



**TESTIMONY OF PETER NEUFELD  
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HOUSE JUDICIARY SUBCOMMITTEE ON CRIME  
HEARING ON  
STRENGTHENING FORENSIC SCIENCE IN THE UNITED  
STATES: A PATH FORWARD  
MAY 13, 2009**

Thank you Chairman Scott, Ranking Member Gohmert, 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. I am extremely pleased to participate in this hearing reviewing the recommendations and conclusions of the National Academies' report *Strengthening Forensic Science in the United States: A Path Forward*. Thank you for the invitation to testify before you today.

The development of DNA testing has allowed the Innocence Project to help exonerate 238 factually innocent Americans – 17 of whom were on death row awaiting execution. However, fewer than 10 percent of cases that come before the courts involve biological evidence that could be subjected to DNA testing; DNA testing cannot help us identify the truth in the remaining 90 percent of cases, many of which involve some form of forensic evidence. Thus the need to be as sure as possible about the probative value of non-DNA forensic evidence is critical to the integrity of our criminal justice system.

This is particularly true given the fact that our work with DNA exonerations has shown us the shortcomings of non-DNA forensics. Our cases have allowed us the opportunity to examine what went wrong, and that research has yielded a stunning statistic: police and prosecutors' reliance on un-validated and/or improper forensics was the second-greatest contributing factor to those wrongful convictions.<sup>1</sup> Those cases show what the NAS report documents – that the lack of science underpinning non-DNA forensics has tremendous potential to mislead the criminal justice system away from the real perpetrators of crime, and that the system must use science to address these scientific shortcomings in order to improve the reliability of forensic evidence, and thus our criminal investigations, prosecutions and convictions.

The Innocence Project strongly believes that the NAS report provided a critical wakeup call regarding the serious shortcomings that exist regarding forensic evidence, and a roadmap to addressing the major improvements in the forensic system necessary to ensure the most accurate evidence – and therefore justice – possible. While the findings of this expert scientific panel was 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. The Innocence Project therefore strongly endorses the report's recommendations; the findings and recommendations of this report are critical to the improvement of our criminal justice system.

The Innocence Project strongly supports the Academy's central recommendation: to ensure the integrity of the forensic evidence used to guide the criminal justice system, the federal government must create a National Institute of Forensic Sciences. Many forensic techniques – such as hair microscopy, bite mark comparisons, fingerprints, firearm tool

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<sup>1</sup> The Innocence Project's analysis regarding wrongful convictions involving unvalidated or improper forensic science that were later overturned through DNA testing is attached to this testimony.

mark analysis and shoe print comparisons – have never been subjected to rigorous scientific evaluation. Yet as I speak, these assays and technologies are being used in investigations, prosecutions and convictions daily everywhere in this country, despite their potential to mislead police, prosecutors, judges and juries away from the real perpetrators of crime. Likewise, forensics techniques that have been properly validated – such as serology, commonly known as blood typing – are sometimes improperly conducted or inaccurately conveyed in trial testimony. The overarching problem has been that all too frequently, these forensic disciplines have been improperly relied upon to connect our innocent clients to crime scene evidence.

Although the conventional wisdom once stated that a sound defense and cross-examination would enable courts to properly assess the strength of forensic evidence, the NAS report unequivocally states and the post-conviction DNA exoneration cases clearly demonstrate that scientific understanding of judges, juries, defense lawyers and prosecutors is wholly insufficient to substitute for true scientific evaluation and methodology. It is beyond the capability of judges and juries to accurately assess the minutiae of the fundamentals of science behind each of the various specific forensic assays in order to determine the truth in various cases, and it is an unfair and dangerous burden for us to place on their shoulders.

An example of this is the case of Steve Barnes. Barnes was convicted in 1989, at the age of 23, of the rape and murder of a high school classmate he did not commit. Three types of unvalidated forensic science were used in the trial to convict him. Eyewitness testimony at his trial was shaky and the lack of other strong evidence put particular weight on the forensic evidence involved in the case. That evidence included testimony that soil on Barnes' truck tires was similar to soil at the crime scene, that an imprint in the dirt on the surface of Barnes' truck matched the fabric pattern on a particular brand of jeans the victim wore when she was killed, and that two hairs collected from Barnes' truck were microscopically similar to the victim's hairs and dissimilar from Barnes' hair.

The soil, fabric, and hair analysis are examples of an area of forensics called “pattern evidence” techniques. These techniques take an item found at the crime scene and determine if it is a match with a sample from the suspect to link them to the scene. However, microscopic hair analysis, soil comparison and fabric print analysis have not been tested to determine their scientific reliability or validity; as a result, it is impossible to know how many other soil samples might be similar to soil from the crime scene or the likelihood that other brands of jeans can make prints of a similar pattern, and there is not adequate empirical data on the frequency of various class characteristics in human hair. Without an existing database or set of “knowns,” a proper statistical inference of likelihood cannot be made.

However, neither the defense counsel, judge, nor jury were familiar with these underlying facts, and as a result this misleading and inaccurate forensic evidence was accepted as scientific fact. In 2007, the Innocence Project secured the latest DNA testing, which yielded conclusive results on sperm cells from the victim’s body and clothing – none of which matched Barnes. After serving near 20 years in prison for a murder and rape he always said he didn’t commit, Barnes was freed on November 25, 2008. His exoneration became official on January 9, 2009, when prosecutors announced that they were dropping all charges. Shortly after his exoneration he celebrated his 43rd birthday – the first one at home in two decades.

According to the NAS report, “[f]or a variety of reasons—including the rules governing the admissibility of forensic evidence, the applicable standards governing appellate review of trial court decisions, the limitations of the adversary process, and the common lack of scientific expertise among judges and lawyers who must try to comprehend and evaluate forensic evidence—the legal system is ill-equipped to correct the problems of the forensic science community. In short, judicial review, by itself, is not the answer.”<sup>2</sup>

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<sup>2</sup> 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. 3-20.

It is absolutely clear – and 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.

The vast majority of forensic employees are hardworking, ethical and responsible. They use the best scientific techniques available to them to deliver objective, solid information – regardless of whether the science favors the defendant, supports the prosecution or is inconclusive. In most cases, the science – rather than the scientist – is inadequate. In other cases, forensic analysts make mistakes that could result from lack of training, poor support or insufficient resources to meet an ever-growing demand. In still other cases, forensic analysts’ testimony goes further than the science allows because the techniques that have been practiced for years have not been subjected to the rigors of scientific research. 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. They are accepted and repeated as fact, leaving juries with the impression that the evidence is more scientific than it is. According to the NAS report, the shortcomings in education, training, certification, and standards for testing and testifying that contributed to wrongful convictions in those cases threaten the integrity of forensic results.<sup>3</sup>

Some may argue that mandatory accreditation and certification would be a sufficient oversight mechanism for the forensic community. While this would, of course, be superior to no oversight structure at all, the NAS Report makes clear that this alone would fail to solve some of the most pressing deficiencies in forensic evidence. Specifically, mandatory accreditation and certification alone would fail to address the lack of validity and reliability the NAS identified in numerous forensic practices.

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<sup>3</sup> Ibid., p S-3.

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. 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 practices are determinative of the accuracy of the forensic product.

Without the basic and applied research and comprehensive assessment and standardization needed to validate the various forensic techniques and assays, mandatory accreditation and certification alone would do little to address the fundamental scientific shortcoming which is of such serious concern to the NAS. If the underlying forensic discipline adopted by the lab and used by the analyst has not been scientifically validated nor its reliability assessed, the final product proffered to prosecutors and court will remain in question.

However, 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. Judges nor juries cannot be expected to understand the accuracy of an expert witness's testimony and whether the science they claim to represent has been tested and validated by the best scientific practices. Because of the fragmentation of the criminal justice system, and because of 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. While states' autonomy must be respected, it is entirely appropriate for the federal government to establish the scientific standards that foster justice when any court is considering forensic evidence.

For our justice system to work properly, standards must be developed and quality must be assured as part of the formal system of vetting the scientific evidence we allow in the

courtroom. Before the evidence is presented to the courts – or even before police seek to consider the probative value of such testing for determining the course of their investigations – the application of the scientific method to each forensic assay or technology, as well as parameters for report writing and proper testimony, must be required. Since the police officers, lawyers and judges who are tasked to adjudicate these cases are very rarely forensic specialists themselves, properly understanding forensic scientific evidence presents a challenge that demands a strong, unified, federal response before scientific evidence reaches the courtroom. This is particularly important because the overwhelming majority of cases are resolved with plea bargains, necessitating defense lawyers and prosecutors – with no judicial involvement – to interpret and rely on the reports’ conclusions as a basis for making an important decision affecting the liberty of life of the accused.

Another challenge to the quality of forensic evidence is information dissemination. When information about new technologies and technique surfaces, there are few formal channels for sharing that information with practitioners in the field. As a result, many practitioners continue to practice unaware of the latest critical advances and news that can inform their work, a problem that is exacerbated because of the lack of resources for continuing education and training to adapt to those advances, when they are known. A formal entity is needed to track the latest advances, and to serve as a centralized repository and to validate the newest technological advances, and ideally to promote innovative research as well. This is also an opportunity to harness the federal government’s resources to promote and subsidize continuing education and training.

The NAS report states that “The forensic science enterprise also is hindered by its extreme disaggregation—marked by multiple types of practitioners with different levels of education and training and different professional cultures and standards for performance and a reliance on apprentice-type training and a guild-like structure of disciplines...”<sup>4</sup> What is called for is a standardized approach to education, training, proficiency testing, and ultimately certification of practitioners to ensure a consistent and

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<sup>4</sup> Ibid., p. S-11

high standard is met nationwide. Likewise, enforceable parameters for interpretation of data, report writing, and courtroom testimony must be developed.

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. It is clear that a comprehensive assessment of the resource needs of the forensic science community – and those who employ forensic evidence - must be conducted to ensure that funding is allocated appropriately. This will also 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.

And of course, the variety of assays, devices, and technologies must be closely examined and subjected to the scientific method. The Innocence Project can cite well over a hundred cases that involved faulty forensics, from the nation's 239 post-conviction DNA exonerations alone. And the NAS report is very clear: "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."<sup>5</sup> Non-DNA forensic assays have not been scientifically validated, and there is no formal apparatus in place to do so for developing forensic technology. Most of the assays used in law enforcement 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. Many of these forensic disciplines – some of which are experience-based rather than data-based – went online with little or no scientific validation and inadequate assessments of their robustness and reliability. 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.

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<sup>5</sup> Ibid., p. 5-5.

Only the federal government has the resources and the power to undertake such a challenge.

While there is research and work that establishes what needs to be done to improve various forensic practices, the fact is that no existing government entity, nor the forensics community itself, has been able to sufficiently muster the resources nor focus the attention necessary to use the existing information as a launching pad to comprehensively improve the integrity of non-DNA forensic evidence. The NAS Report is the first step toward fully establishing and acting upon what we already know. From the perspective of justice and public safety, it is tragic that it has taken this long to act on the desperate need to improve the quality of forensic evidence. Without a push for vigorous adherence to the scientific method, innocent people have gone to prison or death row while the real perpetrators remained at liberty to commit other violent crimes. Given the clear and comprehensive message delivered by the NAS on this subject, further delay would be unconscionable.

As Congress considers the establishment of such an agency, there are several principles that it should adhere to.

First, the National Institute of Forensic Sciences should focus on three critical priorities: (1) basic research, (2) assessment of validity and reliability, and (3) quality assurance, accreditation, and certification. This body 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. Then, 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 court room testimony must operate. The Innocence Project also believes strongly that this body must play a central role in 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.

Second, 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, with its basic and applied research products and standards grounded in the best traditions of the scientific method. We agree with the NAS report that "Governance 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."<sup>6</sup>

Third, this entity will coordinate all existing and future federal functions, programs, and research related to the forensic sciences and forensic evidence.

Fourth, in order for this entity to be successful, forensic oversight must be obligatory and an effective mechanism of enforcement of these standards must exist. After having been given the proper direction and opportunity to comply, noncompliant laboratories or practitioners should lose their ability to participate in the business. These corrective actions can be overseen in conjunction with other government agencies; however enforcement powers must be under the command and control of the NIFS.

Fifth, this entity must be a permanent program in order to ensure ongoing evaluation and review of current and developing forensic science techniques, technologies, assays, and devices; and continued government leadership, both publicly and through private industry, in the research and development of improved technology with an eye toward future economic investments that benefit the public good and the administration of justice.

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<sup>6</sup> Ibid., p. 2-19.

Finally, Congress must allocate adequate resources to the NIFS so that it can undertake its critical work quickly, effectively, and completely, and so its mandates can be executed in full.

The investment of time, effort and resources necessary to improve forensic sciences will pay tremendous dividends in terms of time, effort and resources not wasted by faulty data. It will make criminal investigations, prosecutions and convictions more accurate, and our public more safe – and perhaps most importantly, justice more assured. It will allow us to eliminate backlogs, allowing properly-funded crime labs to turn around evidence in time for a quick trial. There will be no question about what evidence is admissible: all forensic assays, devices, and technologies will have been validated, reliability studies will have been done, and reports will be properly documented. Clear guidelines for testimony will be set which will prevent evidence from being manipulated or mischaracterized to benefit the defense or prosecution. Research on developing technologies will not only improve forensic technology, but will uncover ways to innovate and improve upon current technology and devices.

Our work has shown the catastrophic consequences of such a lack of research, standards, and oversight. Science-based forensic standards and oversight will increase the accuracy of criminal investigations, strengthen criminal prosecutions, protect the innocent and the victims, and enable law enforcement to consistently focus its resources not on innocent suspects, but on the true perpetrators of crimes. For as the nation's post-conviction DNA exonerations have proven all too clearly, when the system is focused on an innocent suspect, defendant or convict, the real perpetrator remains free to commit other crimes.<sup>7</sup>

We have an unprecedented opportunity to significantly improve the administration of criminal justice in the United States. By strengthening forensic science with the strong, well-funded, and well-staffed entity we described, we can create a formal system to ensure that criminal justice is accurately conducted and justly performed. The research and development of both existing and new forensic disciplines will create new industries

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<sup>7</sup> In the wake DNA exonerations of the wrongfully convicted, that same DNA analysis has enabled us to identify 100 of the true suspects and/or perpetrators of those crimes.

and jobs, just as the development of DNA technologies and their applications has done. With your support, we will minimize the possibility that tragedies like those endured by the nation's 238 (and counting) exonerees and their families will be needlessly repeated, and we will significantly enhance the quality of justice in the United States.