

Improving the Practice and Use of Forensic Science

A Policy Review

The erroneous testimony of a forensic analyst helped convict Brandon Moon for a rape he did not commit. The botched handling of post-conviction DNA testing kept Moon in prison for seventeen years before he was ultimately exonerated.

Improved oversight and regulation of forensic science can prevent such an injustice.

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“If forensic evidence is not objectively tested, analyzed, and interpreted by adequately trained scientists, the search for truth will potentially be compromised, if not defeated.”

— BETTY LAYNE DESPORTES, DEFENSE LAWYER
AND CHAIRWOMAN OF JURISPRUDENCE SECTION
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INTRODUCTION

Forensic science—the use of science to answer legal questions—includes well-known techniques such as fingerprint analysis, DNA analysis, and ballistics (the analysis of firearms). In recent years, the use of forensic science in criminal investigations and trials has steadily gained in popularity as an effective and powerful tool for seeking truth and justice. The use of forensic science can effectively help convict those guilty of crimes and can equally help exonerate the innocent. Popular crime shows like *CSI: Crime Scene Investigation* can give the impression that forensic science is flawless. However, forensic science is not flawless, and its use in the criminal justice system is in great need of reform. To ensure a more fair and accurate criminal justice system, it is critical to improve the reliability, objectivity, and independence of forensic analysis—the expert examination or testing of physical evidence to determine its connection to a crime—and forensic expert testimony in criminal investigations and trials.

The common perception of forensic analysis as a precise, objective science often obscures the fact that many areas of forensic analysis involve discretionary interpretations by individual analysts. Because the need for interpretation introduces a significant subjective element to some kinds of forensic analysis, normal tendencies of human psychology can influence the interpretation of data in a way that threatens the fairness and accuracy of the analysis and testimony used in criminal trials. As such, forensic science laboratories that lack internal procedures and standards to prevent bias create the greatest danger to achieving justice.

In the case of Brandon Mayfield, experienced FBI fingerprint analysts found that Mayfield’s fingerprints

matched fingerprints tied to the 2004 Madrid train bombings. The FBI crime laboratory declared with one-hundred percent certainty that Mayfield’s fingerprints matched fingerprints tied to the crime, but they were mistaken. After spending time in jail, Mayfield was found to be innocent and was released. The FBI was mistaken in its analysis. The mistakes made by experienced analysts show that tools such as fingerprint analysis, assumed by many to be objective barometers

of truth, involve subjective interpretations. Although scientists have developed a good understanding of the sources of inadvertent bias and have incorporated effective safeguards in other areas of science, most forensic science laboratories—including the FBI laboratory—do not provide adequate safeguards to prevent bias and error in testing and analysis.

In recent decades, the use of forensic science in criminal investigations and trials has skyrocketed. No other forensic science technique has received as much attention as DNA analysis. To date, DNA has exonerated more than two-

hundred people in the United States. These exonerations are a reminder that our system is flawed, and they have shed light on serious problems with the criminal justice system, including forensic science. While many assume that forensic science is a near-perfect tool for discovering the truth in criminal cases, a recent study found that false or misleading forensic expert testimony is a leading contributing factor in wrongful convictions.¹ In fact, forensic evidence was presented by the state in 113 of the first two-hundred cases in which the defendant was later exonerated by DNA testing.²

There are many cases where individual analysts’ erroneous or misleading analysis and testimony

The Justice Project Recommendations

- States should create an independent, transparent oversight commission to develop and enforce quality standards for forensic science laboratories.
- States should require all forensic science laboratories to develop internal structures and policies to prevent bias in testing and analysis.
- States should ensure that all forensic laboratories are independent from law enforcement and prosecutorial agencies.
- States should require that all forensic laboratory analysts receive proper training and certification.
- States should allocate sufficient funding to adequately implement these recommendations.

have led to wrongful convictions. Some cases exemplify the most egregious errors and show intentional misconduct. These cases demonstrate the strong need for oversight of all forensic laboratories. One of the most notorious examples is Fred Zain, a former crime lab analyst in West Virginia and Texas, who fabricated test results in over one hundred cases during the late 1970s and throughout the 1980s.³ Many of the people convicted because of his work went on to serve lengthy prison sentences, including five who were later exonerated through DNA testing. In Texas, investigators discovered forensic pathologist Ralph Erdmann faking autopsies, but not before his testimony was used in twenty or more death penalty convictions.⁴ The misleading testimony of former Illinois analyst Pamela Fish has been implicated in the wrongful convictions of at least seven men.⁵ While these examples of deliberately false testimony are troubling, the bigger concern is inadvertent error. Fortunately, the same reforms that prevent misconduct also reduce the risk of unintentional mistakes.

To increase the reliability, objectivity, and independence of forensic analysis and forensic expert testimony in criminal trials, and to increase fairness and accuracy in the criminal justice system, The Justice

Project recommends that states create an oversight commission to set and enforce quality standards for forensic labs, develop internal structures and policies in forensic labs to prevent bias in testing and analysis, make forensic labs institutionally independent from law enforcement and prosecutorial agencies, improve training and certification standards for forensic analysts, and increase funding to implement these essential changes. Without these reforms, the integrity of the criminal justice system is threatened.

The Justice Project has developed this policy review to facilitate communication among the legal community, local law enforcement agencies, policymakers, practitioners, the public, and others by explaining the problems with forensic science, and by recommending positive reforms that can dramatically improve its practice. While forensic laboratories have yielded critical evidence in countless cases, preventable error has subverted justice, convicted the innocent, and jeopardized public safety. By implementing the reforms recommended in this policy review, states can dramatically improve the practice and use of forensic science. As such, states can improve the quality of evidence in criminal trials and increase fairness and accuracy within the criminal justice system.

PROBLEMS & SOLUTIONS

While errors in forensic analysis and forensic expert testimony are a leading contributing factor in wrongful convictions, a series of reform measures could dramatically reduce such errors. States can ensure a more fair and accurate criminal justice system by implementing a number of key reforms that would help improve the reliability and objectivity of forensic analysis and testimony in criminal investigations and trials. These reforms, described in greater detail below, should focus on the following: creating an independent, transparent oversight commission to set and enforce quality standards; developing structures and policies within laboratories to prevent bias in testing and analysis; ensuring institutional independence by making forensics laboratories independent of law enforcement and prosecutorial offices; improving

training and certification standards for all forensics laboratory analysts; and providing adequate funding to ensure a more reliable and objective system. Without these reforms, the risk of erroneous forensic analysis and unreliable forensic testimony are likely to continue to contribute to wrongful convictions.

States should create an independent, transparent oversight commission to develop and enforce quality standards for forensic science laboratories.

While DNA testing has led to the exoneration of many wrongfully convicted individuals, it has also shed light on the deficiencies of forensic science in the criminal justice system. From negligence to misconduct, one study has shown that faulty forensic

evidence or testimony was a contributing factor in nearly sixty percent of wrongful convictions.⁶ Some of these wrongful convictions were a result of incorrect or improperly conducted tests. While many of these mistakes are likely unintentional, many of them could have been prevented with proper quality standards and policies. In some disturbing cases, crime lab analysts have intentionally fabricated or misrepresented test results to aid prosecutions.⁷ Intentional or unintentional, erroneous or misleading forensic analysis or testimony severely undermines the fairness and accuracy of criminal trials.

Often operating with little or no oversight, forensic crime labs frequently lack safeguards necessary to prevent the introduction of erroneous forensic analysis into the courtroom, and most states lack any statutory standards for forensic laboratories. To prevent error, each state should create an independent oversight commission to regulate its forensic science laboratories. The creation of a state oversight commission would provide a venue for investigating cases of misconduct, negligence, or poor management of testing practices. The commission should implement quality assurance standards, and monitor laboratory performance.

These commissions should include a cross-sec-

tion of people from inside and outside the forensic establishment and other stakeholders in the criminal justice system, including prosecutors and defense attorneys with expertise in forensic evidence. The commission should set and enforce standards for laboratory accreditation. Statewide standards and rigorous oversight of forensic testing ensure that labs operate in a way that is consistent with the highest scientific standards.

The commission should create or adopt operational, training, administrative, and scientific standards and regulations for forensic laboratories and other entities performing or offering forensic analysis in the state. The standards should be designed to increase and maintain the objectivity, reliability, and efficiency of forensic testing and analysis. As such, the standards should include:

- Minimum qualifications for forensic lab employees, including analysts;
- Certification and continuing education requirements for all forensic techniques;
- Training programs;
- Quality control protocols;
- Routine internal and external proficiency testing;

COMPARATIVE BULLET-LEAD ANALYSIS: A FAILED FORENSIC TEST

The FBI has performed the technique of matching the chemical makeup of bullets found at crime scenes to other bullets—often called comparative bullet-lead analysis—on bullets from thousands of criminal cases. Scientists based the technique on the assumption that no two batches of bullets would have precisely the same chemical makeup, and that each batch of bullets would have a consistent chemical makeup within that batch. Unfortunately, neither one of these assumptions is true.⁸ Testimony from forensic analysts about comparative bullet-lead analysis has played a role in hundreds of trials nationwide, leading to the incarceration of a large number of individuals.⁹ A landmark 2004 study performed by the National Academy of Sciences severely undermined the assumptions forensics experts had made for years about the accuracy of comparative bullet-lead analysis.

The study concluded that the test was far less precise than analysts had often stated during their testimony, and that some testimony about the method was “misleading under federal rules of evidence.”¹⁰

Despite concerns raised about the technique as early as 1991, defense lawyers and judges rarely, if ever, challenged comparative bullet-lead analysis testimony.¹¹ The lack of comparative bullet-lead analysis challenges in court is a good example of the problem of relying on judges and attorneys, rather than experts in the sciences, to evaluate the validity of scientific testimony.¹² Following coverage by the *Washington Post* and *60 Minutes*, the FBI agreed to implement a monitoring system to ensure “the accuracy of its experts’ testimonies in court,” and has stopped using comparative bullet-lead analysis.¹³

- Internal disciplinary procedures;
- Internal structures and protocols to regulate the flow of information between a forensic examiner and the person requesting forensic services to minimize inadvertent bias in the processing or interpretation of evidence and testimony;
- Protocols for providing equitable access to law enforcement, prosecutors, and defense counsel, and a process for recording such contact with the forensic lab;
- Protocols for documenting forensic tests, examinations and analyses, and for archiving reports, bench notes, and other important documentation, and for appropriate disclosure of such information; and
- A licensing program for all forensic laboratories offering lab tests, exams or analysis in the state.

In addition to developing the aforementioned forensic laboratory standards, the commission should ensure public access to the accreditation program, including any and all documentation with the end result of increasing transparency and confidence in forensic evidence.

The commission should provide an independent review of management practices and lab policies, while also taking steps to ensure that testing and analysis are performed accurately. The Justice Project recommends that such a commission would conduct effective accreditation and/or licensure audits, including a review of testing and testimony in a random sample of completed cases. In addition, department heads and analysts should be interviewed to uncover problems with competency, proficiency, or training. An audit should also include blind proficiency testing—testing in which the analyst is unaware of being evaluated—for all lab analysts. This technique maximizes the reliability of the test as a performance barometer and effectively captures a snapshot of the analyst’s performance. Non-blind proficiency tests have been shown to artificially inflate the accuracy of analysts’ work, hiding actual problems.¹⁴ Other scientific fields regularly employ blind proficiency testing, which can identify problems with an analyst’s routine testing procedures in a way that announced testing cannot.¹⁵

Despite the terrible injustices caused by negligent practices, the discipline of lab analysts is rare.

Despite the terrible injustices caused by negligent practices, the discipline of lab analysts is rare. Even in the most extreme cases, such as that of West Virginia serologist Fred Zain, discipline is often weak or non-existent.¹⁶ Even when a technician is removed from the lab, the consequences of poor performance are often minor. On one occasion, the erroneous testimony and serological work of Cleveland crime-lab technician Joseph Serowik led to the wrongful conviction and thirteen-year incarceration of an innocent man. After the City of Cleveland fired Serowik, a Cuyahoga County Common Pleas Judge nominated him to head the forensics program of nearby Youngstown State University.¹⁷ Developing and implementing procedures to hold forensic analysts accountable for misconduct is an essential reform. Strong internal lab disciplinary procedures provide an important check on employee negligence—a significant cause of wrongful convictions.¹⁸

At the federal level, Congress acknowledged the need for forensics reform by passing the Justice for All Act of 2004. The act directly addresses the need for forensic oversight, instructing the U.S. Attorney General to create and appoint members to a federal forensic science commission, requiring federal laboratories to undergo frequent audits, and expanding the requirements for the Paul Coverdell Forensic Science Improvement federal grant program.¹⁹ While the standards for forensics laboratories presented in The Justice for All Act of 2004 do not apply to state or local crime labs, it provides a good model for states to follow by requiring the creation of standards and ensuring oversight of forensic laboratories.

States should design standards and regulations to increase and maintain the objectivity, reliability, efficiency, and accuracy of forensic laboratories and ensure that forensic analysis is performed in accordance with the highest scientific standards. To that end, a number of states attempt to meet this goal by requiring accreditation by the American Society of Crime Lab Directors Laboratory Accreditation Board (ASCLD/LAB).²⁰ While this program has much to recommend in terms of standards and regulations, it falls short by lacking certain impor-

tant requirements including: independence from law enforcement and prosecutorial agencies, mandatory blind proficiency testing, and procedures to prevent inadvertent bias.²¹ Although requiring ASCLD/LAB accreditation is a vast improvement over a complete lack of standards, states should do more to ensure the accuracy of forensic science.²²

States should require all forensic laboratories to develop internal structures and policies to prevent bias in testing and analysis

The information a forensic analyst receives prior to performing any forensic testing or analysis can have a subtle, but significant, effect on the objectivity of the analysis. When an analyst is assigned a sample to test, it is common that they receive a wide array of information about the sample and its context. Information such as details of the crime, names of suspects, where the police collected the sample, and the expected result can have a huge impact on the objectivity of the analyst. Information about the crime, suspects, and where data was collected may not be necessary to accurately conduct testing. At times, some of this data is necessary to perform analysis, but analysts and those they receive data from should take caution. Expectations and desires can influence perception, and this extraneous information can skew the outcome of the testing by subtly biasing the analyst.²³ In one recent study, experienced examiners misidentified almost seventeen percent of fingerprints when given unnecessary contextual information.²⁴

Forensic analysts are especially susceptible to biases if other analysts, police, or prosecutors inform them of other results from the same case before completing their own tests and making their own conclusions. Becoming aware of other test results or other case evidence from the same case can push analysts to expect a particular outcome, making it more likely that their conclusion will fulfill this expectation.²⁵ These dangers are especially real given the subjective element of most forensic analysis and the high stakes of the test outcomes.²⁶

Another factor increasing the danger of bias is the nature of crimes that leave forensic evidence behind. Many crimes with the greatest amount of forensic evidence available to test involve sensational acts such as murder, assault, or rape. Photos, descrip-

tions of the crime, and other unnecessary information can evoke strong emotions, creating greater risks of inadvertent bias. An expert with the FBI Materials Analysis Unit stressed that “you work so many of these cases that you try not to get involved, but it’s very difficult when a crime involves a baby or a small child, somebody that’s defenseless, and you find yourself, I think, working harder to try to establish something in a case.”²⁷

Utilizing procedures to minimize bias is not a new idea. In fact, clinical and academic science labo-

THE NEED FOR OVERSIGHT

The story of the Houston Police Department’s (HPD) crime laboratory is a striking example of how poorly a forensics lab can operate without proper oversight. A recent independent investigation found that analysts at the HPD crime lab repeatedly tested DNA samples incorrectly and, in some cases, made up results without actually testing evidence.²⁸ A special investigator was hired to examine the HPD crime lab’s work in thousands of cases and determined that the lab did not perform or performed incomplete serology work in over four-hundred cases.²⁹ In addition to the retesting of many cases, including four death penalty cases, the investigation has proven the innocence of three men who were wrongfully convicted with erroneous testing and analyst testimony.³⁰ There will likely be more exonerations because so few of the retests recommended by the investigation have taken place. Texas has recently taken important steps towards improving its forensics laboratories, but for those wrongfully convicted because of the practices of the HPD crime lab, no amount of reform can replace the time they lost in prison. Unfortunately, without independent investigations, there is no way to know how many other labs have problems similar to those experienced at the HPD crime lab. One thing is clear, however: only proper oversight and accountability can ensure that forensic science helps, rather than hurts, the criminal justice system.

ratories regularly control for these biases. However, forensic labs generally do not.³¹ Because bias caused by extraneous information operates at a subconscious level, it cannot simply be “trained away.” In addition, bias caused by extraneous information is not a question of ethics or misconduct. Often, the bias is inadvertent. While training and professionalism are important, inadvertent biases are caused by subtle psychological tendencies that we all share, not by inexperience or a lack of professionalism.

Laboratories can minimize biases by implementing appropriate internal structures and policies. One way to limit the amount of background information an analyst receives prior to testing is to create a position designed to manage the flow of information between law enforcement investigators and analysts, such as an evidence control officer. A person in such a position could filter out irrelevant information and provide an analyst with only the information needed to test the evidence. Evidence control officers should

THE EFFECTS OF BIASING INFORMATION

One study confirms what many experts had suspected about the power of biasing contextual information in forensic analysis.³² In this study, experienced analysts were asked to evaluate a series of fingerprints to determine if they matched.³³ Though the analysts believed the prints were for an actual, open case, they were actually reexamining prints they had correctly evaluated in the past, this time accompanied by artificial contextual information, such as that the suspect had confessed. The results were striking. In cases where analysts were given contextual information about the fingerprints, they were wrong in almost seventeen percent of the cases. These errors were particularly notable because the same analysts had previously evaluated the prints correctly. This study highlights the need to ensure that contextual information does not undermine the objectivity of analysts by making forensics labs independent from law enforcement and prosecutorial agencies and by regulating the flow of information between investigators and forensic analysts.

have advanced degrees in science, enabling them to determine what information is necessary for accurate testing and to formulate the least subjective questions for analysts.³⁴

This position, or another similar structure to prevent extraneous information from reaching analysts prior to testing, is necessary to protect against inadvertent bias. Minimizing inadvertent bias will improve the accuracy of forensic testing and analysis, increasing the reliability of the criminal justice system.

States should ensure that all forensic laboratories are independent from law enforcement and prosecutorial agencies.

In most states, police agencies or other public safety agencies have jurisdiction over the operation of public forensic laboratories.³⁵ Due to the nature of their location within law enforcement or prosecutorial agencies, forensic science laboratory employees often have close, collegial relationships with law enforcement and prosecutors conducting investigations of crimes. In addition, many forensic analysts come from law enforcement backgrounds. As a result, analysts sometimes see their role as part of the crime-fighting team as opposed to being a fully objective agent of science.³⁶ In some circumstances, the nature of forensic analysis will be unaffected by such factors. However, in other types of analysis—those types of forensic analysis with a significant subjective element—the risks of inadvertent bias cannot be ignored.³⁷

States must address the issue of inadvertent bias on the part of analysts. Forensic science lab analysts must be fully objective agents of science. Analysts must operate without bias or favor. In its report, the Illinois Commission on Capital Punishment recommended that labs should operate as an “independent third force in the criminal justice system.”³⁸ The operation of forensic laboratories as part of law enforcement or prosecutorial agencies is at odds with this needed objectivity. Making forensic science laboratories structurally independent from law enforcement and prosecutorial agencies is a reform that is needed to effectively guarantee an environment of impartiality and objectivity.

The real harm of inadvertent bias is that: “Juries tend to regard forensic evidence more highly than they regard witnesses because it is purportedly more

objective. But forensic scientists work so closely with the police and district attorneys that their objectivity cannot be taken for granted.”³⁹

A handful of states are leading the way on making labs independent from law enforcement and prosecutorial agencies. Maryland, for example, gives the Department of Health and Mental Hygiene jurisdiction over the regulation of forensics laboratories.⁴⁰ The State Crime Laboratory in Arkansas operates independent of law enforcement or the Attorney General and the executive director is accountable directly to the governor.⁴¹ Virginia also has an independent Department of Forensic Science.⁴² Other states should follow the lead of these states. Forensic laboratory independence is an essential part of addressing bias, as it effectively protects the neutrality of forensic testing and testimony, thereby enhancing the fairness and accuracy of the criminal justice system.

States should require that all forensic science laboratory analysts receive proper training and certification.

The output of any forensic science laboratory is only as strong as the analysts performing the work. Thus, any attempt to reform forensic science must ensure that laboratories provide proper training and certification for its analysts. Currently, training programs vary wildly around the country. While forensic science is an important part of the criminal justice system, the practice itself is scientific in nature. Care is needed to ensure that forensic analysts have a greater interest in performing objective science than in fighting crime.⁴³ In addition to improving analytical skills, effective training improves respect for, and belief in, forensics as an objective science.

Analysts should be certified before they are allowed to perform forensic analysis or testify in criminal trials.⁴⁴ The commission recommended above should adopt and enforce a certification and continuing education program for all forensic analysts, examiners, and technicians in all forensic fields. Certification should be mandatory, not voluntary. Research in other fields has proven that voluntary

certification is less effective in ensuring competence than required certification.⁴⁵

One potential problem is that many analysts come from criminal justice, rather than scientific, backgrounds. Crime-fighting bias can lead to inaccurate results.⁴⁶ Less scientific training also decreases the likelihood that forensic analysts will critically analyze information received from police, prosecutors, and their colleagues.⁴⁷ Even with scientific training, however, a bachelor’s degree in some cases is not enough to ensure competence. One study found that, “hands-on training is needed to develop and maintain expertise, update knowledge and skills, and keep up with advances and changes in technology.”⁴⁸ Improved training must involve additional field work and blind proficiency testing.

In addition to creating a program for certification and training, laboratories should adopt and teach an ethical code. The creation of a strong ethical code provides analysts with a guide to understanding the serious nature of their responsibilities by helping them navigate the sometimes challenging ethical waters of a forensics laboratory.

States should allocate sufficient funding to adequately implement these recommendations

Lack of funding is a common problem in public forensic laboratories. In many states, funding for forensic laboratories has remained constant, despite a dramatic increase in workload. As a result, laboratories that do not receive adequate funding to implement much needed reforms are often incredibly short-staffed, have underpaid lab employees, and carry large backlogs of evidence to be tested, resulting in delayed trials.⁴⁹ One study reports that increasing the number of personnel in the field is the number one need of the forensic science community.⁵⁰ A lack of funding also endangers quality control and often encourages rushed or non-existent oversight.

States must increase funding to implement the aforementioned recommended reforms. Laboratories can use new funding to increase capacity, an issue of critical importance for the countless jurisdictions across the country with backlogs of evidence waiting

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to be tested. Due to low salaries, it is often difficult for forensic laboratories to hire and retain highly qualified analysts. As a result, increasing analyst salaries to make them more competitive is another pressing funding need. Salaries should reflect the importance of forensic analysts to the accuracy of our criminal justice system. Ninety-six percent of positions in forensic science laboratories are held by persons with a bachelor's degree or less.⁵¹ Salaries must be competitive with other job opportunities to attract the best and the brightest applicants.⁵² The state-created oversight commission recommended above will also require funding. While it may be possible to have members

of the commission serve without compensation, the costs associated with any investigative oversight body will require funding. Without sufficient funding, such a commission cannot be effective.

A failure to properly fund forensic science can lead to tragic results. Congress recognized the importance of adequate funding for forensic science in 2000 by passing the Paul Coverdell National Forensic Science Improvement Act.⁵³ Now, states can follow the federal government's lead to deal with backlogs of forensic material, increase the pay of qualified analysts, improve training, and create and enforce meaningful lab standards and oversight.

THE LEGAL LANDSCAPE

Attorneys and judges have not been successful in their attempts to prevent the introduction of bad forensic evidence in the courtroom.⁵⁴ Courts often admit forensic evidence with little scrutiny of its reliability. This failure is not necessarily caused by any bias or prejudice on the part of the court or the attorneys in the case. Rather, judges and attorneys often simply do not have the scientific background to make educated decisions about the reliability of evidence.⁵⁵ This is especially significant given the weight that jurors are likely to put on forensic evidence. One study found that “[a]bout one quarter [of jurors who] were presented with scientific evidence believed that had such evidence been absent, they would have changed their verdicts—from guilty to not guilty.”⁵⁶

The traditional standard for admissibility of expert testimony, as stipulated by the Supreme Court, is that the techniques used to gather and test the forensic evidence must be “generally accepted” by those in the field.⁵⁷ The number of wrongful convictions caused by erroneous forensic testimony have shown this standard to be an insufficient safeguard. Ultimately, judicial safeguards alone are simply unable to effectively protect against faulty forensic evidence. As a result, statutory reform is vital to ensure the reliability of forensic evidence in criminal cases. The following section is a brief overview of the federal courts' attempts to act as gatekeepers against unreliable types of forensic evidence.

DAUBERT AND THE EXPANSION OF FEDERAL RULE OF EVIDENCE 702

The first 20th century ruling on the admissibility of expert testimony came in the 1923 case of *Frye v. United States*. In *Frye*, the Court held that, “expert opinion based on a scientific technique is inadmissible unless the technique is ‘generally accepted’ as reliable in the relevant scientific community.”⁵⁸ The Federal Rules of Evidence Rule 702, instituted in 1975, superseded *Frye* at the federal level, but many states that had adopted the *Frye* standard in the wake of the Court's decision continued to apply the *Frye* test in determining admissibility standards for the introduction of expert testimony in state courts.

In 1993, the United States Supreme Court issued the landmark ruling of *Daubert v. Dow Pharmaceuticals*, ruling that “general acceptance” is not sufficient as a precondition for the admissibility of scientific evidence under the Federal Rules of Evidence. Rather, the Court explained, the Rules assign the trial judge with the task of ensuring that expert testimony “rests on reliable foundation and is relevant to the task at hand.”⁵⁹ The Federal Rules of Evidence, in turn, were modified to clarify the Supreme Court's decision in *Daubert*:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a

fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.⁶⁰

When compared with the *Frye* standard, *Daubert* made admissibility easier for relatively new, well-grounded science which might not yet have achieved wide acceptance. Conversely, for poorly-grounded sciences which nonetheless had come to be widely accepted, *Daubert* raised the threshold and made admissibility harder (because such fields fall short on *Daubert's* more objective criteria).⁶¹ Furthermore, *Daubert* places the determination of reliability in the hands of judges with the implication “that the trial judge, after applying various measures, would know scientific reliability when he or she saw it.”⁶²

Daubert created an important precedent. The *Daubert* standard was used to challenge the dependability of expert evidence presented by plaintiffs in civil cases.⁶³ Commentators hailed this ruling as a powerful improvement from the *Frye* standard, but enthusiasm muted when it became clear that courts would aggressively apply the standard in civil cases while rarely applying it in criminal cases.⁶⁴

Following *Daubert*, the quality of expert testimony in civil cases increased dramatically. Judges were much less enthusiastic about applying the *Daubert* standard to criminal cases. When criminal defendants challenged the reliability of forensic evidence on the grounds of the *Daubert* standard, judges consistently ruled in favor of the government, maintaining broad admissibility of ‘expert’ testimony.⁶⁵ One scholar observes a “troubling gap in the way judges apply *Daubert* and Rule 702 in civil cases and criminal cases. Judges have excluded a lot more evidence in civil cases since *Daubert* and there has been surprisingly little change in criminal

cases.”⁶⁶ Courts’ unwillingness to play gatekeeper in criminal cases means that *Daubert* has not prevented the introduction of unreliable forensic evidence in criminal cases.

State laws on admissibility also vary widely. Some states continue to follow the *Frye* standard for admitting expert testimony while other states have opted to employ the *Daubert* standard in their courts. Four states, Wisconsin, Virginia, Georgia, and Utah, have created their own, non-*Frye*, non-*Daubert* rules.⁶⁷ Traditional types of forensic evidence are easily admitted into court under either standard and most

jurors consider it highly trustworthy. Thus, it is imperative to do what is possible to ensure that it is, in fact, trustworthy.

KUMHO: AN EXTENSION OF DAUBERT

Kumho Tire Co. v. Carmichael is another important U.S. Supreme Court case ruling on the issue of expert testimony.⁶⁸ *Kumho* makes clear that *Daubert* applies to all

kinds of expert testimony, not only scientific testimony:

It would prove difficult, if not impossible, for judges to administer evidentiary rules under which a “gatekeeping” obligation depended upon a distinction between “scientific” knowledge and “technical” or “other specialized” knowledge. There is no clear line that divides the one from the others...We conclude that *Daubert's* general principles apply to the expert matters described in Rule 702.⁶⁹

Kumho has important implications for forensic science. In amicus briefs for the case, forensic scientists, realizing that much of their work was not based on well-researched and established foundations, asked the court not to extend *Daubert* beyond the realm of science. Forensic scientists hoped to find refuge (and continued admissibility) by refraining from calling what they did “science.”⁷⁰ In *Kumho*, the Supreme Court rejected this argument, and the stage was set for the foundations of forensic science to be evaluated more rigorously by the courts. Regrettably, the lack of judicial gatekeeping with

Case law and the record of exonerations illustrate that judges are simply unable to effectively keep faulty forensic evidence out of the courtroom.

respect to forensic science following *Kumbo* makes clear that forensic scientists had no reason to be as worried as they were. In the context of prosecution-proffered forensic identification expertise, “[t]here is almost no expert testimony so threadbare that it will not be admitted...”⁷¹

Case law and the record of exonerations illustrate that judges are simply unable to effectively keep faulty forensic evidence out of the courtroom. And

history has shown that defense lawyers are often unable to judge the reliability of forensic testimony. Consequently, lab results are almost always accepted *prima facie* without regard to whether the laboratory lacks appropriate standards, independent oversight, or adequately trained and qualified analysts. Statutory forensic science reform is vital to ensure the reliability of forensic evidence in criminal cases and to protect against wrongful convictions.

PROFILES OF INJUSTICE

Ron Williamson & Dennis Fritz’s Story

Inaccurate and misleading forensic evidence led to the conviction of Ron Williamson and Dennis Fritz for a rape and murder they did not commit. Each spent over a decade in jail—Williamson on death row—until DNA testing exonerated them. Prior to their arrests, Fritz was a high school teacher and a single father and Williamson had been a star baseball player before an injury prevented him from playing anymore, and psychiatric disorders began to plague him.⁷²

The main physical evidence purporting to link Williamson and Fritz to the crime was a microscopic hair comparison. Forensic analysts compared the hairs of Williamson and Fritz with those found at the scene. Though the investigators collected hairs from the victim’s family and friends and other suspects, an analyst at the Oklahoma State Bureau of Investigation (OSBI), testified that out of the forty-five reference samples she received, she only mounted those belonging to Williamson and Fritz onto microscopic slides. The same analyst later felt that she could not be objective in the investigation because of the stress and strain of working on numerous homicide cases and she gave the samples to another staff member, Melvin Hett.⁷³

Hett testified that he spent several hundred hours examining the hair samples he received. He claimed to have found eleven hairs from the crime scene that were “consistent” with the sample he

received from Fritz, and four hairs that were “consistent” with the sample from Williamson. During his testimony at trial, he said the hairs were “consistent microscopically and could have come from the same source.” This meant, in his opinion, that the visual hair comparison did not exclude Williamson and Fritz as suspects.⁷⁴

Visual hair comparison was first used in criminal prosecutions in the U.S. in 1882 in Wisconsin, where an expert visually compared two hairs, then claimed they came from the same source.⁷⁵ On appeal the Wisconsin Supreme Court ruled that this type of evidence was of a “dangerous character.”⁷⁶ Since then, the science of visual hair comparison has not advanced. The court, granting Williamson his writ of *habeas corpus*, wrote, “This court has found an apparent scarcity of scientific studies regarding the reliability of hair analysis testing. The few available studies reviewed by this court tend to point to the method’s unreliability.”⁷⁷

The court cited a study from The Law Enforcement Assistance Administration of over two hundred crime labs that found the weakest area of performance was visual hair comparison, with error rates as high as sixty-seven percent on individual samples, and inaccuracies in four out of five of the samples analyzed in the majority of police laboratories.⁷⁸

In addition to the visual hair comparison, the OSBI tested semen, saliva, and blood found at the

The main physical evidence purporting to link Williamson and Fritz to the crime was a microscopic hair comparison.

scene. The forensic evidence obtained in these investigations was integral to the convictions of Williamson and Fritz. Testing of the semen and saliva revealed that the perpetrator of the crime was a “non-secretor,” a characteristic shared with fifteen to twenty percent of the population. Non-secretors do not secrete any blood antigens that would identify blood type into other bodily fluids; therefore blood type cannot be determined from the semen or saliva of these individuals. During the investigation, a forensic analyst at OSBI tested the saliva of twenty individuals, including the victim, to determine whether or not they were secretors. Of these twenty, twelve individuals were non-secretors, including both Williamson and Fritz. Despite this information, the analyst did not seek to confirm any of the individuals’ status as non-secretors through an additional blood test, except for Williamson and Fritz.⁷⁹

Although the blood type of the perpetrator could not be determined from the semen or saliva, the OSBI was able to identify the blood type found under the victim’s fingernails as type A, the same as the victim’s. Both Fritz and Williamson have type O blood.⁸⁰

After Williamson’s public defender had received permission to test the DNA found at the scene and Fritz had contacted The Innocence Project for post-conviction assistance, tests conclusively exonerated both men. The DNA found at the scene matched the man who had originally led police to suspect Williamson in the first place.⁸¹ The true perpetrator had given samples of hair at least twice to Oklahoma authorities during the original investigation, but the OSBI failed to compare them with the unidentified hairs found at the victim’s apartment.⁸²

Donald Reynolds & Billy Wardell’s Story

Childhood friends Donald Reynolds and Billy Wardell spent over a decade in prison for a crime they did not commit, largely due to a lack of oversight and transparency in the forensic lab that tested evidence in the case. In addition, an exculpatory forensic report was never disclosed, and the erroneous testimony of a forensic expert was used to shore up questionable eyewitness identifications. In 1997, DNA tests exonerated them both.

Before their joint jury trial, Reynolds and Wardell requested that DNA evidence in the case be tested. The judge denied the request on the grounds that the testing was too new and its reliability and methodology not yet sufficiently established to allow it in court.⁸³ As a result, only basic blood testing was performed on the evidence.

At trial, the victims of the crime identified Reynolds and Wardell as their attackers.⁸⁴ In addition, police serologist Pamela Fish testified at trial that semen recovered from one of the victims could

only have come from thirty-eight percent of the black male population, and that Reynolds was included in this segment of the population.⁸⁵

Nearly a decade after their trial, DNA testing was finally conducted on semen from the rape kit, proving that neither Reynolds nor Wardell was the attacker.⁸⁶

Nearly a decade after their trial, DNA testing was finally conducted on semen from the rape kit, proving that neither Reynolds nor Wardell was the attacker.

Although prosecutors originally opposed overturning the convictions, arguing that the eyewitness identifications should trump the DNA, a new assistant state’s attorney took over the case and eventually agreed to the release of Reynolds and Wardell.⁸⁷

Evidence of wrongdoing by the forensic experts was uncovered after Reynolds and Wardell were released. The testimony of forensic lab analysts Pamela Fish, which claimed that the perpetrator and Reynolds both had a blood type characteristic shared by only thirty-eight percent of black males, was exposed as false. Fish based her testimony on what forensic experts later characterized as a “narrow, prejudicial view of the evidence.”⁸⁸ In fact, an independent expert analysis showed that, had

Fish accounted for other possibilities, nearly eighty percent of black males could have shared the characteristic.⁸⁹ The false testimony was only discovered as a result of investigations into the unrelated wrongful conviction of John Willis (another victim of Fish's misleading testimony).⁹⁰

An independent analysis of cases in which Fish testified found that, “[i]n many of these cases, Ms. Fish misrepresent[ed] the scientific significance of her findings either directly or by omission ... The nature of these errors are such that a reasonable investigator, attorney or fact finder would be misled ... And always ... she offered the opinion most damaging to the defendant.”⁹¹ Fish's misleading testimony has since been identified as a factor in the wrongful convictions of at least five others.⁹²

In addition to the misleading testimony, important exculpatory forensic results were never provided to defense lawyers despite their formal requests for all scientific tests and any exculpatory evidence. Chicago Police crime analyst Maria Pulling prepared a report concluding that hairs found on Reynolds' underwear did not match either victim. It is unclear whether the failure to disclose the report was intentional or inadvertent, but Pulling later swore of her report that “It was significant exculpatory information—it indicated

that the hair and fiber evidence taken from [the victim] did not match the evidence from Reynolds. This should have been reported to the defense.”⁹³

Dr. Howard Harris, former head of the New York City police crime lab and former president of the American Society of Crime Lab Directors, prepared a report at the request of attorneys for Reynolds and Wardell, in which he identified many shortcomings in the Chicago Crime Lab. Prominent among them were a lack of training and guidelines regarding presentation of testimony, and a lack of monitoring of testimony that could serve as a check on misleading characterizations of results. “Failure to train and/or monitor examiners' courtroom testimony can lead to serious deviations from proper testimony,” wrote Harris. “Further, the importance of resisting advocacy type pressures from investigators or state's attorneys is also an ethical issue of great difficulty for examiners, particularly in police-run crime laboratories and should be formally covered in training.”⁹⁴

Reynolds and Wardell each lost eleven years of their lives. After receiving pardons from Governor Jim Edgar, the Illinois Court of Claims paid each of them \$120,300.⁹⁵ They also recovered \$45,000 each in a settlement of a civil suit against the city.⁹⁶

Brandon Moon's Story

Erroneous forensic testimony by a state forensic crime lab analyst and the botched handling of exculpatory post-conviction DNA results kept Brandon Moon in prison for seventeen years for a rape he did not commit.

Authorities arrested Moon after the victim tentatively picked him out from a photo array. She later identified Moon in a live lineup. Based on the identification, police contacted three other women who had been victims of similar attacks in the same area, all of whom subsequently identified Moon as their attacker.

At trial, the prosecutor called Glen David Adams, a serologist at the Texas Department of Public Safety (DPS) Crime Lab in Lubbock, to the stand to testify that physical evidence corroborated the eyewitnesses' identification. Adams testified that

he examined the semen stains from the crime scene, and that his analysis excluded the victim's husband and son, but indicated Moon could have been the source of the semen. He explained that the semen was deposited by a non-secretor—one whose blood type antigens are not found in other body fluids—and that Moon was among only fifteen percent of the population that was a non-secretor. Jurors later said that Adams' testimony figured prominently in their decision to convict.⁹⁷

Despite his conviction, Moon continued to proclaim his innocence and began filing motions to have the evidence re-tested. Eventually, he won access to DNA testing—technology that was still in its infancy at the time. While the results of the tests seemed to exclude Moon as the source of some crime scene evidence, the results were not yet

exculpatory because the victim's reference sample was not tested. Moon continued to petition for further testing.

In 1996, Assistant El Paso District Attorney John Davis was preparing a response to Moon's latest appeal and requested that the DPS crime lab review the evidence. In a December 1996 internal memo, DPS scientist Donna Stanley raised serious questions about the original DPS testing and testimony by Adams. Stanley wrote in the memo "It is imperative to obtain a blood sample from Brandon Moon and the victim's husband in order to resolve this case."⁹⁸

Stanley proceeded with DNA testing that proved that the crime scene stains on a comforter and bathrobe came from two different men. She sent a report to Davis in January 1997 stating reference samples from Moon and the victim were too old and degraded to test. Stanley claimed that additional reference samples from Moon, the victim, and her ex-husband were needed to determine whether Moon could be excluded as the perpetrator by the crime scene evidence. She left her DPS job four days after sending her report to Davis. By this time Moon's appeal had been denied.⁹⁹

No one in the DPS lab or the DA's office ever followed up on the request for reference samples. Lab officials said they could only act at the direction of the DA's office. A DPS spokesperson offered the following explanation to the *El Paso Times* in 2005: "No additional samples were ever received, so there was no further work to complete; therefore no other personnel were assigned to the case."¹⁰⁰ Assistant El Paso DA John Davis told the paper that it "wasn't my role as the prosecutor to go out and manufacture or produce exculpatory evidence." In short, both the lab and the prosecutor ignored Stanley's red flags.¹⁰¹

Based on Texas' then-new post-conviction DNA testing statute, Moon finally won access to further testing in 2002. This testing conclusively excluded Moon as the contributor of any semen from the crime scene comforter or bathrobe, but the results were still not enough to free Moon. If the stains could be traced to either the victim's husband or

teenage son (it was the son's bathrobe), prosecutors could argue that the results were not exculpatory, because the perpetrator may not have left DNA behind.¹⁰²

Moon's new lawyers with the El Paso Public Defender's Office tracked down the victim's now ex-husband, but could not find her son. The ex-husband agreed to offer a DNA sample, but, believing it would be useless unless they could also get a reference sample from the son, the lawyers waited to collect it while they continued their search.¹⁰³

The Innocence Project subsequently took the case. In November 2004 the victim's husband gave a reference sample that matched the comforter stain but not the bathrobe. Further testing proved that the son could not have been the source of the stain either, leaving only the rapist.¹⁰⁴

DNA testing demonstrated Moon's innocence, and it also exposed grave flaws in the original work and trial testimony of Glen D. Adams, the state crime lab's serologist. Adams testified that the victim's husband was definitely excluded as a source of the comforter stain, yet DNA proved that the comforter stain originated from the husband.

In fact, Adams' original testing could not have included or excluded any person or suspect.¹⁰⁵

An investigative reporter with the *El Paso Times* later documented that Adams was brand new at his job when assigned the Moon case, had received a D in his college serology course, was struggling through a significant work backlog at the time, and that a supervisor indicated in a review that he had an insufficient understanding of the basics of blood analysis.¹⁰⁶

In December 2004, after the multiple tests and analyses were complete, Brandon Moon was finally freed from prison with the support of prosecutors after seventeen years of wrongful incarceration. El Paso District Attorney Jamie Esparza issued the following statement: "I would like to convey my apologies to Mr. Moon on behalf of the state of Texas and acknowledge that an apology at this time is inadequate..."¹⁰⁷

DNA testing demonstrated Moon's innocence, and it also exposed grave flaws in the original work and trial testimony of Glen D. Adams, the state crime lab's serologist.

SNAPSHOTS OF SUCCESS

While most states lack important safeguards that prevent against erroneous forensic analysis and testimony, some states have taken measures to ensure that forensic science and testimony are fair, accurate, and reliable. States like Maryland, New York, and Texas are case studies in forensics reform.

MARYLAND

On April 24, 2007, the governor of Maryland signed a bill creating an independent system for the oversight of forensic laboratories in Maryland.¹⁰⁸ Maryland's law actively fosters fairness and accuracy at publicly funded forensics laboratories by giving oversight responsibility to the Department of Health and Mental Hygiene (DHMH), rather than the Department of Public Safety or the Attorney General.

The legislation directs the DHMH to create a quality assurance program, retain all case files for ten years, establish qualifications for personnel of forensic laboratories, establish procedures for verifying the background and education of personnel, and establish additional standards assuring that labs provide accurate and reliable services. The legislation also creates a forensic proficiency program, overseen by the Secretary of the DHMH. Licensing will be required for labs beginning in 2012. The director of Department's Office of Healthcare Quality at DHMH commented that this delay was needed, "to be sure that we do this right. We want to work with the laboratories and the advocates...really bridge the gap between the people who are seeking change and the people who are providing the services."¹⁰⁹

If any lab is found to not meet the DHMH standards, DHMH will document the reasons and make such information public. In addition, labs must make discrepancy logs, contamination records, and test results available to the public within thirty days of completion.¹¹⁰

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NEW YORK

A 1994 law in New York created an oversight board to regulate forensic laboratories in the state.¹¹¹ The board sets minimum standards for accreditation, which include an initial inspection of the lab, routine inspections, quality control, and annual certification. The board can also investigate cases of negligence or misconduct. The board can revoke accreditation if, among other things, there is misrepresentation during the initial accreditation or if the lab shows a pattern of excessive errors. The commission has determined that accreditation by the American Society of Crime Laboratory Directors Laboratory Accreditation Board (ASCLD/LAB) or the American Board of Forensic Toxicology is sufficient to ensure quality, but requires that inspections take place roughly every two and one half years, rather than every five years as required by ASCLD/LAB.¹¹²

The commission must meet at least four times a year and consists of fourteen members who receive no compensation. The commissioner of the division of criminal justice services and the commissioner of the department of health or his or her designee are automatically members of the committee, and

the governor appoints twelve other members to serve three year terms.

The law also establishes that tampering or attempting to tamper with any DNA sample or collection container without lawful authority is a Class E felony.¹¹³ John Hicks, Director of New York State's Office of Forensic Services, has said that the reforms have been successful.¹¹⁴ He points specifically to the working groups established by the Office of Forensic Services as being a model for other states to follow. Analysts and other forensics lab employees are grouped according to job-function, and meet two to three times a year. During these meetings, they share experiences and find solutions to problems they encounter. The meetings add uniformity and

increase shared knowledge of the analysts at New York's twenty-three forensics laboratories. Finally, proper funding ensures that New York does not have a backlog of DNA analysis for pending cases, turning around nearly all evidence within thirty days.¹¹⁵

TEXAS

Since the investigation of the Houston Police Department (HPD) crime lab, Texas has taken steps toward forensic science reform. In response to the 2002 audit of the HPD crime lab, the Texas state legislature passed legislation in 2003 requiring evidence to come from laboratories accredited by the Department of Public Safety in order to be admissible at trial.¹¹⁶ The bill also appropriated almost

ten million dollars to the Department of Public Safety for its crime labs.¹¹⁷

Texas also passed legislation in 2005 creating a Forensic Science Commission, which is similar in composition to the New York Forensic Science Commission mentioned above.¹¹⁸ The creation of this commission is a major step towards implementing effective, independent oversight. As an investigative body, the commission's main responsibilities are to identify problems, recommend quick corrective action, and demand effective implementation of reforms. Members of the commission are appointed by the governor, attorney general, and lieutenant governor. The commission was appropriated \$500,000 in the 2007 legislative session.

QUESTIONS & ANSWERS

I thought forensic science was fool-proof. Why are reforms necessary?

When properly conducted, forensic analysis can be a useful tool, helping to increase the accuracy of our criminal justice system. Due to the fact that forensic science enjoys a reputation as an objective, precise type of evidence, judges and juries often accept forensic evidence and testimony with little challenge. Therefore, it is critical that forensic analysis and testimony be as accurate as possible.

Unfortunately, the lack of oversight, structural independence, proper training, and adequate funding for forensics in most states undermines the accuracy of forensics analysis. Inaccurate or misleading forensic analysis is a leading contributing factor in wrongful convictions.¹¹⁹ Fortunately, there are solutions to this problem. Implementing the reforms outlined in this review accomplishes two goals: strengthening the convictions of the guilty, and reducing the likelihood of imprisoning the innocent.

Has forensics played a role in wrongful convictions?

Issues with forensic science are enough of a problem to jeopardize the fairness and accuracy of

the criminal justice system. DNA-based exonerations shine a light on the failures of our criminal justice system, and the results for forensic science do not inspire confidence. Erroneous and misleading forensic science is the second leading contributing factor in wrongful convictions, contributing to nearly sixty percent of the first two-hundred wrongful convictions overturned by DNA evidence.¹²⁰

Why do judges allow the use of erroneous forensic evidence and testimony?

Judges often lack the scientific expertise and background to determine the reliability of forensic evidence. In addition, attorneys often lack the scientific background necessary to effectively cross-examine forensic experts and expose faulty science.

Courts have rigorously upheld rules about the admissibility of expert testimony in civil cases, but these rules are seldom used in criminal cases.

The courts have left it to state legislatures to implement standards and oversight of forensic laboratories. In recent years, states such as Maryland and Texas have demonstrated that they take this responsibility and have passed legislation to improve oversight, standards, training, and certification.

VOICES OF SUPPORT

“[Forensic science] is justice’s best friend, but it has to not only be used right but done right. There needs to be a way to hold the labs accountable.”¹²¹

Juan Hinojosa

Texas State Senator
USA Today, March 31, 2006

“Full disclosure by [crime labs] is crucial to the integrity of the system.”¹²²

Anne Daly

President of Washington Defenders Association
Seattle Post-Intelligencer Reporter, March 13, 2004

“More frequent audits by an independent body are needed to ensure the lab is following proper protocols... One wrongful accusation in my mind is just inexcusable. It should be above reproach.”¹²³

Senator Val Stevens

Arlington, Virginia
Seattle Post-Intelligencer Reporter, September 14, 2004

“A diverse commission with a lot of liberty to go into local jurisdictions and look at their labs looks like the best answer.”¹²⁴

Senator John Whitmire

Texas Senate Criminal Justice Chairman
The Houston Chronicle, February 28, 2005

“It’s not unusual for people in a lab position to get pressure from various agencies about what tests are needed or when you get to testimony. The DA’s office can exert pressure. If your program isn’t set up to protect your analysts from that, it can lead to trouble. An oversight board might make sense... To keep the current lab structure, but have a board that involves law enforcement types but also scientists and others, would allow us to continue to serve our communities.”¹²⁵

Timothy Sliter

Dallas’ Southwestern Institute of Forensic Sciences
The Houston Chronicle, February 28, 2005

“This [Virginia state] laboratory that touts itself as the best DNA laboratory in the country generated erroneous test results in a capital case twice, using two different DNA methods ... I think this proves our point that crime labs cannot police themselves.”¹²⁶

Peter Neufeld

Co-director of The Innocence Project
Chicago Tribune, May 8, 2005

“There needs to be vigorous disclosure and vigorous scrutiny in any adversarial system ... In our American system of justice, we don’t just rely on the government to tell us everything is right.”¹²⁷

Greg O’Reilly

Chief of Cook County Public Defender’s
Forensic Unit, Illinois
Chicago Tribune, October 20, 2004

“If I’m a defense counsel and there’s science involved ... [I] should be able to go to that examiner and be able to say, ‘What did you do? What was your method? What were your findings?’ And the people who are working at the state crime lab should not take the position that ‘we are an arm of the prosecution.’ They’re scientists. They should be an arm of the truth.”¹²⁸

Judge Daniel Locallo

Cook County Circuit Court, Illinois
Chicago Tribune, October 20, 2004

“The search for truth in criminal cases has increasingly relied on the forensic science community. If forensic evidence is not objectively tested, analyzed, and interpreted by adequately trained scientists, the search for truth will potentially be compromised, if not defeated.”¹²⁹

Betty Layne DesPortes

Defense Lawyer and Chairwoman of Jurisprudence
Section of the American Academy of Forensic
Sciences
ABA Journal, July 2005

A MODEL POLICY

AN ACT TO ENSURE THE OBJECTIVITY AND RELIABILITY OF FORENSIC EVIDENCE¹³⁰

Section I. Purpose

The purpose of this Act is to enhance the reliability, independence, and objectivity of forensic analysis and testimony in order to ensure a fair and accurate criminal justice system that convicts the guilty and protects the innocent from wrongful conviction.

Section II. Definitions

When used in this Act:

- A. “Forensic laboratory” means a facility, entity, or site that offers or performs forensic analysis.
- B. “Forensic analysis” means medical, chemical, toxicological, firearms, or other such expert examination or test performed on physical evidence, including DNA evidence, for the purpose of determining the connection of the evidence to a criminal act.
- C. “Physical evidence” means any object, thing, or substance related to a criminal act.
- D. “Blind external proficiency testing” means a test sample that is presented to a forensic laboratory for forensic testing through a second agency, and which appears to the analysts to involve routine evidence submitted for forensic testing.
- E. “Commission” refers to the Forensic Science Oversight Commission, as outlined in section III of this Act.

Section III. Forensic Science Oversight Commission

- A. There is hereby created the Forensic Science Oversight Commission.
The Commission shall be composed of the following eleven members:
 1. The Chief Justice of the Supreme Court shall appoint one member who is a judge.
 2. The Governor shall appoint four members as follows:
 - a. One member who is a prosecutor with expertise in forensic evidence, selected from a list of ten prosecutors provided by the State District Attorneys Association;

- b. One member who is a criminal defense lawyer with expertise in forensic evidence, selected from a list of ten defense lawyers provided by the State Criminal Defense Lawyers Association;
 - c. One member who is a forensic scientist who specializes in DNA analysis;
 - d. One member who is a forensic scientist who specializes in a forensic discipline other than DNA analysis;
3. The Governor shall appoint six members selected from lists provided by the Chancellor of the State University System (three nominees for each):
- a. One member who is a law professor with expertise in forensic evidence;
 - b. One member who is a faculty member of a medical school and specializes in clinical laboratory medicine;
 - c. One member who is an academic research scientist with a PhD in biology or some sub-discipline thereof;
 - d. One member who is an academic research scientist with a PhD in chemistry or some sub-discipline thereof;
 - e. One research scientist with a PhD engaged in pharmaceutical sciences;
 - f. One member who is an academic social scientist with expertise in experimental psychology.
- B. Each member shall serve a four-year term and may be reappointed for additional terms. The governor shall designate a member to serve as presiding officer.
- C. The commission shall meet at least four times each year and may establish its own rules and procedures concerning the conduct of its meeting and other affairs not inconsistent with law.
- D. No member of the commission on forensic science shall be disqualified from holding any public office or employment, nor shall he or she forfeit any such office or employment, by reason of his appointment hereunder.
- E. Members of the commission shall receive no compensation for their services but shall be allowed their actual and necessary expenses incurred in the performance of their functions hereunder.
- F. Hereafter in this Act the Commission on Forensic Science will be referred to as “the Commission.”

- G. The Chair of the Commission shall, with the approval of a majority of the Commission's members, hire an Executive Director of the Commission. The Executive Director shall employ, in accordance with the provisions of the [state] Personnel Code, administrative, professional, clerical, and other personnel as may be required to perform the duties of the Commission. The Executive Director may organize the staff of the Commission as he or she may deem appropriate. The Executive director may, with the approval of the Commission, hire independent contractors as necessary to carry out the Commission's duties, including, but not limited to, investigators, auditors, and quality assurance experts.

Section IV. Tracking and Investigating Allegations of Misconduct, Negligence, and Error

- A. The Commission shall develop and promulgate a system of reporting instances or allegations of forensic misconduct, negligence, or other serious error regarding analysis of forensic evidence in the state, and require employees of all forensic laboratories and other entities performing or offering forensic analysis in the state to report instances or allegations of misconduct, negligence, or other serious forensic error to the Commission. The Commission may consider complaints from any party.
- B. The Commission shall investigate in a timely manner any allegations of forensic negligence, misconduct, or other serious forensic error that could affect the integrity of results of forensic analysis in the state.
- C. The commission shall prepare a written report regarding any investigation it undertakes under this section detailing the allegations and the Commission's findings regarding whether negligence, misconduct, or other serious forensic error occurred, and any corrective action required of the laboratory or other entity conducting forensic analysis. All such reports shall be provided to the Governor and the Attorney General, and made available to the public.
- D. An investigation may include, where appropriate, retrospective reexaminations of other forensic analyses conducted by the laboratory or other entity that may involve the same kind of negligence, misconduct, or serious forensic error, and follow-up evaluations of the laboratory or entity to review implementation of corrective action.

Section V. Adoption of a Forensic Science Ethical Code

- A. The Commission shall create an ethical code for the conduct of forensic science in [state]. The Commission shall consult with relevant experts in the creation of this code.

- B. The code will be created pursuant to the goals of communicating the seriousness of the work of forensics laboratories to employees of these laboratories and of making clear the role of a forensic analyst as a neutral, objective scientist, and not as an actor on the side of the prosecution or the police.
- C. The code shall be distributed to each employee of each laboratory or entity conducting or offering forensic testing, examinations, or analysis in [state].

Section VI. Standards and Regulation

- A. The Commission shall, by rule, adopt operational, training, administrative, and scientific standards and regulations for forensic laboratories and other entities performing or offering forensic analysis in the state.
- B. The standards and regulations shall be designed to increase and maintain the objectivity, reliability, efficiency, and accuracy of forensic laboratories, and ensure that forensic analyses are performed in accordance with the highest scientific standards practicable.
- C. In determining standards and requirements pursuant to this section, the Commission shall evaluate other existing standards and systems of accreditation for forensic laboratories. The commission may decide to incorporate accreditation through an approved private system to satisfy some requirements it adopts; however, the Commission shall not be bound by existing private accreditation systems, and shall supplement them as necessary with its own programs to meet the Commission's standards consistent with this Act.
- D. The standards and regulations that shall be adopted and enforced by the Commission shall, at a minimum, require:
 - 1. Minimum qualifications for forensic laboratory directors, analysts, examiners, technicians, and other such personnel as the Commission may determine to be necessary and appropriate;
 - 2. Adoption and enforcement of certification and continuing education requirements for all forensic analysts, examiners, and technicians for each of the forensic sub-disciplines;
 - 3. Satisfactory training programs for employees at all levels, including training on ethics and possible sources of error, and the role of forensics in causing and exposing wrongful convictions in the past;
 - 4. Comprehensive quality control and quality assurance protocols, a method validation procedure, and a corrective action and remedial program;

5. Routine internal and external proficiency testing of all laboratory personnel involved in forensic analysis, which shall include blind external proficiency testing requirements, and definition of satisfactory performance on such testing;
6. Internal disciplinary procedures for violations of the Commission's ethical code, created pursuant to this Act;
7. Internal structures and protocols to regulate the flow of information between forensic examiners and persons requesting forensic services, in order to minimize the potential effects of extraneous information and influences that may contribute to inadvertent bias in the processing or interpretation of evidence, or in the presentation of testimony;
8. Protocols for providing appropriate and equitable access to law enforcement, prosecutors, and defense counsel not inconsistent with paragraph D7 above, and keeping appropriate records of such contacts;
9. Protocols for documenting forensic tests, examinations, and analyses, and for archiving reports, bench notes, and other important documentation, and for appropriate disclosure of such information.

Section VII. Licensure

- A. The Commission shall by rule establish a licensing program for laboratories or other entities performing or offering forensic laboratory tests, examinations, or analysis in the state.
- B. To qualify for a license, an applicant shall provide evidence to satisfy the Commission that the laboratory, facility, or entity and its personnel meet the standards and requirements of this Act and all regulations adopted under this Act.
- C. To assure compliance with the standards and requirements under this Act, and to make licensure determinations, the Commission shall conduct:
 1. An inspection of each forensic laboratory for which a license to operate is sought; and
 2. An inspection of each forensic laboratory for which a license has been issued.
- D. To assure compliance with the standards and requirements under this Act, the commission may conduct:
 1. A compliance investigation; and
 2. A validation survey of an approved forensic laboratory.

- E. Laboratories or other entities licensed or seeking a license under this Act shall permit the Forensic Science Commissioners and their designees to conduct inspections of facilities and records at any time.
- F. The Commission shall grant licenses to laboratories and other entities performing or offering forensic analysis in the state that will designate the categories of tests, examinations, or analyses that may be offered or performed by the laboratory.
- G. Effective two years from passage of this Act, an entity shall hold a license issued by the Commission before that entity may offer or perform forensic laboratory tests, examinations, or analysis in the state. A forensic laboratory may not operate in a manner not designated by its license.
- H. To qualify for a license, forensic laboratories must be fully independent of state and local police and prosecutorial agencies. The Commission may grant limited, temporary waivers of this requirement if a unit of local government that currently provides forensic services under the auspices of a law enforcement or prosecutorial agency provides a plan acceptable to the Commission for transitioning the forensic services to an agency separate from law enforcement or prosecutorial agencies.
- I. The approval of a forensic laboratory may be revoked, suspended, or otherwise limited, upon a determination by the Commission that the laboratory or one or more persons in its employ:
1. Is guilty of misrepresentation in obtaining a forensic laboratory accreditation;
 2. Rendered a report on laboratory work actually performed in another forensic laboratory without disclosing the fact that the examination or procedure was performed by such other forensic laboratory;
 3. Showed a pattern of excessive errors in the performance of forensic laboratory examination procedures;
 4. Failed to file any report required to be submitted pursuant to this Act or the rules and regulations promulgated pursuant thereto; or
 5. Violated in a material respect any provision of this Act or the rules and regulations promulgated pursuant thereto.
- J. No forensic laboratory approval shall be revoked, suspended, or otherwise limited without a hearing. The Commission shall serve written notice of the alleged violation, together with written notice of the time and place of the hearing, which notice shall be mailed by certified mail to the holder of the forensic laboratory approval at the address of such holder at least twenty-one days prior to the date fixed for such hearing. An approved laboratory may file a written answer to the charges with the Commission, not less than five days prior to the hearing.

Section VIII. Applicability

This Act shall not apply to a laboratory operated by any agency of the federal government, or to any forensic test performed by any such federal laboratory.

Section IX. Availability to Public

- A. Forensic laboratory deficiency statements, plans of correction, laboratory audits, and accreditation reports are public documents.
- B. A forensic laboratory shall make discrepancy logs, contamination records, and test results available to the public within thirty days of a written request.

Section X. Independence of State Forensic Laboratories

- A. There is hereby created the Department of Forensic Services, an independent agency of state government.
- B. The Forensic Science Oversight Commission shall by a majority vote appoint the Director of the [State] Department of Forensic Services.
- C. The Director shall be a scientist with a PhD in life or physical sciences, or be a medical doctor, and have substantial experience in academic, government, industrial, research, or clinical laboratory operations. The Director shall not have been employed previously by a law enforcement, prosecutorial, or public defender agency.
- D. The Director shall serve at the pleasure of the Forensic Science Commission. The Director shall hire such personnel as are necessary to carry out the operations of the Department with the approval of the Forensic Science Commission.
- E. The Department of Forensic Services shall operate forensic laboratories and conduct forensic analyses of evidence for law enforcement agencies in [state], and, upon request, for defense counsel, in connection with the investigation and prosecution of crimes in [state].
- F. Notwithstanding any other law to the contrary, all functions related to forensic laboratory testing by other agencies of state government shall instead be performed by the Department of Forensic Services, and the Director shall enter into a cooperative agreement with any department of state government currently providing forensic laboratory services to transfer appropriate assets within one year of the effective date of this Act.
- G. Nothing in this section shall be construed to limit a criminal defendant's due process rights to engage independent forensic experts not employed by or under contract with the Department of Forensic Services.

LITERATURE

SUGGESTED READINGS

The following materials are suggested reading for individuals interested in enhancing the reliability of forensic science.

- Cooley, Craig M. “Reforming the Forensic Community to Avert the Ultimate Injustice.” *Stanford Law and Policy Review* 15 (2004): 381-446.
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THE JUSTICE PROJECT

Working to Increase Fairness and Accuracy in the Criminal Justice System

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The Justice Project is comprised of two nonpartisan organizations dedicated to fighting injustice and to creating a more humane and just world. The Justice Project, Inc., which lobbies for reform, and The Justice Project Education Fund, which increases public awareness of needed reforms, work together on the Campaign for Criminal Justice Reform to reaffirm America's core commitment to fairness and accuracy by designing and implementing national and state-based campaigns to advance reforms that address significant flaws in the American criminal justice system, with particular focus on the capital punishment system.

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The Justice Project (TJP) has developed a national program of initiatives designed to address and affect the policies and procedures that perpetuate errors and contribute to the conviction and incarceration of innocent people, especially within the death penalty system. As such, TJP advocates for 1) improvements in eyewitness identification procedures; 2) electronic recording of custodial interrogations; 3) higher standards for admitting snitch or accomplice testimony at trial; 4) expanded discovery in criminal cases; 5) improvements in forensic testing procedures; 6) greater access to post-conviction DNA testing; 7) proper standards for the appointment and performance of counsel in capital cases; and 8) safeguards against prosecutorial misconduct.

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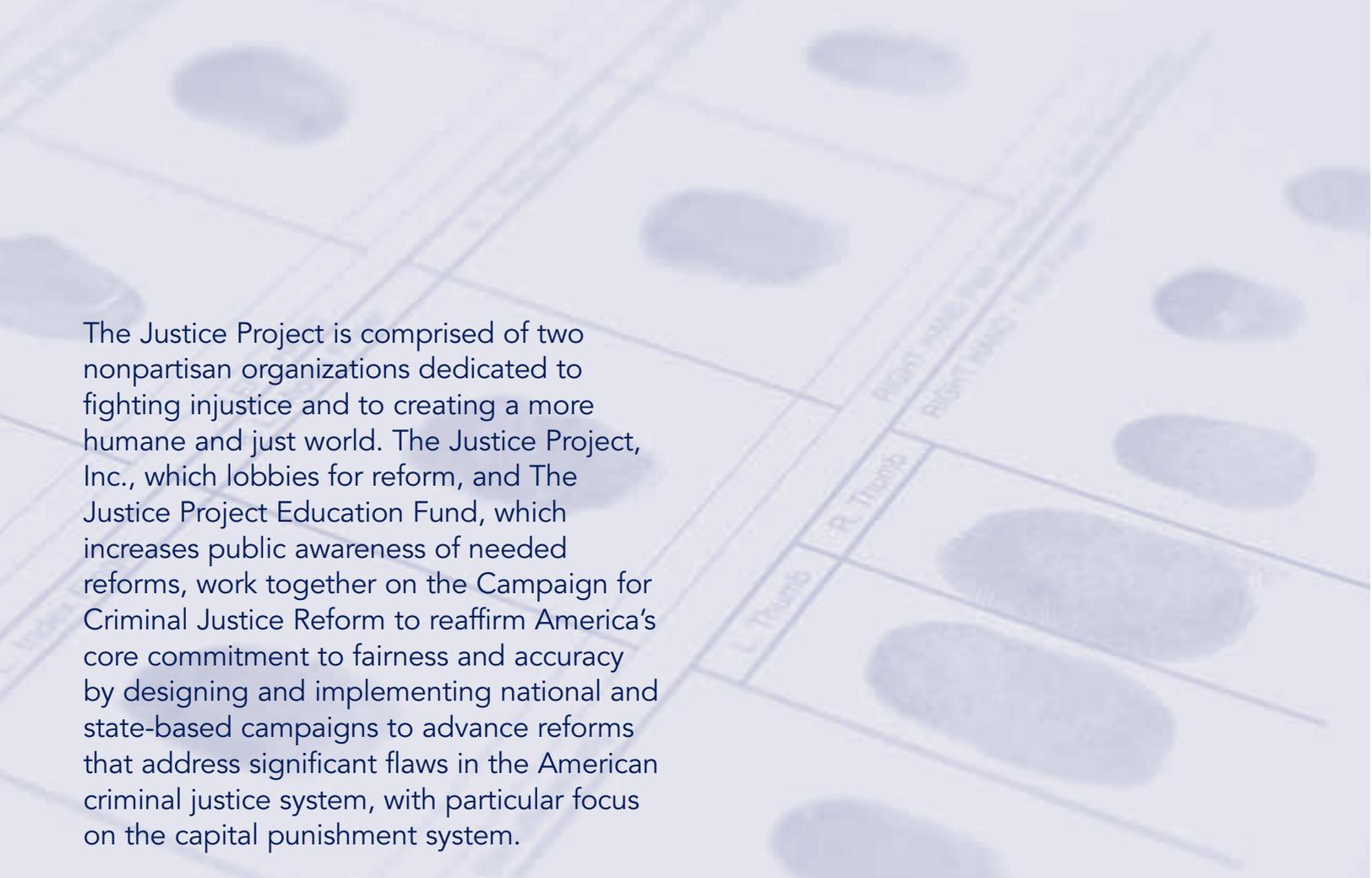
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*“Law’s evolution is never done,
and for every improvement made
there is another reform that is overdue.”*

— JUSTICE WILLIAM J. BRENNAN, JR.



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