the method. Assumptions must be recognized, and explicitly incorporated into the interpretation. Finally the written report must reflect the totality of the analyst's results, inferences, and conclusions, and it should be written in clear, informative language; testimony should hold no surprises.

Further, it is crucial to understand that forensic science does not operate in a vacuum; rather it interfaces with the legal and judicial system at every level. Thus, rather like a dysfunctional family, the failures are systemic, supported at each step of the process by the larger entity. Not only do forensic practitioners bear the responsibility to ensure that the craft they practice is valid and reliable, the scientific community at large must embrace forensic science in order to hold the profession to the highest scientific standard. Historically, this has not been the case, as many of the forensic disciplines evolved under the auspices of law enforcement rather than academics. Attorneys must educate themselves to use forensic science responsibly, and judges must be aware of the capabilities and limitations for various forensic disciplines.

To again quote Judge Edwards' comments to this committee:

> *The judicial system is encumbered by, among other things, judges and lawyers who generally lack the scientific expertise necessary to comprehend and evaluate forensic evidence in an informed manner, defense attorneys who often do not have the resources to challenge prosecutors' forensic experts, trial judges (sitting alone) who must decide evidentiary issues without the benefit of judicial colleagues and often with little time for extensive research and reflection, and very limited appellate review of trial court rulings admitting disputed forensic evidence.*

In short, fixing forensic science alone is insufficient when addressing the shortcomings of science practiced within the context of law. The legal side of the equation must be remedied as well.

In some sense, the players who struggle the most with science are judges. Judges work in relative isolation, typically consider only information provided to them by the litigating attorneys, and are afforded few case-independent educational opportunities. Additionally, because judges are the ultimate authority figure in trial-level litigation, they are rarely questioned, certainly not from below, and all-too-rarely from above. Yet they, and they alone, are the gatekeepers of how and when forensic evidence interfaces with the criminal justice system. Educating judges about physical evidence must be a priority if we are to elevate the use of forensic evidence in the courts.

While judges are not and should not attempt to become scientists, neither should attorneys. To avoid this temptation, both prosecution and defense must have equivalent access to qualified experts. The current situation is clearly lopsided, as the prosecution has free access to government laboratory scientists, while most defendants must beg for court-mandated funding to hire independent experts. As long as the U.S. maintains an adversarial legal system, the best opportunity for justice to be served is to ensure that attorneys on both sides have access to commensurate resources.

Finally we address transparency, an element sadly lacking in many jurisdictions. We are constantly dismayed at the attitude that discovery is somehow a shell game, that defense must ask three times nicely, using the right words, to obtain certain pieces of information from the government crime laboratory, such

as error logs or underlying data. A better model for discovery is the military model, detailed in the *Uniform Code of Military Justice*. Although a Court Martial proceeds in a similar fashion to a civilian criminal trial, with full advocacy from both sides, complete transparency in discovery is both required and uniformly executed. This streamlines the process and minimizes theatrics. The civilian criminal justice system would do well to emulate this model.

To quote Judge Edwards a final time:

> *As the committee's report makes clear, what is needed is a massive overhaul of the forensic science system in the United States, both to improve the scientific research supporting the disciplines and to improve the practices of the forensic science community.*

The path forward for forensic science remains shrouded in uncertainty. We have addressed a few of the most pressing issues here and look forward to continuing to participate in elevating our profession. We leave you with this closing thought:

Forensic science developed historically as an adjunct to the law enforcement effort, subject to the same point of view (biases) as law enforcement. In our parlance, forensic science has been used for verification, simply corroborating what is believed to be true without actually challenging it. However, science is capable of providing much greater value to the law, by serving as an ***independent check in the administration of justice***. The paradigm must shift away from science used in blind support of law enforcement to science employed as one instrument, among many, with which to administer justice.

Respectfully submitted

Norah Rudin, PhD

Keith E. Petersen Inman, M.Crim

September 10, 2009

SUBMISSION OF

MICHAEL J. SAKS

Regents Professor
Sandra Day O'Connor College of Law
Center for the Study of Law, Science, and Technology
Arizona State University

TO THE

COMMITTEE ON THE JUDICIARY
UNITED STATES SENATE

HEARING
September 9, 2009

ON THE
NATIONAL ACADEMY OF SCIENCES REPORT

STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD

Submitted: September 11, 2009

I began studying the inter-relationship between the sciences and the courts as part of my duties as a staff member at the National Center for State Courts in the late 1970s and early 1980s. Some of that work became the book, *The Uses of Scientific Evidence in Litigation* (1983) (co-written with Richard Van Duizend). That topic has continued to be an interest of mine as an academic researcher and teacher. The most notable of my works on the subject is the multi-volume treatise, *Modern Scientific Evidence: The Law and Science of Expert Testimony* (annually updated) (which I have co-edited and co-authored with David Faigman, Joseph Sanders, Edward Cheng, and David Kaye).

I write to offer the Committee two much shorter documents, which are attached as appendices to this Statement.

Letter dated January 16, 2007, to the National Research Council's Committee on Identifying the Needs of the Forensic Sciences Community

When I was initially asked to testify at the January meeting of the Committee on Identifying the Needs of the Forensic Sciences Community, I responded by saying that I would not be able to find sufficient away from my university responsibilities, but that in my place I would send a letter summarizing my thoughts about some of the core scientific problems and possible solutions. I continue to think that letter is a good summary, and I now offer it to the Senate Judiciary Committee.

Saks & Koehler, The Coming Paradigm Shift in Forensic Identification Science, 309 Science 892 (2005)

The second document I submit to you at this time is a brief article from *Science*, which provides a summary of the history of how it came to be that a field of "science" failed for the better part of a century to do what is central to science, namely, to empirically test its beliefs and to modify those beliefs in light of the results of that testing; the forces that have comes into play to press the forensic sciences to become more serious about science; some of the consequences of poor science in the forensic sciences; and how the forensic sciences might proceed to improve the important work that society wishes them to do and to do well.

If the Committee would like me to provide any additional information, I would be happy to do my best to comply with any such request.

January 16, 2007

Dr. Anne-Marie Mazza, Director
Committee on Science, Technology, and Law
The National Academies
500 Fifth Street, NW
Washington, DC 20001

Dear Anne-Marie:

When I was unable to accept your invitation to speak to the Committee on Identifying the Needs of the Forensic Sciences Community, I offered to send a letter to the Committee outlining some suggestions. This is that letter.

My principal suggestion is that some or many areas of forensic "individualization" science need programs of systematic empirical research to (a) test long-standing but untested beliefs, (b) to add precision where there has been only the individual judgment of individual examiners, and (c) to add rigor to the management of uncertainty (that is, to apply proper probability models to data) where there has been only an unsupportable faith in uniqueness and certainty. Such efforts could be expected to result in the development of a scientifically defensible foundation to undergird and improve current practice as well as the creation of empirically derived standards to guide practitioners.

Imagine a field that largely guesses at many of the phenomena that fall within its domain; where supposition and hypothesis are considered sufficient. For example, the field of fire and arson investigation relied on mere intuition and imagination to develop a set of what came to be accepted as indicators of arson. Untold numbers of cases, both criminal and civil, were decided on the strength of fire and arson experts applying those beliefs and opining on whether a particular fire was arson or accident. Eventually, those beliefs were put to empirical tests in which buildings were set afire in ways that simulated both arson fires and accidental fires. By comparing the effects of the arson versus accidental fires on windows, walls, burn patterns, and so on, these conceptually simple experiments revealed that many of the accepted indicators of arson did not, in fact, distinguish arson from accidental fires. In light of the research findings, the field corrected its erroneous beliefs (at least as to future cases in which well informed examiners participated). The various subfields I will focus on in this letter are in much the same state as fire and arson investigation was before it undertook to empirically test its assumptions in order to determine which were correct and which were not.

My comments are focused on those subfields of forensic science which are variously characterized as involving pattern matching, individualization, or sometimes are referred to as criminalistics or forensic individualization (or identification) science. These include the

comparison of fingerprints, handwriting, voiceprints, toolmarks, firearms, tire prints, shoe prints, and so on. These comments *do not* speak to areas of forensic science that do not assert an ability to "individualize" – among them forensic entomology, pathology, toxicology, the chemical analysis of urine, drugs, soil, explosives, paint, fire and arson (except for using it in the example above), conventional serology, or DNA typing (except for using it, below, as a model of a subfield of forensic identification that has worked to place itself on empirically defensible ground).

Two Stages of Forensic Identification

Calling a Match

The first stage of forensic identification is the problem of when to call a match. Examiners must compare a questioned and a known image; if differences are perceived (and differences are always perceived), a decision must be made about whether these differences are "explainable" (leading to calling a match) or not (leading to exclusion of the known item as sharing a common origin with the questioned one). There are no empirically based objective standards for making these comparisons and knowing when to call a match or not. Examiners rely instead on their subjective judgment arising from their "training and experience." As one federal judge described the testimony of a firearms examiner testifying in a *Daubert* hearing: The expert "conceded, over and over again, that he relied mainly on his subjective judgment. There were no reference materials of any specificity, no national or even local database on which he relied. And although he relied on his past experience with these weapons, he had no notes or pictures memorializing his past observations" (1).

Proficiency studies and more refined research have found disagreements (that is, imperfect reliability) and errors (that is, imperfect validity even among examiners whose judgments agreed with each other) in the decisions of examiners from various subfields of forensic identification. Not many years ago it was not unusual to hear or read of examiners claiming perfect inter-examiner agreement and near-perfect accuracy. As a results of the modest amount of research already undertaken, it now is known that under some circumstances examiner errors can run to high levels (see summaries in 2, 3). Post-mortems of DNA exonerations suggest that forensic science errors have been a leading cause of erroneous convictions (3).

Highlighting the subjective and idiosyncratic nature of the comparison process, one of the very few extant studies of the judgment process found that even when fingerprint examiners agreed that a match should be called, they nevertheless differed markedly on what similarities or differences justified their conclusory judgements (4).

Examination procedures have not been developed to protect examiners from the risk of context effects (also known as observer effects), which create a cognitive bias toward confirming the investigative hunches or findings of other investigators on the same case (5). One recent study suggests forensic examiners are at least as vulnerable to such cues as people in other fields. When fingerprint examiners were shown a pair of prints each had called a match five years earlier in their regular casework, but this time were given a cue suggesting that the pair of prints

did not match, only one of the five did not succumb to the cue; the four others reached conclusions different from their original conclusions (6). This suggests the need for blind examination procedures, ideally in the context of evidence lineups (7).

These pattern matching subfields would benefit from research testing a whole array of examination practices and procedures to determine which maximize the likelihood of correct and consistent match calls. At present, only a tiny trickle of such research has been undertaken. In addition, recommendations for more informative analyses, such as the use of signal detection theory (8) have appeared in the literature.

Interpreting the Meaning of a Match

The second stage of forensic identification is the problem of interpreting the meaning of a match. To conclude that a known matches a questioned merely places the known in a pool of possible sources of the questioned mark. Unless the size of the pool can be estimated, then the diagnosticity of the match remains a guess.

Many subfields of forensic identification assume that the pool consists of a single object, and leap from the first stage (calling a match) to the conclusion that the suspect person or object is the source of the unknown. But no theoretical or empirical basis exists to support such a belief. (For a rare effort to test for the assumed uniqueness, in the area of handwriting, see 9. That work acknowledges the lack of any prior efforts to confirm the assumption of handwriting uniqueness. For a critique of that research design for the research problem at hand, see 10. For the point that no study relying on sampling can ever provide convincing empirical evidence on the claim of uniqueness, see 11.)

The probabilistic nature of forensic identification is suggested by the arguments of the founders of nearly, or literally, every one of the "individualization" subfields, and has been reiterated by thoughtful forensic scientists over the decades (reviewed in 12, 13). On present knowledge, the assertion of criminalists that they can individualize the source of a questioned mark is regarded by more thoughtful criminalists as the "leap to individualization" (14).

The practice of DNA typing does not rely on the assumption of uniqueness, and recognizes that a match does not equal proof of common origin. Instead, the practice of DNA typing routinely involves the calculation of empirically-based estimates of random match probabilities. Proper research, and assistance from conventional scientists of a number of kinds, could enable most other fields of forensic identification to achieve a similar ability to evaluate the meaning of a match using empirical data and a suitable probability-based model.

With the exception of DNA typing, which routinely does such work already, studies are needed in every forensic identification subfield to develop measures and data that will support the estimation of random match probabilities; or other empirically-based, probability-respecting assessments of the inferences that can justifiably be drawn from a finding that a questioned and a known image match.

Three Research Approaches

Three general research strategies that could be pursued in an effort to improve the scientific foundation of the forensic identification sciences appear in the literature. I briefly describe each.

The DNA Model

The various forensic individualization sciences could follow the lead of DNA typing by developing measures of their respective phenomena of interest (mostly complex patterns of ridges or striations), collecting data on their distribution in relevant populations (and subpopulations), testing for the independence or correlation of the patterns, and developing probability models appropriate to those data (product rule or something involving conditional probabilities), thus enabling examiners to obtain empirically-based random match probabilities (15). A less precise, but still useful, approach would be to draw empirically defined lines that have been determined to divide (known) non-matches from (known) matches with a high degree of dependability. Such efforts have been underway by some members of the field of firearms identification (16). Efforts along these lines would help solve the second stage problem of evaluating the meaning of a match – replacing intuitive guesswork with data.

The Basic (and Applied) Research Model

The individualization sciences rest on a body of maxims, assumptions, hypotheses, and other assorted beliefs about the phenomena of interest to them and the best way to examine relevant case specific evidence and to intuit their significance. All of those beliefs are, in principle, subject to systematic empirical testing, but very little such testing has occurred. This includes everything from basic research questions such as how independent or correlated elements of fingerprints or handwriting are to such applied research questions as whether greater accuracy flows from first examining parts or wholes.

Forensic identification science need not start with nothing. Much research already exists that can inform the questions criminalists should be asking about their methods and procedures and those could be borrowed from and built upon. Examples of such sources of research can be found in human factors engineering, psychophysics, and various cognitive sciences including signal detection theory (e.g., 8, 17). Unfortunately, forensic scientists often claim a disciplinary exceptionalism: that they are not subject to the same phenomena that have been found in other fields. Perhaps the clearest example of this involves research on context effects. Despite the fact that such effects were found in every other field in which they were tested, forensic scientists insisted that they alone could prevent such effects merely by willing themselves to do so (and therefore did not need the methodological protections so many other sciences have adopted). Dror's research (e.g., 6) suggests that, rather than being uniquely immune from such effects, forensic scientists might be unusually susceptible to such cues. It might be hoped that once serious programs of research are undertaken within the forensic identification sciences, they will come to pay greater heed to the relevant findings of other fields.

The Black Box Model

Finally, examiners could continue to rely on whatever mental tools they currently use – however subjective, intuitive, experiential, and unguided by data. Much could be learned if they simply participated in routine, organized, blind testing in which they were presented with "evidence" samples that represented systematically varied features. These features would be selected to represent the landscape of the kinds of evidence that each of the subfields customarily deals with. The result would be the development a "map" (for each subfield) of what kinds of tasks and material examiners can deal with most effectively and where their skills fall off. For example, how fragmentary can a latent fingerprint be and still be useful for drawing conclusions? How small can a quantity of writing be and still be sufficient? At present, such judgments are left entirely to the discretion of the individual examiner. As information from such black-box studies were accumulated and made part of the literature, examiners would develop an empirically informed sense of their collective strengths and weaknesses, the boundaries of what they can do well and where they need to refrain from asserting confident conclusions.

I will conclude by saying that I do not believe that there is anything about forensic identification scientists that makes them inherently anti-research or anti-science. I suspect that the main problem is that they simply have little idea how to design or conduct the kind of research that needs to be done, and lack the time, resources, and help from researchers in other fields that would enable them to do so. It is telling that the little research that has been conducted on core assumptions and procedures has been carried out by people from fields other than forensic science, such as engineering and psychology. Again, I would point to the positive example of DNA typing as illustrating the kind of scientific work that can be accomplished when resources of various kinds (including help from specialists from other, more conventional, scientific fields) are made available.

Sincerely,

Michael J. Saks, Ph.D.
Professor of Law
Professor of Psychology
Fellow, Center for the Study of Law, Science, and Technology

References

1. United States v. Green, 405 F.Supp.2d 104 (D.Mass. 2005)

2. Faigman, Kaye, Saks, & Sanders (eds.), MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY (2005-2006) (see chapter 31 by Peterson & Thornton and chapters 34-39 on various forensic identification sciences).

3. Saks & Koehler, *The Coming Paradigm Shift in Forensic Identification Science*, 309 SCIENCE 892 (2005).

4. Evett & Williams, *A Review of the Sixteen Points Fingerprint Standard in England and Wales,* 46 JOURNAL OF FORENSIC IDENTIFICATION 49 (1996).

5. Risinger, Saks, Rosenthal & Thompson, *The* Daubert/Kumho *Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 U. CAL. L. REV. 1 (2002).

6. Dror, Charlton, & Péron, E. *Contextual Information Renders Experts Vulnerable to Make Erroneous Identifications*, 156 FORENSIC SCIENCE INTERNATIONAL 74 (2006).

7. Saks, Risinger, Rosenthal & Thompson, *Context Effects in Forensic Science: A Review and Application of the Science of Science to Crime Laboratory Practice in the United States*, 43 SCIENCE & JUSTICE 77 (2003).

8. Phillips, Saks & Peterson, *Signal Detection Theory and Decision-making in Forensic Science,* 46 JOURNAL OF FORENSIC SCIENCES 294 (2001).

9. Srihari, Cha, Arora, & Lee, *Individuality of Handwriting*, 47 J. FORENSIC SCI. 856 (2002).

10. Saks, *Commentary on "Individuality of Handwriting,"* 48 J. FORENSIC SCIENCES 916 (2003).

11. Balding, WEIGHT-OF-EVIDENCE FOR FORENSIC DNA PROFILES (2005).

12. Saks & Koehler, *The Individualization Fallacy* (forthcoming).

13. Saks, *Merlin and Solomon: Lessons from the Law's Formative Encounters with Forensic Identification Science*, 49 HASTINGS LAW JOURNAL 1069 (1998).

14. Inman & Rudin, PRINCIPLES AND PRACTICE OF CRIMINALISTICS (2000).

15. Kaye & Sensabaugh, *DNA Typing*, Chapter 32 in Faigman, Kaye, Saks, & Sanders (eds.), MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY (2005-2006).

16. Biasotti & Murdock, *Firearms and Toolmark Identification,* Chapter 36 in Faigman, Kaye, Saks, & Sanders (eds.), MODERN SCIENTIFIC EVIDENCE: THE LAW AND SCIENCE OF EXPERT TESTIMONY (2005-2006).

17. Thompson & Cole, *Psychological Aspects of Forensic Identification Evidence*, in Costanzo, Krauss, & Pezdek (eds.), EXPERT PSYCHOLOGICAL TESTIMONY FOR THE COURTS (2006).

REVIEW

The Coming Paradigm Shift in Forensic Identification Science

Michael J. Saks[1] and Jonathan J. Koehler[2]

Converging legal and scientific forces are pushing the traditional forensic identification sciences toward fundamental change. The assumption of discernible uniqueness that resides at the core of these fields is weakened by evidence of errors in proficiency testing and in actual cases. Changes in the law pertaining to the admissibility of expert evidence in court, together with the emergence of DNA typing as a model for a scientifically defensible approach to questions of shared identity, are driving the older forensic sciences toward a new scientific paradigm.

Little more than a decade ago, forensic individualization scientists compared pairs of marks (handwriting, fingerprints, tool marks, hair, tire marks, bite marks, etc.), intuited whether the marks matched, and testified in court that whoever or whatever made one made the other. Courts almost never excluded the testimony. Cross-examination rarely questioned the foundations of the asserted expertise or the basis of the analyst's certainty.

Today, that once-complacent corner of the law and science interface has begun to unravel—or at least to regroup. The news carries reports of erroneous forensic identifications of hair, bullets, handwriting, footprints, bite marks, and even venerated fingerprints. Scientists have begun to question the core assumptions of numerous forensic sciences (*1*–*6*). Federal funding has materialized to support research that examines long-asserted but unproven claims. Courts have started taking challenges to asserted forensic science expertise seriously (*1*). A dispassionate scientist or judge reviewing the current state of the traditional forensic sciences would likely regard their claims as plausible, underresearched, and oversold.

The traditional forensic individualization sciences rest on a central assumption: that two indistinguishable marks must have been produced by a single object. Traditional forensic scientists seek to link crime scene evidence to a single person or object "to the exclusion of all others in the world" (*7*, *8*). They do so by leaning on the assumption of discernible uniqueness. According to this assumption, markings produced by different people or objects are observably different. Thus, when a pair of markings is not observably different, criminalists conclude that the marks were made by the same person or object.

Although lacking theoretical or empirical foundations, the assumption of discernible uniqueness offers important practical benefits to the traditional forensic sciences. It enables forensic scientists to draw bold, definitive conclusions that can make or break cases. It excuses the forensic sciences from developing measures of object attributes, collecting population data on the frequencies of variations in those attributes, testing attribute independence, or calculating and explaining the probability that different objects share a common set of observable attributes. Without the discernible uniqueness assumption, far more scientific work would be needed, and criminalists would need to offer more tempered opinions in court.

Legal and scientific forces are converging to drive an emerging skepticism about the claims of the traditional forensic individualization sciences. As a result, these sciences are moving toward a new scientific paradigm. [We use the notion of paradigm shift not as a literal application of Thomas Kuhn's concept (*9*), but as a metaphor highlighting the transformation involved in moving from a prescience to an empirically grounded science.] Two such forces are outgrowths of DNA typing: the discovery of erroneous convictions and a model for a scientifically sound identification science. A third force is the momentous change in the legal admissibility standards for expert testimony. A final force grows from studies of error rates across the forensic sciences.

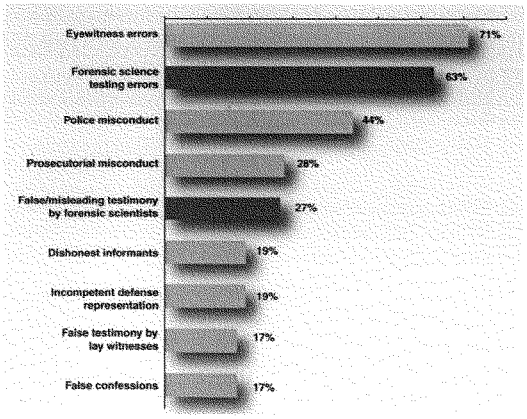


Fig. 1. Factors associated with wrongful conviction in 86 DNA exoneration cases, based on case analysis data provided by the Innocence Project, Cardozo School of Law (New York, NY), and computed by us. Percentages exceed 100% because more than one factor was found in many cases. Red bars indicate factors related to forensic science.

[1]College of Law, Arizona State University, Tempe, AZ 85287, USA. E-mail: saks@asu.edu [2]McCombs School of Business, University of Texas, Austin, TX 78712, USA. E-mail: koehler@mail.utexas.edu

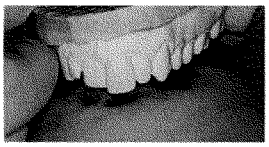


Fig. 2. Bite mark evidence exhibit from trial of Ray Krone, suggesting alignment of a cast of Krone's dentition with bite wounds in victim's flesh [*State v. Krone*, 182 Ariz. 319 (1995)]. A forensic odontologist testified that this showed Krone to be the biter. Krone was convicted of murder and sentenced to death, but a decade later he was exonerated by DNA analysis. [Source: E. Thomas Barham (Los Alamitos, CA) and Alan Simpson (Phoenix, AZ), attorneys for Krone]

Post-Conviction DNA Exonerations

During the past decade, scores of people who were convicted of serious crimes—including at least 14 who had been sentenced to death—have been exonerated by DNA analyses of crime scene evidence that had not been tested at the time of their trials (*10*). It was not surprising to learn that erroneous convictions sometimes occur, and that new science and technology can help detect and correct those mistakes. Nor was it surprising to learn, from an analysis of 86 such cases (Fig. 1), that erroneous eyewitness identifications are the most common contributing factor to wrongful convictions. What was unexpected is that erroneous forensic science expert testimony is the second most common contributing factor to wrongful convictions, found in 63% of those cases. These data likely understate the relative contribution of forensic science expert testimony to erroneous convictions. Whereas lawyers, police, and lay witnesses participate in virtually every criminal case, forensic science experts participate in a smaller subset of cases—about 10 to 20% of criminal cases during the era when these DNA exonerations were originally tried (*11*).

Figure 1 also indicates that forensic scientists are the witnesses most likely to present misleading or fraudulent testimony. Deceitful forensic scientists are a minor sidelight to this paper, but a sidelight that underscores cultural differences between normal science and forensic science (*12, 13*). In normal science, academically gifted students receive four or more years of doctoral training where much of the socialization into the culture of science takes place. This culture emphasizes methodological rigor, openness, and cautious interpretation of data. In forensic science, 96% of positions are held by persons with bachelor's degrees (or less), 3% master's degrees, and 1% Ph.D.s (*14*). When individuals who are not steeped in the culture of science work in an adversarial, crime-fighting culture, there is a substantial risk that a different set of norms will prevail. As one former forensic scientist noted, this pressure-packed environment can lead to data fudging and fabrication: "All [forensic science] experts are tempted, many times in their careers, to report positive results when their inquiries come up inconclusive, or indeed to report a negative result as positive" [(*15*), p. 17].

DNA Typing as the New Model for Scientific Forensic Identification

Much of the above criticism does not apply to the science of DNA typing as practiced today. Indeed, DNA typing can serve as a model for the traditional forensic sciences in three important respects. First, DNA typing technology was an application of knowledge derived from core scientific disciplines. This provided a stable structure for future empirical work on the technology. Second, the courts and scientists scrutinized applications of the technology in individual cases. As a result, early, unscientific practices were rooted out. Third, DNA typing offered data-based, probabilistic assessments of the meaning of evidentiary "matches." This practice represented an advance over potentially misleading match/no-match claims associated with other forensic identification sciences.

Immediately after DNA's first courtroom appearance in the 1980s, scientists from disciplines as varied as statistics, psychology, and evolutionary biology debated the strengths and limitations of forensic DNA evidence. Blue-ribbon panels were convened, conferences were held, unscientific practices were identified, data were collected, critical papers were written, and standards were developed and implemented. The scientific debates focused on the adequacy of DNA databases (*16*), the computation of DNA match probabilities (*17*), the training of DNA analysts (*18*), the presentation of DNA matches in the courtroom (*19*), and the role of error rates (*20*). In some cases, disputants worked together to find common ground (*21*). These matters were not resolved by the forensic scientists themselves, by fiat, or by neglect. Most exaggerated claims and counterclaims about DNA evidence have been replaced by scientifically defensible propositions. Although some disagreement remains (*22*), the scientific process worked.

One of the great strengths of DNA typing is that it uses a statistical approach based on population genetics theory and empirical testing. Experts evaluate matches between suspects and crime scene DNA evidence in terms of the probability of random matches across different reference populations (e.g., different ethnicities). These probabilities are derived from databases that identify the frequency with which various alleles occur at different locations on the DNA strand. The traditional forensic sciences could and should emulate this approach (*23*). Each subfield must construct databases of sample characteristics and use these databases to support a probabilistic approach to identification. Fingerprinting could be one of the first areas to make the transition to this approach because large fingerprint databases already exist. The greatest challenge in this effort would be to develop measures of the complex images presented by fingerprints, tool marks, bite marks, handwriting, etc. (Figs. 2 and 3). Forensic scientists will need to work with experts in differential geometry, topology, or other fields to develop workable measures.

A second data collection effort that would strengthen the scientific foundation of the forensic sciences involves estimating error rates. Although the theoretical promise of forensic technology is considerable, the practical value of any particular technology is limited by the extent to which potentially important errors arise. The best way to identify the frequency with which errors occur is to conduct blind, external proficiency tests using realistic samples. A proficiency test requires analysts to make judgments about samples whose properties are known. External proficiency tests are conducted by an agency unaffiliated with the forensic scientist's laboratory. Externality is important to the integrity of proficiency tests because laboratories have strong incentives to

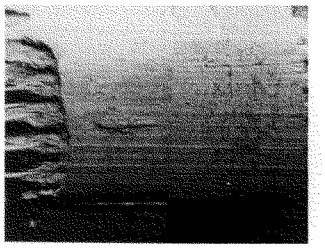


Fig. 3. Image of two bullets viewed through a comparison microscope. The bullets were fired from two consecutively manufactured Smith & Wesson 38 Special revolver barrels. Whether fired through the same or different barrels, numerous matching and nonmatching striations are engraved onto bullets. To reliably identify the barrel through which a questioned bullet was fired, an examiner must distinguish among class, subclass, and individual characteristics. These two bullets illustrate subclass characteristic agreement of striated markings on a groove impression that could be mistaken for individual characteristics. Without investigating the potential for subclass carryover, the examiner could mistake these as having been fired from the same gun. [Source: Bruce Moran, firearms examiner with the Sacramento County (CA) District Attorney, Laboratory of Forensic Services]

be perceived as error-free. An even better test would be a blind proficiency test, in which the analyst believes the test materials are part of ordinary case work. Blindness increases the validity of proficiency test results because it ensures that analysts treat the test sample as they would other case samples. Although proficiency tests are used in many forensic sciences, the tests are generally infrequent, internal, and unrealistic; blind tests are practically nonexistent.

Changes in the Law

Until recently, courts assessed expertise by looking for superficial indicia of validity. In the 19th century, courts were impressed by "qualifications" and success in the marketplace. If the market valued an asserted expertise or expert, courts generally did, too. In *Frye v. United States* [293 F. 1013 (D.C. Cir. 1923)], a federal appellate court confronted the question of admissibility of an expertise that had no life in any commercial marketplace. The court solved the problem by substituting an intellectual marketplace. The court asked whether the proffered expertise had "gained general acceptance in the particular field in which it belongs." Sixty years later, the *Frye* test had become the dominant expert evidence filter in American courts.

In 1993, the law began to catch up with the scientific method. In *Daubert v. Merrell Dow Pharmaceuticals* [509 U.S. 579 (1993)], the U.S. Supreme Court introduced a new standard for the admissibility of scientific evidence. Under *Daubert*, proffered scientific testimony must be shown to stand on a dependable foundation. The court suggested that trial judges making this determination consider whether the proffered science has been tested, the methodological soundness of that testing, and the results of that testing. The *Daubert* test in effect lowers the threshold for admission of sound cutting-edge science and raises the threshold for long-asserted expertise that lacks a scientific foundation. Seriously applied, the *Daubert* test subjects the forensic sciences to a first-principles scientific scrutiny that poses a profound challenge to fields that lack rigorous supporting data.

United States v. Starzecpyzel [880 F. Supp. 1027 (S.D.N.Y. 1995)] offered an early indication of how *Daubert* could change judicial views. After an extensive hearing on the soundness of asserted handwriting identification expertise, a federal district court concluded that the field had no scientific basis: "[T]he testimony at the *Daubert* hearing firmly established that forensic document examination, despite the existence of a certification program, professional journals and other trappings of science, cannot, after *Daubert*, be regarded as 'scientific ... knowledge'" (p. 1038). However, the court did not exclude this unscientific testimony. It reasoned that handwriting identification did not have to reach the *Daubert* standard because *Daubert* applied only to scientific evidence, and handwriting identification plainly was not scientific evidence. Thus, when a forensic science was found to stand on a weak foundation, the threshold of admission was lowered to accommodate this weakness.

In *Kumho Tire v. Carmichael* [526 U.S. 137 (1999)], the Supreme Court directly confronted the question of whether *Daubert* applies to nonsciences. A consortium of law enforcement organizations prepared an amicus brief urging that *Daubert* scrutiny not be extended to the testimony of police agency expert witnesses. The brief argued that "the great bulk of expert testimony provided by law enforcement officers does not involve scientific theories, methodologies, techniques, or data in any respect.... Instead, law enforcement officers testify about such things as accident reconstruction, fingerprint, footprint and handprint [identification], handwriting analysis, firearms markings and toolmarks and the unique characteristics of guns, bullets, and shell casings, and bloodstain pattern identification" (*24*). Ironically, then, fields that initially gained entry to the courts by declaring themselves to be "sciences" now sought to remain in court by denying any connection with scientific methods, data, or principles. Despite efforts to preserve the "nonscience" loophole, the Supreme Court doctrinally sealed it shut when *Kumho Tire* held that all expert testimony must pass appropriate tests of validity to be admissible in court.

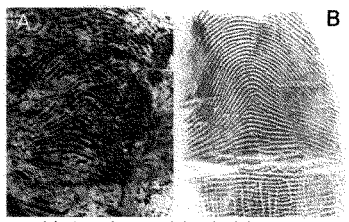


Fig. 4. (**A**) A latent fingerprint believed to belong to a terrorist involved in train bombings in Madrid, Spain, in March 2004. (**B**) A database print belonging to Brandon Mayfield of Portland, Oregon. On the basis of these prints (though not necessarily these very images), FBI fingerprint examiners erroneously identified Mayfield as the bomber (*26*). [Source: Problem Idents, onin.com/fp/problemidents.html#madrid]

Error Rates

Although *Daubert*'s testing recommendations are familiar to most scientists, there has been remarkably little research on the accuracy of traditional forensic sciences. Proficiency tests in some fields offer a step in the right direction, even though simple tasks and infrequent peer review limit their value. Nonetheless, the available data hint that some forensic sciences are best interpreted in tandem with error rates estimated from sound studies.

Unfortunately, forensic scientists often reject error rate estimates in favor of arguments that theirs is an error-free science. For example, an FBI document section chief asserted that all certified document examiners in the United States would agree with his conclusions in every case [(*25*), p. 196]. Likewise, fingerprint experts commonly claim that all fingerprint experts would reach the same conclusions about every print (*2*). Such hubris was on display in spring 2004 when the FBI declared that a fingerprint recovered from a suspicious plastic bag near the scene of a terrorist bombing in Madrid provided a "100 percent match" to an Oregon attorney (Fig. 4). The FBI eventually conceded error when Spanish fingerprint experts linked the print to someone else (*26*).

The FBI and other agencies often seek to preserve the illusion of perfection after disclosure of such errors by distinguishing between human errors ("possible") and errors of method ("impossible"). A leading FBI scientist explained the distinction to the court in *United States v. Llera-Plaza I* [58 Fed. R. Evid. Serv. 1 (E.D. Pa. 2002)]: "We have to understand that error rate is a difficult thing to calculate. I mean, people are trying to do this, it shouldn't be done, it can't be done.... An error rate is a wispy thing like smoke, it changes over time.... If you made a mistake in the past, certainly that's valid information ... but to say there's an error rate that's definable would be a misrepresentation.... Now, error rate deals with people, you should have a method that is defined and stays within its limits, so it doesn't have error at all. So the method is one thing, people making mistakes is another issue."

Such claims are problematic. First, the suggestion that humans err but forensic techniques do not is unfalsifiable. It is impossible to disentangle "method" errors from "practitioner" errors in fields where the method is primarily the judgment of the examiner. Second, even if such disentanglement were possible, it is a red herring. When fact-finders hear evidence of a forensic match, a proper assessment of the probative value of that match requires awareness of the chance that a mistake was made. The source of such a mistake is irrelevant for this purpose. If method errors could be distinguished from practitioner errors,

a 1% method error affects the probative value of the match in exactly the same way as a 1% practitioner error. Identifying sources of error is relevant for improving forensic science practice, but it plays no role in identifying the probative importance of a match.

Third, the suggestion that error rates do not exist because they change over time and are not specific to the case at hand is a base-rate fallacy. In this fallacy of reasoning, people underuse (or willfully ignore) general background data in judgment tasks because they believe the data are irrelevant to the instant case. However, general background data (or base rates) are relevant for specific predictions (*27*, *28*). For example, although risk estimates for a disease fluctuate and are developed on patients other than the patient now seeking medical advice, these estimates provide information useful for predicting whether this patient will contract the disease. A 20% base-rate risk of contracting the disease makes it more likely that the patient will get the disease than would a 1% risk. Likewise, an X% base-rate risk of error in a given forensic science provides some indication of the chance that a particular conclusion is in error (*22*).

Data from proficiency tests and other examinations suggest that forensic errors are not minor imperfections. Spectrographic voice identification error rates are as high as 63%, depending on the type of voice sample tested [(*1*), chap. 31]. Handwriting error rates average around 40% and sometimes approach 100% [(*1*), chap. 28]. False-positive error rates for bite marks run as high as 64% [(*1*), chap. 30]. Those for microscopic hair comparisons are about 12% (using results of mitochondrial DNA testing as the criterion) (*29*). Fingerprint examiners generally fare better, although data from a well-known forensic testing program contradict industry boasts of perfect, or even near-perfect, agreement (*30*). Since 1995, about one-fourth of examiners failed to correctly identify all latent prints in this test (which includes 9 to 12 latent prints and palmprints). About 4 to 5% of examiners committed false-positive errors on at least one latent. In one test, 20% of examiners mistook one person's prints for those of his twin. The editor of the leading fingerprint journal called this performance "unacceptable" [(*31*), p. 524]. It is noteworthy that these misidentifications are not confined to a single lab, circumstance, or marking. Moreover, the misidentification rates do not show a clear pattern of improvement (the misidentification rates in 2004 were 4 to 6%). Nor are these errors limited to arguably artificial testing situations; erroneous fingerprint identifications have made their way out of the crime lab and into prosecutions in at least 21 documented cases (*32*).

Forensic science proficiency tests and examinations are obviously imperfect indicators of the rate at which errors occur in practice. This fact does not justify ignoring the worrisome data these tests have yielded. Indeed, these data are probably best regarded as lower-bound estimates of error rates. Because the tests are relatively easy (according to test participants), and because participants know that mistakes will be identified and punished, test error rates (particularly the false-positive error rate) probably are lower than those in everyday casework (*33*, *34*).

The studies mentioned above cry out for attention and follow-up investigations. In light of the law's growing reluctance to accept experts' personal guarantees in lieu of scientific data, these studies should increase candor about performance and create pressure for improvement.

The Future

The traditional forensic sciences need look no further than their newest sister discipline, DNA typing, for guidance on how to put the science into forensic identification science. This effort should begin with adoption of the basic-research model. Just as DNA scientists tested the genetic assumptions that undergirded DNA typing theory (e.g., Hardy-Weinberg equilibrium), traditional forensic scientists should design experiments that test the core assumptions of their fields. As basic research knowledge grows, experts will be able to inform courts about the relative strengths and weaknesses of their theories and methods, and suggest how that knowledge applies to individual cases.

At the same time, data should be collected on the frequency with which markings and attribute variations occur in different populations. In addition to their case-specific benefits, these data may also facilitate the development of artificial intelligence or computer-aided pattern recognition programs for the identification sciences. Forensic scientists might also adopt protocols, such as blind examinations in combination with realistic samples, that minimize the risks that their success rates will be inflated and their conclusions biased by extraneous evidence and assumptions (*34*). When matches are identified, forensic scientists in all fields would compute and report random-match probabilities similar to those used in DNA typing. These estimates—in combination with error rate estimates provided by mandatory, well-constructed proficiency tests—would inform fact-finders about the probative value of the evidentiary match.

Simply put, we envision a paradigm shift in the traditional forensic identification sciences in which untested assumptions and semi-informed guesswork are replaced by a sound scientific foundation and justifiable protocols. Although obstacles exist both inside and outside forensic science, the time is ripe for the traditional forensic sciences to replace antiquated assumptions of uniqueness and perfection with a more defensible empirical and probabilistic foundation.

References

1. D. L. Faigman, D. Kaye, M. J. Saks, J. Sanders, *Modern Scientific Evidence: The Law and Science of Expert Testimony* (Thompson-West, St. Paul, MN, ed. 2, 2002).
2. R. Epstein, *S. Cal. Law Rev.* **75**, 605 (2002).
3. M. J. Saks, *Hastings Law J.* **49**, 1069 (1998).
4. National Research Council, *Forensic Analysis: Weighing Bullet Lead Evidence* (National Academy Press, Washington, DC, 2004).
5. I. Pretty, D. Sweet, *Sci. Justice* **41**, 85 (2001).
6. C. M. Cooley, *Stanford Law Policy Rev.* **15**, 381 (2004).
7. D. A. Stoney, *J. Forensic Sci. Soc.* **31**, 197 (1991).
8. J. W. Osterburg, *J. Crim. Law Criminol.* **60**, 97 (1969).
9. T. S. Kuhn, *The Structure of Scientific Revolutions* (Univ. of Chicago Press, Chicago, 1962).
10. B. Scheck, P. Neufeld, J. Dwyer, *Actual Innocence* (Doubleday, New York, 2000).
11. J. Peterson, Forensic Science and the Courts (National Institute of Justice, Washington, DC, January 1986).
12. P. C. Giannelli, *Issues Sci. Tech.* **20**, 55 (fall 2003).
13. P. C. Giannelli, *Va. J. Soc. Policy Law* **4**, 439 (1997).
14. K. G. Furton, Y. L. Hsu, M. D. Cole, *J. Forensic Sci.* **44**, 128 (1999).
15. A. A. Moenssens, *J. Crim. Law Criminol.* **84**, 1 (1993).
16. Committee on DNA Technology in Forensic Science, *DNA Technology in Forensic Science* (National Research Council, Washington, DC, 1992).
17. R. C. Lewontin, D. L. Hartl, *Science* **254**, 1745 (1991).
18. Technical Working Group on DNA Analysis Methods, *Crime Lab. Digest.* **18**, 44 (1991).
19. K. Roeder, *Stat. Sci.* **9**, 263 (1994).
20. J. J. Koehler, A. Chia, J. S. Lindsey, *Jurimetrics J.* **35**, 201 (1995).
21. B. Budowle, E. S. Lander, *Nature* **371**, 735 (1994).
22. J. J. Koehler, *Jurimetrics J.* **37**, 425 (1997).
23. M. J. Saks, J. J. Koehler, *Cardozo Law Rev.* **13**, 361 (1991).
24. Brief Amicus Curiae of Americans for Effective Law Enforcement et al., submitted in *Kumho Tire v. Carmichael*, No. 97-1709, in the Supreme Court of the United States (October Term, 1997).
25. D. Fisher, *Hard Evidence* (Simon & Schuster, New York, 1995).
26. D. Heath, H. Bernton, Portland lawyer released in probe of Spain bombings, *Seattle Times* (21 May 2004).
27. D. Kahneman, A. Tversky, *Psychol. Rev.* **80**, 237 (1973).
28. J. J. Koehler, *Behav. Brain Sci.* **19**, 1 (1996).
29. M. M. Houck, B. Budowle, *J. Forensic Sci.* **47**, 964 (2002).
30. Collaborative Testing Services Inc., Forensics Testing Program: Latent Prints Examination, 1993–2004.
31. D. Grieve, *J. Forensic Ident.* **46**, 524 (1996).
32. S. Cole, *J. Crim. Law Criminol.*, in press (available at www.seweb.uci.edu/faculty/cole).
33. J. L. Peterson *et al.*, *Forensic Evidence and the Police* (National Institute of Justice, Washington, DC, 1984).
34. M. J. Saks, D. M. Risinger, R. Rosenthal, W. Thompson, *Sci. Justice* **43**, 77 (2003).

10.1126/science.1111565

WASHINGTON BUREAU · NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF COLORED PEOPLE
1156 15TH STREET, NW SUITE 915 · WASHINGTON, DC 20005 · P (202) 463-2940 · F (202) 463-2953
E-MAIL: WASHINGTONBUREAU@NAACPNET.ORG · WEB ADDRESS WWW.NAACP.ORG

Testimony of Mr. Hilary Shelton,
Director, NAACP Washington Bureau &
Senior Vice President for Advocacy and Policy
Before the Senate Judiciary Committee
on
"Strengthening Forensic Science in the United States"
September 9, 2009

Chairman Leahy, Ranking Member Sessions, and members of the Senate Judiciary Committee, I thank you on behalf for the NAACP for holding this important series of hearings on the use of forensic science in our criminal justice system, and considering the NAACP's concerns regarding such a crucial issue, one which speaks to the very integrity of our Nations criminal justice system. I am submitting this testimony on behalf of the NAACP, our Nation's oldest, largest and most widely-recognized grassroots civil rights organization. The NAACP has more than 2,200 membership units in every state in our Nation, as well as in Italy, Germany, Korea and Japan.

The NAACP supports the recommendations made by the report issued earlier this year by the National Academy of Sciences' (NAS) Committee on *Identifying the Needs of the Forensic Science Community*[1]. Specifically, the NAACP strongly supports the recommendation that Congress should create a new, independent agency to oversee the further development, advancement and utilization of forensic science. This agency should be independent of existing law enforcement agencies at the local, state and federal level and therefore unencumbered by any biases these organizations, agencies or their representatives may have.

From the dark days of slavery, through the cruel and inhumane years of lynching's and Jim Crow laws, and even today the American criminal justice system has always been, and continues to be deeply affected by race. Currently, racial and ethnic minorities are over-represented at every level of the criminal justice system; from routine traffic and pedestrian stops, to arrests, to convictions, to the length and

[1] *Strengthening Forensic Science in the United States: A Path Forward.* Committee on Identifying the Needs of the Forensic Science Community, the National Academies Press (2009)

severity of sentences. African Americans and other people of color are treated more suspect, and more harshly by the American criminal justice system.

It is difficult, if not impossible, for entire communities in our Nation to have faith in the criminal justice system when it so blatantly and obviously perpetuates racial and ethnic disparities. As such, one of the core missions of the NAACP is and has always been to the elimination of racial prejudice our pursuit of equal justice under the law. And while a reform of forensic science, which is often a key element used to determine the guilt or innocence of an accused, will not solve all of the racial disparities inherent in our criminal justice system, it will however help to alleviate some of the important problems.

Furthermore, if the Congress does move forward with the establishment of an independent agency as outlined in the NAS report, the availability of current forensic evidence to investigators, prosecutors and the defense will undoubtedly be of benefit to all, and will help to restore some confidence in the system, or at least provide recourse for those falsely accused.

It is impossible to say with any certainty the number of people in our Nation who have been erroneously accused, let alone convicted, of crimes they did not commit. It is also therefore impossible to cite, with 100% accuracy, the racial disparities that exist among those who are wrongly imprisoned. Yet it is significant that of the 242 prisoners who have been exonerated by the Innocence Project, which does not seek to correct racial disparities, at least 144, or almost 60% are African American.

In his testimony before your committee, Peter Neufeld of the *Innocence Project* stated that "(i)nadequate science leaves evidence open to attack and may mean that police, prosecutors, judges and juries across the country are at risk of being mislead away from the real perpetrators of the crime.[2]" The absence of adequate science may also mean that investigations and trials may also be dominated by, and the fate of the accused may also hinge on, biases of the police, prosecutors, judges and juries. And, as the NAS report so clearly demonstrates, judges and juries, as well as defense attorneys, cannot be relied upon to detect and question deficient forensic evidence.

By providing all of the interested parties in a criminal case with access to better science, the NAACP is confident that the number of erroneous convictions will decrease. This is not to say that racial biases will be eliminated but, if properly implemented, an independent agency such as the one recommended by the NAS committee will provide investigators, prosecutors, judges, juries and defense

[2] Testimony of Peter Neufeld, Co-Director, the Innocence Project, Senate Judiciary Committee Hearing Strengthening Forensic Science in the United States September 9, 2009

attorneys, not to mention the American people, with better tools to address, and hopefully mitigate some of the corrosion that racial bias has traditionally played in our Nation's criminal justice system.

So again I would like to thank the Senate committee, Chairman Leahy and all of the members for their interest and commitment in pursuing this matter. To reiterate, the NAACP strongly supports the recommendations by the NAS Committee on Identifying the Needs of the Forensic Science Community that Congress should create a new, independent, non-partisan agency to oversee forensic science. We encourage this committee to work with its counterpart in the other body as well as the Executive Branch to pursue the recommendations in the NAS report. We believe that such an agency is an important step to restoring integrity, and the confidence of the American people, in the American Judicial system.

Thank you very much for the opportunity to present the views of the NAACP and we stand ready to help advance this very important initiative.

The Constitution Project

September 15, 2009

Chairman Patrick Leahy
Senator Jeff Sessions
United States Senate
Committee on the Judiciary
224 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Leahy, Senator Sessions, and Members of the Committee:

I write to provide the Constitution Project's comments on the National Academy of Sciences (NAS) report, "Strengthening Forensic Science in the United States: A Path Forward." The Committee's September 9 hearing on this report was a vital step forward in ensuring much-needed improvements in the accuracy of forensic science.

Since 1997, the Constitution Project has sought consensus solutions to difficult legal and constitutional issues through constructive dialogue across ideological and partisan lines, and through scholarship, activism, and public education efforts. In 2005, our Death Penalty Committee - a group of experts with diverse experiences throughout the criminal justice system, and that includes both opponents and proponents of capital punishment - issued a report entitled *Mandatory Justice: The Death Penalty Revised*, which contains the Committee's consensus recommendations for urgently-needed reforms. The Committee's recommendations regarding forensic evidence parallel those issued this year by the NAS. In particular, the Committee urged that:

- The testimony of a prosecution forensic examiner not associated with an accredited forensics laboratory should be excluded from evidence.
- Laboratories should be accredited only when they meet stringent scientific standards.
- Forensics laboratories should audit all death penalty cases when there is reason to believe that an examiner engaged in forensic fraud or an egregious act of forensic negligence in any case (whether capital or not) during the examiner's professional career.

The Constitution Project's experience is that finding consensus among a wide group of stakeholders is no easy task, which makes the NAS truly a remarkable effort. The NAS's conclusion is that the criminal justice system, and public safety, depend on scientifically sound and reliable forensic evidence. Forensic scientists, police, and prosecutors aspire to

do the best job they can, but cannot properly administer justice and focus their resources in the right direction without accurate forensic tools and science-based assessments of the evidence.

However, as the NAS report documents, forensic scientists have been plagued by a variety of obstacles to that goal. Not only must they deal with insufficient funding to operate crime laboratories and to educate and train practitioners, but they have not had a scientific framework within which they could develop their craft and uniform standards on which to base their methods. The primary recommendation of the NAS report is critically important: an independent, science-based body that can support solid scientific research into the forensic disciplines in question and set standards for the conduct of these forensic disciplines based on the results of that research. Once standards are set, testimony of a prosecution forensic examiner should only be admissible if he or she comes from an accredited laboratory and that accreditation is granted only when laboratories meet stringent scientific standards.

Without rigorous scientific scrutiny and a central scientific entity, it is impossible to truly reform the forensic sciences. It is also vital that this entity be independent and transparent, and not, as the NAS report describes it, "beholden to law enforcement."

Improving public safety by ensuring the accuracy of forensic science is not a partisan issue. Forensic science plays a vital role in convicting the guilty and exonerating the innocent, as the case of Cameron Todd Willingham tragically demonstrates. Texas executed Mr. Willingham in 2004 based on a determination by investigators that the fire that killed his three children was caused by arson and that Mr. Willingham deliberately set the fire. However, just before his execution, a leading fire and explosives scientist alerted authorities that his review of the evidence using scientific data appeared to prove that the fire was not arson, but a tragic accident. Now, six of the nation's leading fire investigators have come to the same conclusion. It is cases such as Mr. Willingham's that demonstrate the foresight of the Constitution Project's Death Penalty Committee, when it recommended that forensic laboratories audit all death penalty cases when there is reason to question the actions of the forensic examiner.

The Constitution Project urges the Committee to enact legislation based on the NAS recommendations. Such legislation is urgently needed to ensure the fairness and accuracy of our criminal justice system.

Very truly yours,

Virginia E. Sloan
President