



**TESTIMONY OF PETER NEUFELD
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SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
HEARING ON
STRENGTHENING FORENSIC SCIENCE IN THE UNITED
STATES: THE ROLE OF THE NATIONAL INSTITUTE OF
STANDARDS AND TECHNOLOGY
MARCH 10, 2009**

Thank you Chairman Gordon, Ranking Member Hall, 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.

Without the development of DNA testing, there would be no Innocence Project; 233 factually innocent Americans would remain behind bars, and 17 of those 233 could have been executed. Our research into the causes of wrongful conviction reveals that police and prosecutors' reliance on un-validated and/or improper forensics was the second – greatest contributing factor to those wrongful convictions. Our analysis regarding wrongful convictions involving unvalidated or improper forensic science that were later overturned through DNA testing is attached to this testimony.

Given what those DNA exonerations have taught us about the shortcomings of forensic science, the Innocence Project is extremely thankful to Congress for authorizing and appropriating funds to establish the National Academies of Science Committee on

Identifying the Needs of the Forensic Science Community. By convening some of the very best minds in the nation to focus on the needs and shortcomings of forensic practice and how to remedy them, the nation has been provided with both an alarm 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.

I am also 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.

While the Innocence Project is known for its association with DNA evidence, we are forever cognizant of the importance of non-DNA forensic evidence to determinations of justice. Our criminal justice system relies heavily on non-DNA forensic techniques. The Bureau of Justice Statistics' 2005 Census of Publicly Funded Forensic Crime Laboratories reported that new lab requests for DNA work consist of only approximately 3% of all of all new requests for lab work.

As our review of DNA exonerations shows, unvalidated and improper forensics contributed to approximately 50% of wrongful convictions overturned by DNA testing. In the DNA exonerations alone, we have had wrongful convictions based on unvalidated or misapplied serological analysis, microscopic hair comparisons, bite mark comparisons, shoe print comparisons, fingerprint comparisons¹, forensic geology (soil comparison), fiber comparison, voice comparison, and fingernail comparison², among the many forensic disciplines that have produced these tragic miscarriages of justice in our courts. There have even been a few innocents whose convictions relied, in part, on shoddy DNA testing in the early years of its forensic application. It comes as no surprise to us that the NAS concluded: "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

¹ Garrett and Neufeld, *Virginia Law Review*, Vol. 95, No.1, March 2009, p. 8.

² *Ibid.*, p. 13.

or source.”³ The overarching problem has been that all too frequently, these other forensic disciplines have been improperly relied upon to connect our innocent clients to crime scene evidence.

Just as DNA exonerations reveal inherent shortcomings in other forensic disciplines, the evolution and regulation of DNA in the forensic setting (from basic research to crime lab and to casework) contrast starkly with the near total absence of validation and demonstrable reproducibility for many other forensic technologies. Long before there was a national forensic DNA testing program, the National Institutes of Health (NIH) and others funded and conducted extensive and relevant basic research and followed it with applied research. Scientists appreciated the challenge of transferring the technology from research lab to clinical lab and from clinical lab to crime lab. The forensic methods were validated for case work, and individual crime labs further validated the kits and protocols for use in their own laboratory settings.

In contrast to DNA, the vast majority of non-DNA forensic assays, which have often been erroneously used to suggest an individual match, have never been subjected to basic scientific research or federal review. Moreover, as pointed out by the NAS, neither the FBI nor the National Institute of Justice have, over the years, “recognized, let alone articulated, a need for change or a vision for achieving it. Neither has full confidence of the larger forensic science community. And because both are part of a prosecutorial department of the government, they could be subject to subtle contextual biases that should not be allowed to undercut the power of forensic science.”⁴ 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.

The NAS report references several of the forensic disciplines which have gone unregulated and without proper validation and reliability:

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. 5-5.

⁴ Ibid., p. S-12.

- **Hair Comparisons:**

“No scientifically accepted statistics exist about the frequency with which particular characteristics of hair are distributed in the population. There appear to be no uniform standards on the number of features on which hairs must agree before an examiner may declare a “match.”⁵ The report notes that along with the imprecision of microscopic hair analysis, the “problem of using imprecise reporting terminology such as ‘associated with’, which is not clearly defined and which can be misunderstood to imply individualization.”⁶ The committee found no scientific support for the use of hair comparisons for individualization in the absence of nuclear DNA. Microscopy and mtDNA analysis can be used in tandem and may add to one another’s value for classifying a common source, but no studies have been performed specifically to quantify the reliability of their joint use.”⁷

Jimmy Bromgard spent 14.5 years in prison for the rape of an 8 year old girl that he did not commit. The semen found at the crime scene could not be typed, so the forensic case against Bromgard came down to the hairs found at the crime scene. The forensic expert, Arnold Melnikoff, a hair examiner and Laboratory Manager of the state crime lab in Montana, testified that the head and pubic hairs found at the scene were indistinguishable from Bromgard's hair samples. He claimed that there was a one in 100 chance of a head hair “matching” an individual, and a one in 100 chance of a pubic hair “matching” – and then he multiplied these statistics to say that there was less than a one in 10,000 chance that the hairs did not belong to Bromgard. This damning testimony was also fraudulent: there has never been a standard by which to statistically match hairs through microscopic inspection. The criminalist took the impressive numbers out of thin air.

- **Bite mark Comparisons:**

“Although the methods of collection of bite mark evidence are relatively noncontroversial, there is considerable dispute about the value and reliability of

⁵ Ibid., p. 5-25.

⁶ Ibid., p. 5-26.

⁷ Ibid., p. 5-26.

the collected data for interpretation. Some of the key areas of dispute include the accuracy of human skin as a reliable registration material for bite marks, the uniqueness of human dentition, the techniques used for analysis, and the role of examiner bias... Although the majority of forensic odontologists are satisfied that bite marks can demonstrate sufficient detail for positive identification, no scientific studies support this assessment, and no large population studies have been conducted. In numerous instances, experts diverge widely in their evaluations of the same bite mark evidence, which has led to questioning of the value and scientific objectivity of such evidence... Bite mark testimony has been criticized basically on the same grounds as testimony by questioned document examiners and microscopic hair examiners. The committee received no evidence of an existing scientific basis for identifying an individual to the exclusion of all others.”⁸

Kennedy Brewer spent 7 years on death row in Mississippi for the murder of a 3 year old girl that he did not commit. An independent examiner, forensic odontologist, Dr. Michael West, analyzed several marks on the child’s body that he testified were bitemarks inflicted by Brewer, and then only by his top two teeth. West said that “within reasonable medical certainty,” Brewer’s teeth caused the marks, and then explained that “reasonable medical certainty” meant that Brewer was the source of the marks. The “bite marks” turned out to be caused by insects in the pond where the girl’s body was discovered and by the natural sloughing of skin a body experiences when left in the water for several days.

- **Fingerprint Comparisons:**

“ACE-V provides a broadly state framework for conducting friction ridge analyses. However, this framework is not specific enough to qualify as a validated method for this type of analysis. ACE-V does not guard against bias; is too broad to ensure repeatability and transparency; and does not guarantee that

⁸ Ibid., p. 5-37.

two analysts following it will obtain the same results.⁹ Errors can occur with any judgment-based method, especially when the factors that lead to the ultimate judgment are not documented.¹⁰ As was the case for friction ridge analysis and in contrast to the case for DNA analysis, the specific features to be examined and compared between toolmarks cannot be stipulated a priori.”¹¹

Although not a DNA exoneration, **Brandon Mayfield**'s case was referred to in the NAS Committee's report as, “surely signal caution against simple, and unverified, assumptions about the reliability of fingerprint evidence.”¹² 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. Mayfield, a Portland Oregon lawyer, who had converted to Islam and married an Arab woman, had his prints in the national database because years earlier he had served in the US armed forces. Mayfield's print was one of 20 prints returned from a search of the national Automated Fingerprint Identification System (AFIS) as being very similar to the crime scene print. Following a further visual inspection of the 20 prints, two FBI fingerprint experts swore in affidavits that they were 100% certain that the crime scene prints belonged to Mayfield. When the Spanish 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. Several major investigations followed, including one conducted by the Inspector General of the Department of Justice.¹³

The NAS report revealed similar lapses in validation and inappropriate associations in several other forensic disciplines:

- **Shoe Print Comparisons:**

⁹ Ibid., p. 5-12.

¹⁰ Ibid., p. 5-13.

¹¹ Ibid., p. 5-21.

¹² Ibid., 3-16.

¹³ Ibid., footnotes 75 and 76, which indicated that contextual bias and confirmation bias played an important role in the misidentification.

“[I]t is difficult to avoid biases in experience-based judgments, especially in the absence of a feedback mechanism to correct an erroneous judgment.¹⁴ [C]ritical questions that should be addressed include the persistence of individual characteristics, the rarity of certain characteristic types, and the appropriate statistical standards to apply to the significance of individual characteristics.”¹⁵

- **Fiber Comparisons:**

“Fiber examiners agree, however, that none of these characteristics is suitable for individualizing fibers (associating a fiber from a crime scene with one, and only one, source) and that fiber evidence can be used only to associate a given fiber with a class of fibers.”¹⁶

- **Other Pattern/Impression Evidence: Fingernail Comparison, Voice Comparison, Forensic Geology:**

“Although one might argue that those who perform the work in laboratories that conduct hundreds or thousands of evaluations of impression evidence develop useful experience and judgment...the community simply does not have enough data about the natural variability of those less frequent impressions, absent the presence of a clear deformity or scar, to infer whether the observed degree of similarity is significant.¹⁷ Also, little if any research has been done to address rare impression evidence. Much more research on these matters is needed”¹⁸

The aforementioned disciplines all require further validation. The Innocence Project agrees with the NAS report regarding what is needed: “(1) information about whether or not the method can discriminate the hypothesis from an alternative, and (2) assessment of the sources of error and their consequences on the decisions returned by the method.”¹⁹

¹⁴ Ibid., p. 5-17.

¹⁵ Ibid., p. 5-18.

¹⁶ Ibid., p. 5-26.

¹⁷ Ibid., p. 5-17.

¹⁸ Ibid., p. 5-18.

¹⁹ Ibid., p. 4-2.

It is critical that we all understand the real world consequences of the forensic problems I and the NAS have discussed. These were not incidents reflective of one bad actor, or one wayward jurisdiction; our review of the nation's DNA exonerations showed that seventy-two 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. According to the NAS Forensic Committee's 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.

It is important to recognize that these 233 individuals represent just the tip of the iceberg. In the vast majority of cases DNA is simply useless to indicate innocence or guilt – in fact, DNA is estimated to be probative in only 10% of all murder cases, and a far lower percentage of all criminal cases. What's more, in most cases where convicted people seek our representation to use post-conviction DNA testing to prove their innocence, we don't have the opportunity to conduct a DNA test because the biological evidence has either been lost or destroyed. And in some cases, when we have the evidence and testing it can prove innocence, the state simply refuses to allow the test that can indicate the truth.

DNA testing has become the gold standard in forensics because it is science-based and tested. It was discovered through basic research and later applied to clinical DNA diagnostics, developing under the same scrutiny given to medical devices. So when it entered the courtroom, there was already a tremendous body of literature in highly respected scientific journals, amassed over a number of years, to support and validate its accuracy. Subsequently, the National Research Council twice convened some of the top scientists from leading research universities to discuss not only the scientific application of DNA in courts, but also to validate the statistical implications of the data that was produced.

Non-DNA forensic assays have not been scientifically validated, and there is no formal apparatus in place to do so for developing forensic technology. Though the technology has changed over time, the sources of human error, misinterpretation, and misconduct have not. 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. Essentially, the assays were simply accepted as accurate. 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 Food and Drug Administration 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.

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 – and a tremendous one – 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. Given the clear and comprehensive message delivered by the NAS on this subject, further delay would be unconscionable.

The report calls for Congress to act, strongly and swiftly. This is because as I speak, many of 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. 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 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. Indeed, the NAS report deems that “judicial review, by itself, will not cure the infirmities of the forensic science community.”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. For our justice system to work properly, standards must be developed and quality must be assured 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. 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 part of the formal system of vetting the scientific evidence we allow in the courtroom.

The Innocence Project whole-heartedly supports the primary recommendation of the National Academy of Sciences’ report to create a federal National Institute of Forensic Sciences. We believe that federal oversight body must conduct research into the scientific validity and reliability of forensic disciplines and set standards for their use in the courtroom. A federal entity is needed to ensure that we don’t have 50 states operating under 50 definitions of “science”; forensic science in America needs one standard of science so we can have one standard for justice. 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,

²⁰ Ibid., p. 3-20.

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. Given NIST's reputation as a highly respected and admired standard-setting agency, as well as its history of employing Nobel prize-winning scientists who conduct superb research and translate basic science to applied commercial standards and its tradition of objective, independent, science-grounded work, we agree with the NAS report that NIST would make a sensible partner for setting those standards. 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."²¹

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

²¹ Ibid., p. 2-19.

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.

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.

Our work has shown the catastrophic consequences of such a lack of research, standards, and oversight. It is clear that the nation's forensic science community is ready and willing to work with the federal government, law enforcement, and other scientists to ensure a brighter future for forensic science. 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.²²

²² 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.

The investment of time, effort and resources necessary to deliver us from our false reliance on some forensic assays will pay tremendous dividends in terms of time, effort and resources not wasted by virtue of this false reliance. In short, it will make criminal investigations, prosecutions and convictions more accurate, and our public more safe – and perhaps most importantly, justice more assured.

We have been directed toward an irrefutable and unprecedented opportunity to significantly improve the administration of criminal justice in the United States. By evaluating and strengthening forensic science techniques 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 and jobs in the U.S., just as the development of DNA technologies and their applications has done. With your support, we will not only significantly enhance the quality of justice in the United States, but we will also minimize the possibility that tragedies like that endured by the nation's 233 (and counting) exonerees and their families will needlessly be repeated time and again.



Wrongful Convictions Involving Unvalidated or Improper Forensic Science that Were Later Overturned through DNA Testing

The table below lists DNA exoneration cases (through February 1, 2009, the first 225 DNA exonerations in the nation) where unvalidated or improper forensic science contributed to the underlying wrongful conviction.

The Innocence Project defines unvalidated or improper forensic science as:

- the use of forensic disciplines or techniques that have not been tested to establish their validity and reliability;
- testimony about forensic evidence that presents inaccurate statistics, gives statements of probability or frequency (whether numerical or non-numerical) in the absence of valid empirical data, interprets non-probative evidence as inculpatory, or concludes/suggests that evidence is uniquely connected to the defendant without empirical data to support such testimony; or
- misconduct, either by fabricating inculpatory data or failing to disclose exculpatory data.

The determinations in this table make no conclusions about the state of mind of analysts involved in cases, which cannot typically be known. Many cases are included where the analyst's role is not at issue at all, but the forensic disciplines and techniques being used were not validated. Where the analysts' conduct is at issue, it may be attributed simply to innocent error, or it could be the result of negligence, recklessness or intent.

The determinations in this table are based on trial transcripts and other official sources. Many of these determinations are based on underlying research from Professor Brandon Garrett and Peter Neufeld for [Invalid Forensic Science Testimony and Wrongful Convictions](#), 95 Va. L. Rev. 1 (2009). Garrett and Neufeld focused on one aspect of this category, invalid testimony by forensic analysts. In their research, Garrett and Neufeld consulted with a number of forensic scientists, attorneys and other experts in the field. The Innocence Project reviewed transcripts for cases that were included in Garrett and Neufeld's study, as well as transcripts in cases that were not included (because Garrett and Neufeld's scope was more limited).

This table includes specific quotes from trial transcripts and other official sources where available. In many cases, there may be additional bases for determining that unvalidated or improper forensic science was involved, but further research was not conducted once the case fit within the definition. Some cases may also not be included in this list at all because sufficient source material could not be located. Anyone with information about a DNA exoneration case involving unvalidated or improper forensic science that is not listed here should send that information to info@innocenceproject.org. Similarly, anyone

who believes that a case listed here does not fit the Innocence Project's definition of cases involving unvalidated or improper forensic science should send that information to the same email address. Since its inception, the Innocence Project has collected information about DNA exoneration cases – and has encouraged anyone with more information about these cases to share it for our review.

Name of Defendant	State	Years Served	Details/Notes
Abdal, Wahir Abdal (Jenkins, Vincent)	NY	16.0	Incorrect Hair Analysis. An analyst testified that hairs from the crime scene were "distinctively different" from the defendant's but that he couldn't exclude the defendant based on the distinction because "it's not unusual to have different hairs come from the same person." The analyst went on to say that diet affects hair, giving a statistical probability that other unexamined hairs could be similar: "The study shows it would not be unusual to have a look at 4,500 strands of hair from the head in order to get a match with any one particular hair. And, from the pubic hair, one may have to look at as much as 800 hairs, and it could be from the same person. That gives an idea of how much a hair can vary just within one single person." (Garrett/Neufeld, March 2009)
Adams, Kenneth	IL	17.5	Incorrect Hair Analysis. An analyst testified that the hair looked the same: "I couldn't distinguish if I was looking almost at two hairs. They looked just like one." The analyst said the hairs were "just like if you drop two dollar bills and you see dollar bills on the floor. You see two one dollar bills. It's obvious. And that's how it looked there." (Garrett/Neufeld, March 2009). Incorrect Serology. An analyst also testified that Adams' blood exhibited an "H reaction" similar to the type A blood found in samples from the victim, and that less than 2% of the population has that type of clumping due to an "H reaction." (Garrett/Neufeld, March 2009).
Alejandro, Gilbert	TX	3.5	Incorrect DNA Analysis. A forensics expert claimed that there was a DNA match (based on banding that the analyst said "could only have originated from" the defendant), without providing a random match probability. In fact, DNA testing hadn't been done, or at best, only partial testing had been done. (Garrett/Neufeld, March 2009)
Atkins, Herman	CA	11.5	Incorrect Serology. An analyst testified properly that the sample could have come from the victim or could have been a combination of people. However, the analyst then said that the population of people who are A secretors and PGM type PGM 2+1+ is 6.1% of the white population and 4.4% of black people. (Garrett/Neufeld, March 2009)
Avery, Steven	WI	17.5	Unvalidated Hair Analysis. An analyst testified that after comparison, a hair sample from the crime scene and another taken from Avery were "similar" and "consistent." (Garrett/Neufeld, March 2009)
Barnes, Steven	NY	19.5	Other Unvalidated Science. An analyst testified that soil on Barnes' truck tires was similar to soil from the crime scene. An analyst also testified that a marking on the outside of Barnes' truck was similar to a unique pattern that is associated with one brand and style of blue jeans (the same brand and style of blue jeans the victim was wearing). (Trial transcript, page 587, 600, 607)
Bauer, Chester	MT	8.0	Incorrect Serology. The victim and the perpetrator were both O secretors, and an analyst limited the potential donor source to O secretors, ignoring the potential that the victim's blood groupings masked the perpetrator's. The analyst also said 7.5% of men could have been the source (improperly dividing the population statistic in half for males). (Garrett/Neufeld, March 2009) Incorrect Hair Analysis. An analyst provided unsupported statistics in comparing the hairs. The analyst said that "to have them both match, it would be the multiplication of both factors so as an approximately using that 1 out of 100, you come out with a number like 1 chance in 10,000." (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Bibbins, Gene	LA	15.5	Incorrect Fingerprint Analysis. An analyst testified that lab analysis of fingerprints from the crime scene were inconclusive, and that the analyst had checked those findings with the state crime lab, which had reached the same conclusion. In fact, Bibbins was excluded as the source of the fingerprints, which was in a state crime lab report. (Garrett/Neufeld, March 2009)
Blair, Michael	TX		Incorrect Hair Analysis. An analyst testified that the victim had unusual hairs: "The interesting thing about Ashley's hair, when you look at her standard, is that she has microvoid bodies. These are very small air inclusions that are smaller than a true ovoid body. Ovoid bodies are mostly found in cattle hair and they're much larger, but Ashley, throughout her standard or known head hairs, has these microstructures." He linked the characteristics of the hair to the commission of an assault, claiming he observed evidence that "the hair has been crushed or particle filament or frayed ends. The other end of this hair has a similar appearance indicating that this hair piece has been subjected to some sort of blunt force." The analyst also testified that evidence found at the crime scene included hairs he identified as Michael Blair's. The analyst explained "I've never seen a Caucasian or Mongoloid hair that was opaque like that." The analyst then added, "I haven't seen a hair like that before. Not a human hair." The analyst also identified a fiber in Blair's car as being from the victim's toy, stating that "This is a fiber seldom encountered in forensic work." (Garrett/Neufeld, March 2009)
Boquete, Orlando	FL	12.0	Incorrect Serology. An analyst testified that both the victim and Boquete were both O non-secretors. However, two spots on the victim's panties had Type A substances, while two other spots had no blood group substances. The analyst did not exclude Boquete based on the A substances. Regarding the spots that had no blood group substances, the analyst said they could have come from Boquete because he was a non-secretor, adding that 20% of the population are non-secretors. In fact, those two spots with no blood group substances could have come from the victim. (Garrett/Neufeld, March 2009)
Bravo, Mark Diaz	CA	3.0	Incorrect Serology. An analyst testified that 3% of the population is PGM 2-1+, but then erroneously divided that statistic in half (supposedly eliminating females) to claim that 1.5% of men could be the source. (Garrett/Neufeld, March 2009)
Brewer, Kennedy	MS	7.0	Unvalidated Bite Mark Analysis. A forensic odontologist testified that there was "reasonable medical certainty" that Brewer's top two teeth caused bite marks found on the victim. When explaining what "medical certainty" means, analyst testified, "yes, he did" leave the marks. (Garrett/Neufeld, March 2009)
Briscoe, Johnny	MO	23.0	Unvalidated Hair Analysis. An analyst testified that pubic hairs from the crime and Briscoe's pubic hairs exhibited "similar microscopic characteristics." (Trial transcript, page 196)
Brison, Dale	PA	3.5	Unvalidated Hair Analysis. An analyst testified that hairs from the crime were "consistent" and "similar" to Brison's hair. (Trial transcript, page 144)
Bromgard, Jimmy Ray	MT	14.5	Incorrect Hair Analysis. An analyst testified to fabricated hair match statistics. He testified that hair from the crime scene "matches all the characteristics" of Bromgard's pubic hair "and they almost look like one hair." He testified that there is a one in 100 chance of a head hair matching an individual, and a one in 100 chance of a pubic hair matching an individual – and that "it's a multiplying effect," so there was a one in 10,000 chance that the hairs belonged to anyone else. "[I]t's the same as two dice," he testified. "If you throw one dice with a one, one chance out of six; if you throw another dice with a one, it's a one chance out of six, you multiply the odds together." (Garrett/Neufeld, March 2009)
Brown, Dennis	LA	19.0	Incorrect Serology. Both the victim and Brown were O secretors, and the stains were also Type O. An analyst testified that the source of stains found on the crime scene would have to be from a Type O secretor or non-secretor, and said that 46.5% of the population could have been the donor. However, no person should have been excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Brown, Roy	NY	15.0	Unvalidated Bite Mark Analysis. A forensic odontologist testified that at least four bite marks on the victim's body were "entirely consistent" with Brown. The analyst also noted an "apparent inconsistency," but rather than exclude Brown, he called it an "explainable consistency" because the mark was on a curved thigh. In fact, the bite marks showed four incisor teeth, while Brown only had two. (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Bryson, David Johns	OK	16.0	Unvalidated Hair Analysis. An analyst said hairs from the crime scene matched Bryson. The analyst said hair has "unique characteristics" that make it possible to determine a match. (Bryson v. Gonzales decision, U.S. Court of Appeals for the 10th Circuit, July 28, 2008)
Buntin, Harold	IN	13.0	Incorrect Serology. An analyst testified that the victim and Buntin were both Type O, as was the fluid recovered from the victim. The analyst testified that 36% of the population is Type O. No person should have been excluded because the victim's blood group markers could have masked the perpetrator's. (Statement of Facts in the Trial Record)
Byrd, Kevin	TX	12.0	Incorrect Serology. Byrd is a non-secretor. No antigens were detected on a stain at the crime scene, so the analyst assumed that the victim was also a non-secretor, as well. The analyst testified that 15-20% of the population are non-secretors. In fact, no donor could be eliminated because no determination had been made about the victim's secretor status (so it's impossible to know whether her blood group markers masked the perpetrator's) and because the sample could have lacked antigens due to degradation. (Garrett/Neufeld, March 2009)
Charles, Clyde	LA	17.0	Unvalidated Hair Analysis. An analyst testified that hairs from the crime were "similar" to Charles'. (The analyst also testified that hair analysis is not "an exact science" and that it's possible to "find people whose hair is the same.") (Trial transcript, page 307)
Charles, Ulysses Rodriguez	MA	17.0	Impropriety/Negligence/Misconduct. Charles was a B secretor and the victims were O secretors; stains from the crime contained antigens consistent with the victims' O type. Two experts testified that rudimentary testing for the presence of sperm found none; since Charles was a B secretor the absence of sperm was highly relevant (it explained why no B substances were detected). When a private forensic lab tested the evidence years later, analysts detected sperm using a microscope, the same technology analysts used before Charles' trial. (Garrett/Neufeld, March 2009)
Cotton, Ronald	NC	10.5	Other Unvalidated Science. An analyst testified that material from Cotton's tennis shoes was consistent with rubber found at one of the crime scenes. (Almance County Superior Court Order, November 5, 1984; Judge D.M. McLelland)
Cowans, Stephan	MA	5.5	Incorrect Fingerprint Analysis. An analyst testified that fingerprints at the crime scene matched Cowans. However, Cowans' fingerprints were actually compared to themselves and not to the fingerprint on the evidence. (Garrett/Neufeld, March 2009)
Criner, Roy	TX	10.0	Incorrect Serology. Criner was an O secretor, and the victim's blood group marking was not determined. An analyst testified that 44% of the population are O secretors and could have been the donor. H blood group substances were detected, which could have come from the victim if she were a secretor, so nobody could be excluded as the donor. (Garrett/Neufeld, March 2009)
Crotzer, Alan	FL	24.5	Unvalidated Hair Analysis. An analyst testified that hairs from the crime scene exhibited "the same microscopic characteristics" as Crotzer's hair. (Trial transcript, page 44) Incorrect Serology. The victim and Crotzer were both O secretors, PGM1, as were the swabs. An analyst testified that she could "only say it was either from a non-secretor or person of ABO Type O secretor PGM Type 1," which is made up of "38.4% of the total population." She then divided the 38.4% in half to testify that "approximately 19%" of males could have been the source. Dividing the statistic in half was erroneous, but moreover the analyst could not exclude anyone as the potential source, since the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Dillon, William	FL	26.0	Other Unvalidated Science. The state introduced testimony from a dog handler that connected Dillon to the crime scene. Authorities hired John Preston, a purported expert in handling scent-tracking dogs. Eight days after the crime, Preston and his dog, Harass II, conducted two tests which he said linked the T-shirt to the crime scene and Dillon to the T-shirt. In the second test, a "paper lineup" which allegedly linked Dillon to the T-shirt, Preston allowed his dog to sniff the T-shirt and then pieces of paper, including one Dillon had touched. Preston said the dog selected Dillon's paper. (Motion for Postconviction Relief to Vacate Judgment and Sentence, August 25, 2008)
Dominguez, Alejandro	IL	4.0	Incorrect Serology. The victim was a B secretor and Dominguez was an O secretor. Two of the tested stains had B and H antigens, which were consistent with the victim. However, the analyst testified that Dominguez could not be excluded and that O secretors comprise 36% of the population. In fact, nobody in the population could be excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Dotson, Gary	IL	10.0	Unvalidated Hair Analysis. An analyst testified that a pubic hair removed from complainant's underwear was "similar" to that of defendant but "dissimilar to that of complainant." (Appellate Court of Illinois Ruling, November 12, 1997) Incorrect Serology. The victim and Dotson were both B secretors. B substances were found on the victim's underwear, and the analyst testified that that the donor was a B secretor. Those substances could have been entirely from the victim, so any male could have been the donor. Another stain had A antigens that were foreign to both Dotson and the victim, but the analyst failed to exclude Dotson as the source -- telling the court it could be a mixture of blood and sweat, wood, leather, detergents or other substances. (Garrett/Neufeld, March 2009)
Durham, Timothy	OK	3.5	Incorrect Hair Analysis. An analyst testified that hair from the crime and Durham's hair shared supposedly rare characteristics: the hair curled, something that the analyst said he had never seen in Caucasoid hair. The analyst also assigned a percentage to a reddish hue observed on the sample, testifying, "I have seen it in less than 5% of the hairs that I examined. These particular hairs were especially light. I have not found any pubic hairs as light as these before." (Garrett/Neufeld, March 2009)
Erby, Lonnie	MO	17.0	Incorrect Serology. The victim and Erby were both O secretors, but the analyst testified that the perpetrator had to be an O secretor or a non-secretor. In fact, no donor could be excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Fain, Charles Irvin	ID	17.5	Incorrect Hair Analysis. An analyst testified that Fain's hair and hairs from the crime shared unique characteristics. The analyst said the hairs had bifurcated medulla, which the analyst said gave "the sample uniqueness," explaining that "it's not often seen in hair samples ... it's not a characteristic that is very common, so that's -- that's the reason why I remember this particular characteristic." (The analyst also noted that hair comparison is subjective.) (Garrett/Neufeld, March 2009) Other Unvalidated Science. An analyst connected footprints found at the crime scene to shoes belonging to Fain, saying, "I found, therefore, that the shoe which made this impression, and this left shoe had sustained wear in the same area. To a -- a shoe print examiner, this would indicate that the individual who walked with these shoes has the same walking gait." (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Fritz, Dennis	OK	11.0	<p>Incorrect Serology. An analyst did not detect blood group substances in fluids from the crime. The analyst testified that this meant the perpetrator was a nonsecretor. In fact, if the victim was a non-secretor nobody could be excluded because her blood group markers could mask the perpetrator's, or the lack of blood group substances could have been the result of degradation. (Garrett/Neufeld, March 2009)</p> <p>Incorrect Hair Analysis. An analyst testified that 11 pubic hairs and two head hairs from the crime were "consistent" with Fritz's hairs. The analyst told the court that "generally three main results can be considered, but there's actually five or more ways of reporting hair examinations. One is that hairs are consistent microscopically and could have the same source. This means that they match if you want it in one word." The analyst went on to testify that there was an increased significance to finding that both pubic hairs and head hairs matched. (Garrett/Neufeld, March 2009)</p>
Fuller, Larry	TX	19.5	<p>Incorrect Serology. The victim was an O non-secretor and Fuller was an AB non-secretor; the rape kit sample was O. The analyst testified that the source could have been a non-secretor, and that Fuller and 20% of the population were possible donors. In fact, both Fuller and the victim should have been excluded since neither of them secretes blood groups. (Garrett/Neufeld, March 2009)</p>
Good, Donald Wayne	TX	13.5	<p>Incorrect Serology. Good was an O secretor; a stain on a blanket was Type O, while a swab was A and H blood groups. About the swab, the analyst testified that it was impossible to put a percentage on the potential donor population because the fluid could be a mixture of vaginal secretions and seminal fluids. While the analyst was correct about the potential for masking, the percentage for the possible donor population would be 100%. About the blanket, which could have also been a mixture, the analyst said Good could have been the source, along with "one-third of the Caucasian male population." (Garrett/Neufeld, March 2009)</p>
Gray, Paula	IL	9.0	<p>Incorrect Serology. An analyst testified that the tested sample "contained Group A blood and also had distinct characteristic of showing up slight agglutination in the O well, which would indicate person had H substance found in his blood." (Garrett/Neufeld, March 2009)</p>
Green, Anthony Michael	OH	13.0	<p>Incorrect Hair Analysis. An analyst testified that the hair characteristics "eliminated a large percentage of the population." (Garrett/Neufeld, March 2009)</p> <p>Incorrect Serology. The victim and Green were both B secretors, and the stain showed both B and H antigens. The analyst testified that B secretors were 16% of the population; the analyst conclusively ruled out 84% of the population as the source. The testimony failed to account for the possibility that the victim's blood group markers could mask the perpetrator's. (Garrett/Neufeld, March 2009)</p>
Gregory, William	KY	7.0	<p>Incorrect Hair Analysis. An analyst testified that hairs from the crime scene "more than likely" came from Gregory. She said the hairs had unique characteristics, including ovoid bodies, and said, "I told you, there is no statistics on this. I can tell you this is the first time I have ever had a Negroid origin hair that has not had a medulla in it." When asked what percentage of people have ovoid bodies in them, analyst testified, "This is probably the first time I have ever seen an ovoid body in a human hair. I have seen them in cattle hair before." Testifying about how common similarities in hair are, the analyst said that siblings might share "very similar characteristics" in their hair but that "in general, you wouldn't see that kind of an overlap in two people you would just pick up off the street." The analyst failed to testify that she had determined that at least one additional hair was not consistent with Gregory's. (Garrett/Neufeld, March 2009)</p>
Halstead, Dennis	NY	16.0	<p>Unvalidated Hair Analysis. An analyst testified that hairs found in a co-defendant's van were "microscopically alike" to samples from the victim. (The analyst acknowledged that he could not say the hairs were "identical" and that he "wish[ed]" hair analysis was "a bit more exact.") (Trial transcript, page 1,213)</p>
Harris, William	WV	7.0	<p>Incorrect Serology. An analyst testified that the victim could not be the source of the material tested, even though both the victim and Harris were O secretors, PGM1+, as were the swabs. Rather than saying that 100% of the population could be the source (because the victim's blood group markers could have masked the perpetrator's), the analyst said that 11.8% of the population could have been the source, then erroneously divided that statistic in half for the male population. (Garrett/Neufeld, March 2009)</p>

Name of Defendant	State	Years Served	Details/Notes
Harrison, Clarence	GA	17.5	Incorrect Serology. Harrison is an O secretor and the victim was an A secretor; the swabs had A and O antigens. The analyst concluded that the only group that could be excluded were B secretors and AB secretors, which would eliminate 22% of the population, and that Harrison was not within that 22%. In fact, nobody could be excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Hatchett, Nathaniel	MI	10.0	Unvalidated Hair Analysis. An analyst testified that a pubic hair found on the passenger-side floor of the victim's car was "similar" to Hatchett's hair sample. (Michigan Court of Appeals Ruling, May 19, 2000)
Heins, Chad	FL		Incorrect DNA Analysis. An analyst gave faulty testimony by failing to provide relevant statistics for the population included by DQ Alpha type DNA testing. (Garrett/Neufeld, March 2009)
Hicks, Anthony	WI	5.0	Unvalidated Hair Analysis. An analyst testified that tested hairs were "consistent" and "similar" with Hicks. (The analyst also said microscopic hair analysis cannot specifically match individuals, like fingerprints.) (Trial transcript, page 454)
Holland, Dana	IL	8.0	Incorrect DNA Analysis. An analyst testified that the evidence sample taken from the crime scene was too small for DNA testing. An independent DNA expert explicitly refutes the analyst's claim, saying that at the time of the trial, with technology available at the time, DNA testing could have been conducted. (Report from Orchid Cellmark analyst Kristen Koch, September 23, 2002)
Honaker, Edward	VA	9.5	Incorrect Hair Analysis. An analyst testified that the tested hair was "consistent" with Honaker and concluded that it came from Honaker or someone of the same race, coloring and microscopic makeup: "It is unlikely that the hair would match anyone other than the defendant; but it is possible." (Garrett/Neufeld, March 2009)
Jackson, Willie	LA	17.0	Unvalidated Bite Mark Analysis. An analyst testified, "My conclusion is that Mr. Jackson is the person who bit this lady." (Garrett/Neufeld, March 2009)
Jimerson, Verneal	IL	10.5	Incorrect Serology. The victim and Jimerson were both Type O, and the stain had A and O antigens -- yet the analyst failed to exclude Jimerson. (Garrett/Neufeld, March 2009)
Johnson, Calvin	GA	15.5	Incorrect Serology. The victim was an A secretor and Johnson was an O secretor; the swabs had A and H. The analyst testified that the potential donor group was the 44% of the population who are O secretors, plus 20% who are non-secretors, plus A secretors (for which the analyst did not give a statistic), leaving out the B and AB secretors. In fact, 100% of the population could have been the donor because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Jones, Ronald	IL	10.0	Incorrect Serology. Jones was an O non-secretor and the victim was an A secretor; the swabs had A antigens. The analyst testified that the percentage of the population who could be the donor was the number of non-secretors added to A secretors. In fact, no donor could be excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Kogut, John	NY	17.0	Incorrect Hair Analysis. The analyst testified, "I'm saying that in this particular instance that the questioned hair could have originated from the scalp of Theresa Fusco, with a high degree of probability." (Garrett/Neufeld, March 2009)
Kordonowy, Paul	MT	U	Incorrect Serology. Kordonowy and the victim were both O secretors, but A secretions were found on the swabs. The analyst should have excluded Kordonowy but instead testified that sugars produced by bacteria could have caused the A substance reading. (Garrett/Neufeld, March 2009) Incorrect Hair Analysis. An analyst testified that hairs from the crime "match" Kordonowy, and that for each there is a 1 in 100 probability of a match, claiming that hairs from different parts of the body are "independent events." The analyst multiplied that figure to arrive at a 1 in 10,000 probability of a match. (Garrett/Neufeld, March 2009)
Krone, Ray	AZ	10.0	Unvalidated Bite Mark Analysis. An analyst testified that he was "certain" that Krone's teeth caused bites on the victim, and that it was "a very good match." He went on to say that bite mark comparison "has all the veracity, all the strength that a fingerprint would have." The prosecution also failed to disclose that an FBI expert had examined the bite marks and said they weren't from Krone. (Garrett/Neufeld, March 2009)
Laughman, Barry	PA	16.0	Incorrect Serology. The victim was an A secretor and Laughman was a B secretor. No B substances were detected in the evidence, but the analyst said bacteria could have "worked on these antigens" or they could have broken down. The analyst also testified that medications could have interfered with the antigens. The analyst then claimed that bacteria could actually convert one blood group substance to another: "Given sufficient time for those bacteria to act, it would be possible to convert a group A substance to a B, or a B substance to an A." (Garrett/Neufeld, March 2009)
Lavernia, Carlos	TX	15.0	Incorrect Serology. The victim was an O secretor and Lavernia was an O non-secretor. The analyst said, "The semen donor was either a blood group O secretor or a non-secretor" and that "O secretor is found in 33% of the population, so that's a third of the people, of males." The analyst did not say that 100% of the population could be the donor because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Linscott, Steven	IL	3.0	Unvalidated Hair Analysis. An analyst testified that hairs from the crime were "consistent" with Linscott's and "similar" to Linscott's. (Trial transcript, pages 131 and 137)
Lowery, Eddie	KS	9.5	Incorrect Serology. An analyst found Type A substances in the sample but claimed that the semen originated from an O secretor. The analyst determined that Lowery was an O secretor, and the victim was determined to be an A secretor. From an expert independent forensic expert's report on the case: "It is unclear how the analyst determined that the semen from the victim's vaginal swabs originated from O secretor when she found A blood group substance in this sample." (Forensic Science Associates report, 2002)

Name of Defendant	State	Years Served	Details/Notes
Ochoa, James	CA	1.0	Other Unvalidated Science. A police bloodhound linked Ochoa to the crime. The dog had followed a scent for an hour from the perpetrator's hat to Ochoa's front door. (Los Angeles Times, April 24, 2008)
O'Donnell, James	NY	2.0	Unvalidated Bite Mark Analysis. An analyst testified that O'Donnell's teeth were "consistent" with bite marks found on the victim. (Trial transcript, page 371)
Ollins, Calvin	IL	13.5	Incorrect Serology. An analyst never explained a lab report's finding of a PGM type foreign to the victim. Instead, the analyst testified that 37% of the population shared Ollins' type, never saying that Ollins was not a secretor and could not have been the donor. Further, the type that the analyst attributed to Ollins could have come from the victim. In a report on the case years later, an expert DNA analyst said the analyst at trial "failed to state that her findings eliminated Larry and Calvin Ollins, Sa[u]nders and Bradford unless there was another semen source who was an ABO Type O secretor." (Dr. Edward Blake, Review of the Testimony of Pamela Fish, January 9, 2001. Garrett/Neufeld, March 2009)
Ollins, Larry	IL	13.5	Incorrect Serology. See Calvin Ollins, (above).
Pendleton, Marlon	IL	U	Incorrect DNA Analysis. An analyst testified that the DNA sample taken from the crime scene was too small for testing at the time of trial, but analysis by a forensic expert chosen by the defense and prosecution to handle post-conviction DNA testing said the sample was large enough to test at the time of the trial, using the technology then available. (Center on Wrongful Convictions. Brian Wrxall, chief forensic serologist at Serological Research Institute as quoted in Chicago Tribune November 23, 2006, and November 24, 2006)
Peterson, Larry	NJ	16.5	Incorrect Hair Analysis. At trial, the prosecutor asked the analyst whether s/he was saying that "every hair that was known as a questioned hair has been identified as either belonging to the victim or as belonging to Mr. Peterson?" The analyst responded, "Yes." (Garrett/Neufeld, March 2009) Impropriety/Negligence/Misconduct. No serology was conducted because the analyst detected no semen in the rape kit. Later testing readily observed sperm in the rape kit and elsewhere. (Garrett/Neufeld, March 2009)
Pierce, Jeffrey	OK	14.5	Incorrect Hair Analysis. An analyst testified that hair had a unique "banding effect," which the analyst interpreted to mean that part of the perpetrator's hair was exposed to the sun and part wasn't (since some was blonde and some was brunette), which supported the prosecution theory because Pierce regularly wore a bandana. (Garrett/Neufeld, March 2009) Incorrect Serology. Pierce was an AB secretor and the victim was an O secretor. H substances were detected in the sample. The analyst testified that the semen donor was a Type O or a non-secretor, which failed to recognize the potential that the victim's blood group markers masked the perpetrator's. (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Pope, David Shawn	TX	15.0	Other Unvalidated Science. When testifying about a voice on an answering machine and Pope's voice, an analyst was asked, "The bottom line analysis on the known voice and the unknown voice in this situation were only made by one single person in the whole wide world?" and the analyst replied, "Exactly." The analyst was then asked, "Just like fingerprints, it is unique?" and the analyst said, "Exactly." (Garrett/Neufeld, March 2009)
Rainge, Willie	IL	17.5	Incorrect Serology and Hair Analysis. See Kenneth Adams (above). Adams, Rainge and Dennis Williams were tried together and the hair and serology testimony linked all three to the crime.
Restivo, John	NY	16.0	Unvalidated Hair Analysis. See Dennis Halstead, above. Restivo and Halstead were tried together and the hair testimony linked both to the crime.
Reynolds, Donald	IL	9.5	Incorrect Serology. The victim was an A secretor and Reynolds was an O secretor. An analyst testified that swabs from the crime showed both A and H activity, which the analyst said is indicative of Type A and O individuals. The analyst testified that Reynolds could not be excluded (while also saying 43% of the population has that type). The substances were entirely consistent with the victim, and the analyst ignored the potential that the victim's blood group markers masked the perpetrator's. (Garrett/Neufeld, March 2009)
Richardson, James	WV	9.0	Incorrect Serology. Substances detected on the evidence were consistent with the victim, but the analyst ignored the potential that the victim's blood group markers masked the defendant's. The analyst also improperly divided the statistic for the population of possible donors in half to eliminate females. (Garrett/Neufeld, March 2009)
Richardson, Kevin	NY	5.5	Incorrect Hair Analysis. An analyst compared hairs found at the crime scene to Richardson's hair; asked whether it was possible that the hairs came not from Richardson but from another, unknown person, the analyst said it was possible "in a sense" but unlikely. The analyst testified that, based on experience examining hair standards, finding similarities between hairs has greater probative value: "I've looked at thousands of hair standards over the course of my work and I haven't seen any that have the same range of physical characteristics yet ... But I have in fact looked at thousands of standards and haven't seen two that matched exactly." (Garrett/Neufeld, March 2009)
Robinson, Anthony	TX	10.0	Incorrect Serology. Both the victim and Robinson were A secretors. An analyst testified that "the sub type found in the semen was the same as the sub type found in the blood of the victim and the suspect" and said that 40% of the population is Type A. In fact, 100% of the population could have been the donor, since the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Rodriguez, George	TX	17.0	Incorrect Serology. Both the victim and Rodriguez were O non-secretors, while another suspect was an O secretor. The stains were Type A. The analyst testified that Rodriguez could not be excluded but the other suspect could "because he is a secretor and the grouping would be O," adding that "none of those O secretions did show up by the testing." The A substances on the stain were foreign to the victim and to Rodriguez, so he should have been excluded. Later analysis by an independent lab found that the other suspect was actually an O non-secretor. (Garrett/Neufeld, March 2009)
Rollins, Lafonso	IL	10.0	Impropriety/Negligence/Misconduct. Serological testing excluded Rollins, but the stipulation about the testing reported only that sperm had been detected. The analyst requested DNA testing, but forensic supervisors refused to allow DNA testing to be conducted. (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
Rose, Peter	CA	8.0	Incorrect Serology. The victim was an O secretor PGM1+, and Rose was an A secretor PGM1+; the stain was PGM1+, ABO type inconclusive. The analyst testified that Rose could not be excluded and said that "about 30% of the population" possesses PGM1+, failing to state that 100% of the population could have been the donor because the PGM1+ could have come entirely from the victim. (Garrett/Neufeld, March 2009)
Salaam, Yusef	NY	5.5	Unvalidated Hair Analysis. See Antron McCray (above).
Santana, Raymond	NY	5.0	Unvalidated Hair Analysis. See Antron McCray (above).
Saunders, Omar	IL	13.5	Incorrect Serology. See Calvin Ollins (above).
Scott, Calvin Lee	OK	20.0	Incorrect Hair Analysis. In testimony, an analyst was asked whether there have been studies conducted about the probabilities of hair similarity. The analyst cited one study but noted the lack of research. About the one study, the analyst was asked: "Would he have given, or would there be any number type odds to the probability of the hair found on [the victim's] bottom sheet and the unknown hair found in her pubic combings, both belonging to anyone other than the defendant?" The analyst responded: "His hair, I would say this: his studies were made on Caucasian hair, I believe. In this case having two hairs identified, two hairs of different kind, I mean, head hair from one person would be quite large, I would say, I would not give a figure. It would be quite large." (Garrett/Neufeld, March 2009)
Sutton, Josiah	TX	4.5	Incorrect DNA Analysis. An analyst testified that "no other two persons will have the same DNA except in the case of -- identical twins" without giving a random match probability. Also, evidentiary samples were mixed and findings on one test in combination with a second actually excluded Sutton as a contributor. (Garrett/Neufeld, March 2009)
Taylor, Ronald Gene	TX	12.0	Impropriety/Negligence/Misconduct. In initial tests, the analyst failed to detect semen on a bed sheet from the crime, so no testing could be done to include or exclude Taylor as a possible donor. Those tests for the presence of semen were either not conducted or conducted incorrectly, because DNA testing that exonerated Taylor was done on the same spot on the sheet the analyst claimed to test for the presence of semen. Prior to conducting DNA testing on the spot, the private forensics lab conducted acid phosphatase testing (to determine the presence of semen -- the same kind of testing the lab analyst claimed to conduct pretrial) and the testing showed a positive result for the presence of semen. Subsequent DNA testing on that spot exonerated Taylor. (Trial transcript, page 295; Post Conviction Writ, Presiding Judge Denise Collins, October 9, 2007; Memorandum of Law in Support of Application for a Writ of Habeas Corpus, page 3, page 14, October 2007)
Tillman, James C.	CT	16.5	Incorrect Serology. An analyst testified that it was impossible that a stain or part of a stain could be from a secretor and not include the relevant antigens. The testimony ignored the possibility that a finding of no antigens could be the result of degradation. Later, DNA testing on the stain on the dress matched a stain on the pantyhose, highlighting how the failure to see antigens on the pantyhose stain was the result of the quality or quantity of the stain on the pantyhose. (Garrett/Neufeld, March 2009)
Vasquez, David	VA	4.0	Unvalidated Hair Analysis. An analyst testified that hair from the crime was "consistent" with hair samples taken from Vasquez. ("Convicted by Juries, Exonerated by Science," U.S. Department of Justice, National Institute of Justice, June 1996, page 73)

Name of Defendant	State	Years Served	Details/Notes
Velasquez, Eduardo	MA	12.5	Unvalidated Hair Analysis. The analyst testified that two pubic hairs (one from the victim's slip and one that was with some of the victim's hairs that also contained the perpetrator's semen) were "within the [same] range" as the defendant's and "consistent" with the defendant's hair. (The analyst also testified that hair analysis cannot "be taken as positive identity.") (Trial transcript, page 125, 131)
Waller, James	TX	10.0	Incorrect Hair Analysis. An analyst testified that hairs from the crime did not match Waller's hair, but also said it's impossible to make an exclusion: "If you wanted to say that this hair did not come from this individual, you would have to check it against every hair to be positive that it did not come from that individual ... [one would] practically have to denude a person to make a proper comparison." (Garrett/Neufeld, March 2009)
Wardell, Billy	IL	9.5	Incorrect Serology. The victim was an A secretor, Wardell was a B secretor, and his co-defendant (Reynolds, above) was an O secretor. The analyst testified that A and H activity was detected in the sample, "which is indicative of a Type A individual and a Type O individual." The analyst agreed that more than 43% of the population have those types, but the analyst failed to state that the findings were entirely consistent with the victim and that the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Washington, Calvin	TX	13.0	Unvalidated Bite Mark Analysis. An analyst testified that a bite mark found on the victim was "consistent" with Washington's co-defendant. While the analyst excluded Washington as the source of the bite mark, his bite mark testimony about the co-defendant (which was given at Washington's trial) tied Washington to the crime. (Trial transcript, page 1,270)
Washington, Earl	VA	17.0	Impropriety/Negligence/Misconduct. An analyst detected Tf CD (an unusual plasma protein) during serology testing on crime scene evidence. Once Washington, who does not possess Tf CD, became a suspect, an amended forensic report was prepared (without additional testing being conducted) that said the Tf typing on the crime scene evidence was "inconclusive." (Garrett/Neufeld, March 2009)
Watkins, Jerry	IN	13.5	Incorrect Serology. The victim was an A secretor, Watkins was an O secretor, and the swabs from the victim showed A and B substances. Rather than exclude Watkins, however, the analyst speculated that bacteria may have caused the inconsistent finding: "You are dealing with a dead body in which you have decomposition and sometimes bacteria will acquire a B blood group substance activity which could possibly be causing it." (Garrett/Neufeld, March 2009)
Webb, Thomas	OK	13.0	Unvalidated Hair Analysis. An analyst testified that two scalp hairs and a pubic hair recovered from the victim's home were "consistent" with samples taken from Webb. (Oklahoma Court of Criminal Appeals decision, November 20, 1987)
Webb, Troy	VA	7.5	Incorrect Serology. Webb was a non-secretor and swabs from the victim were an A Type that could not have come from the victim. Webb should have been excluded, but the analyst instead testified that he was among the 20% of the population who are non-secretors. The analyst testified, "It's a possibility because I stated you have to have two or more seminal fluids present in that mixture. If that is indeed true, then yes. There's one possibility a non-secretor can be present. Definitely an A secretor is present because we found A which is foreign to the victim." (Garrett/Neufeld, March 2009)
Webster, Bernard	MD	20.0	Incorrect Serology. The victim was Type B (secretor status unknown) and Webster was A. The tested stain had A and B substances, so the perpetrator could have been an A or AB secretor. However, an analyst testified that the perpetrator "should have been a Type A." (Garrett/Neufeld, March 2009)

Name of Defendant	State	Years Served	Details/Notes
White, John Jerome	GA	U	Incorrect Hair Analysis. An analyst testified that hair from the crime and White's hair "shows sufficient similarity to say or conclude that the hairs were of the same origin." (Garrett/Neufeld, March 2009)
Whitley, Drew	PA	16.5	Incorrect Hair Analysis. An analyst acknowledged that the hairs were unsuitable for comparison, but went on to compare them and deem them consistent: "Because they were so small, they had very little in characteristics. Except for the two that had no roots, all of them had no tips on them, so they had very limited characteristics, what characteristics were there ... In examining these questioned hairs and the facial hairs of Drew Whitley, I concluded there were many, many overlapping characteristics and similarities." The analyst also said: "I found no inconsistencies. Based on what I am basing my comparing on, yes, they are consistent." And later said: "I wouldn't go that far to say they were microscopically consistent." (Garrett/Neufeld, March 2009)
Williams, Dennis	IL	17.5	Incorrect Serology and Hair Analysis. See Kenneth Adams (above). Adams, William Rainge and Williams were tried together and the hair and serology testimony linked all three to the crime. In addition, an analyst testified that Williams was an A secretor; in fact, he was an A non-secretor. (Garrett/Neufeld, March 2009)
Williams, Willie "Pete"	GA	21.5	Incorrect Serology. The victim was an O secretor and O group substances were found; Williams was a non-secretor. The analyst testified that 44% of the population could be excluded and that O secretors and all non-secretors (but not A or B secretors) could be the donor. In fact, none could be excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)
Williamson, Ron	OK	11.0	Incorrect Serology. The victim was Type A (and was not tested for secretor status) and Williamson was an O non-secretor. There was no antigen activity in the stains, but rather than attribute this to degradation, the analyst testified this meant the perpetrator could be a non-secretor. (Garrett/Neufeld, March 2009) Unvalidated Hair Analysis. An analyst testified that pubic hair and scalp hair from the crime scene were "consistent microscopically" with Williamson's. (The analyst also testified that "hairs are not absolute identification.") (Trial transcript, page 733, 766)
Willis, John	IL	7.0	Impropriety/Negligence/Misconduct. An analyst testified that serology testing was inconclusive when it in fact excluded Willis. (Center on Wrongful Convictions; Chicago Tribune, October 20, 2004, based on lab notes and records the newspaper filed a lawsuit to obtain)
Wise, Kharey	NY	11.5	Incorrect Hair Analysis. See Kevin Richardson, above. (Richardson and Wise were tried together; the analyst's testimony about Richardson's hair also linked Wise to the crime.)
Woodall, Glen	WV	4.5	Incorrect Serology. Woodall was a B secretor, GLO I Type 2-1 and both victims were also GLO I Type 2-1. The perpetrator could have had one of several GLO types, but the analyst testified that just 6 out of 10,000 people have the same blood groupings as Woodall, "based specifically just on the male population of Cabell County." (Garrett/Neufeld, March 2009) Incorrect Hair Analysis. Comparing hairs from the crime to Woodall's hair, an analyst testified that "it would be very highly unlikely that due to no dissimilarities identifiable and distinguishable, that the hair could have originated from anyone else." (Garrett/Neufeld, March 2009)
Woods, Anthony D.	MO	18.0	Incorrect Serology. The victim was an A secretor and the stains all had A blood group substances. However, the analyst excluded AB and B people, which is 11% of the black population. In fact, nobody could be excluded because the victim's blood group markers could have masked the perpetrator's. (Garrett/Neufeld, March 2009)