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**IN THE COURT OF COMMON PLEAS  
OF CAMBRIA COUNTY, PENNSYLVANIA**

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**COMMONWEALTH OF PENNSYLVANIA**     )  
    **Respondent,**                             )  
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   )  
**STEPHEN REX EDMISTON,**             )  
    **Petitioner.**                             )  
   )

**CAMBRIA COUNTY**  
  
**Case No. 1025-88**

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**SUPPLEMENTAL PETITION FOR POST-CONVICTION RELIEF  
BASED UPON ADDITIONAL NEWLY DISCOVERED EVIDENCE  
– AND –  
CONSOLIDATED MEMORANDUM OF LAW IN SUPPORT OF PETITION AND  
PENDING MOTION FOR DISCOVERY**

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Dated: April 17, 2009

**TABLE OF CONTENTS**

I. Introduction ..... 1

II. Procedural History ..... 7

III. Factual Circumstances Underlying This Supplemental Petition ..... 7

    A. The Commonwealth’s Case and Tackett’s Testimony ..... 7

        1. Judge Long Accepts Tackett’s Testimony ..... 7

        2. Tackett’s Reports, Testimony, and Conclusions ..... 12

            a. Tackett’s Reports ..... 12

            b. Tackett’s Trial and Penalty Phase Testimony ..... 16

                1) Hair Evidence ..... 16

                2) Blood Testimony ..... 19

                3) Semen and Sperm Testimony ..... 20

                4) Soil Analysis Testimony ..... 21

        3. The Prosecutor’s Closing Arguments ..... 22

    B. The NAS Report ..... 22

        1. No Research ..... 25

            a. No Base Rate Data ..... 26

            b. No Research Aimed at Minimizing Potential Biases ..... 29

            c. No Error Rate Research ..... 34

        2. No Standards ..... 37

            a. No Standards for Determining a Match ..... 38

            b. No Standardized Terminology and Report Writing Requirements  
                ..... 39

            c. No Certification Standards ..... 44

IV. Jurisdiction ..... 46

A.	Government Interference .....	46
1.	The Commonwealth Failed to Disclose Impeachment and Exculpatory Evidence, Failed to Correct Materially False Testimony it Had Elicited, and Affirmatively Argued Based Upon this Materially False Testimony. ....	47
2.	Due Diligence .....	49
3.	Prejudice .....	50
B.	After-Discovered Evidence .....	54
V.	Grounds for Relief .....	55
A.	PCRA’s Statutory Requirements .....	56
B.	Edmiston Is Currently on Death Row .....	58
C.	Edmiston Alleges Cognizable Claims of Error .....	58
D.	Edmiston’s Claims Have Not Been Previously Litigated .....	58
VI.	Claims for Relief .....	58
	Guilt-Phase Claims .....	58
Supp. Claim 1.	Edmiston Was Denied His Right to Due Process Because False, Misleading, and Unreliable Evidence Undermined the Fundamental Fairness of the Entire Trial. ....	58
Supp. Claim 2.	Edmiston Was Denied His Right to Due Process Because the Commonwealth Knowingly Presented False Evidence. ....	61
A.	The Legal Standard .....	6
B.	The Standard Applied .....	62
1.	Tackett Committed Perjury .....	62
2.	The Commonwealth Knew of Should Have Known that Tackett’s Testimony was False .....	63
3.	Tackett’s Testimony Went Uncorrected .....	63

4.	Prejudice – The Reasonable Likelihood Standard . . . . .	63
Supp. Claim 3.	The Commonwealth Failed to Disclose Material Exculpatory and Impeachment Evidence in Violation of Edmiston’s Rights Under <i>Brady v. Maryland</i> . . . . .	64
Supp. Claim 4.	Edmiston Was Denied a Meaningful Opportunity to Present a Complete Defense by the Failure to Disclose Material Exculpatory and Impeachment Evidence. . . . .	65
Supp. Claim 5.	The Commonwealth’s Evidence and Argument Rendered Edmiston’s Trial Fundamentally Unfair and Violated His Right to a Jury Verdict Based Solely Upon the True Facts of the Offense Proven Beyond a Reasonable Doubt. . . . .	66
Supp. Claim 6.	Edmiston’s Right to Due Process Was Violated Because Tackett’s False and Unreliable Testimony Led to the Conviction of an Innocent Man. . .	67
Supp. Claim 7.	Edmiston’s Conviction must Be Overturned Because of the Cumulative Prejudice from All of the Constitutional Errors in this Case. . . . .	67
Penalty-Phase Claims . . . . .		68
Supp. Claim 8.	Tackett’s False, Misleading and Unreliable Testimony Violated Edmiston’s Eighth Amendment Right to Heightened Reliability in Capital Sentencing. . . . .	68
Supp. Claim 9.	Edmiston’s Death Sentence Violates Due Process Because its Imposition was Based Upon a Material Misapprehension of Fact. . . . .	70
Supp. Claim 10.	Edmiston Was Denied His Right to an Impartial Penalty-Phase Jury. . .	71
Supp. Claim 11.	Edmiston is Actually Innocent of All Aggravating Circumstances. . . .	72
Supp. Claim 12.	Edmiston is Entitled to Relief Based Upon the Cumulative Prejudicial Effect of these Constitutional Errors. . . . .	72
VII.	Edmiston is Entitled to Discovery . . . . .	72
VIII.	Conclusion . . . . .	77
Prayer for Relief . . . . .		78

1. On February 18, 2009, the National Academy of Sciences issued a landmark analysis of the state of forensic science in the United States. *See* NAT'L ACAD. OF SCI., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES: A PATH FORWARD (Feb. 18, 2009) (hereinafter *NAS Report*) (attached hereto as Exhibit 1). The *NAS Report* offers additional support and newly discovered evidence for Petitioner Stephen Edmiston's claims of actual innocence and an entitlement to a new trial and reversal of his death sentence in the above-captioned matter.

2. It is within sixty days of the issuance of the *NAS Report* and Mr. Edmiston, pursuant to the requirements of the PCRA statute, submits this *Supplemental Petition for Post-Conviction Relief Based upon Additional Newly Discovered Evidence and Consolidated Memorandum of Law in Support of Petition and Pending Motion for Discovery*, and avers as follows:

## **I. INTRODUCTION**

3. The "central function" of a criminal trial "is to discover the truth," *Portuondo v. Agard*, 529 U.S. 61, 73 (2000),<sup>1</sup> so that the "twofold aim" of justice – "that guilt shall not escape or innocence suffer" – can be attained, *Berger v. United States*, 295 U.S. 78, 88 (1935). To expose the truth, however, criminal trials must be *premised* not only on *fair procedures* that adequately ensure the truth can and will be uncovered, *see e.g.*, *Crawford v. Washington*, 541 U.S. 36 (2004) (right to cross-examine adverse witnesses); *Banks v. Dretke*, 540 U.S. 668 (2004)

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<sup>1</sup> *See also Delaware v. Van Arsdall*, 475 U.S. 673, 681 (1986) ("the central purpose of a criminal trial is to decide the factual question of the defendant's guilt or innocence"); *United States v. Nobles*, 422 U.S. 225, 230 (1975).

(right to impeachment or potentially exculpatory evidence),<sup>2</sup> but, as importantly, on *accurate and truthful evidence*. It is axiomatic that the truth cannot be revealed, that Due Process cannot be honored, and that the innocent cannot be fairly identified when the fact finder is inundated with unreliable and false evidence. *See Miller v. Pate*, 386 U.S. 1, 5 (1967) (“the Fourteenth Amendment cannot tolerate a state criminal conviction obtained by the knowing use of false evidence”); *accord Napue v. Illinois*, 360 U.S. 264 (1959).

4. The United States Supreme Court also has repeatedly recognized that because of the death penalty’s unparalleled severity and irreversibility, the Eighth Amendment imposes “a heightened standard of reliability,” *Ford v. Wainwright*, 477 U.S. 399, 411 (1986), “in the determination that death is the appropriate punishment in a specific case.” *Woodson v. North Carolina*, 428 U.S. 280, 305 (1976) (plurality opinion); *Lockett v. Ohio*, 438 U.S. 586, 604 (1978) (death is qualitatively different from all other forms of punishment, and this difference “calls for a *greater degree of reliability* when the death sentence is imposed”) (emphasis added).<sup>3</sup>

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<sup>2</sup> *See United States v. Leon*, 468 U.S. 897, 900-01 (1984) (recognizing the general goal of establishing “procedures under which criminal defendants are ‘acquitted or convicted on the basis of all the evidence which exposes the truth’”) (*quoting Alderman v. United States*, 394 U.S. 165, 175 (1969)). These procedural protections protect “the innocent from erroneous conviction and ensuring the integrity of our criminal justice system.” *California v. Trombetta*, 467 U.S. 479, 485 (1984).

<sup>3</sup> *See also Gardner v. Florida*, 430 U.S. 349, 357-58, 360 (1977); *Godfrey v. Georgia*, 446 U.S. 420, 427-28 (1980); *Beck v. Alabama*, 447 U.S. 625, 637-38 (1980); *Edmund v. Florida*, 458 U.S. 782, 797 (1982); *Ake v. Oklahoma*, 470 U.S. 68 (1985); *Caldwell v. Mississippi*, 472 U.S. 320, 329 (1985) (“[T]he qualitative difference of death from all other punishments requires a correspondingly greater degree of scrutiny of the capital sentencing determination”); *Mills v. Maryland*, 486 U.S. 367, 383-84 (1988); *Johnson v. Mississippi*, 486 U.S. 578, 584 (1988); *Lankford v. Idaho*, 500 U.S. 110, 125 (1991); *Roper v. Simmons*, 543 U.S. 551, 568 (2005). This principle is so fundamental that, within a decade of *Furman v. Georgia*, every Supreme Court Justice had written or joined at least one opinion endorsing the proposition that death is different and that the death sentence must be accompanied by commensurate procedural safeguards. *Spaziano v. Florida*, 468 U.S. 447, 468 (1984) (Stevens, J., concurring in

Central to this fundamental Eighth Amendment principle is the constitutional principle of truth in capital sentencing proceedings. The heightened constitutional need for reliability in capital cases requires that juries be provided “accurate sentencing information [as] an indispensable prerequisite to a reasoned determination of whether a defendant shall live or die.” *Gregg v. Georgia*, 428 U.S. 153, 190 (1976); *California v. Ramos*, 463 U.S. 992, 1004 (1983); *see also Simmons v. South Carolina*, 512 U.S. 154, 172 (1994) (Souter, J. concurring). The presentation or incorporation of materially false or unreliable evidence in capital sentencing produces a verdict that is unconstitutionally arbitrary and capricious. Thus, the evidence and testimony introduced by the prosecution in a capital case as a basis to establish a defendant’s eligibility for the death penalty and to take his life must be truthful and reliable. The reason is self-evident, for the “quintessential miscarriage of justice is the execution of a person who is entirely innocent.” *Schulp v. Delo*, 513 U.S. 298, 324 (1995).

5. These two constitutional principles were clearly established when the Commonwealth prosecuted Stephen Edmiston twenty years ago for allegedly raping, torturing, and murdering two-year-old Bobbi Jo Matthews. The Commonwealth’s case, however, dishonors these two bedrock principles because is grounded on fundamentally unreliable and, in some instances, flat out false forensic evidence.

6. At trial and the sentencing hearing, the Commonwealth introduced Bruce Tackett – a criminalist with the Pennsylvania State Police (PSP) Erie Regional Crime Laboratory – as a hair, serology, and soil expert. Judge Long admitted Tackett’s expert testimony. Tackett testified that he examined the hair and blood evidence recovered from Edmiston’s truck, the rape

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part & dissenting in part).

kits swabs from Bobbi Jo’s autopsy, and soil samples from Edmiston’s truck and crime scene.

7. In regard to the hair evidence, Tackett testified that several of the hairs “positively matched” Bobbi Jo’s hair samples and that it was “not very likely” that the hairs had come from anyone other than Bobbi Jo. With respect to the swabs, Tackett testified that he had identified semen and sperm on the vaginal and anal swabs. Regarding the blood evidence, Tackett testified that Bobbi Jo had type-O blood and that several blood samples from the truck were type-O blood. Finally, Tackett testified that some of the soil samples from Edmiston’s truck could have – and presumably did – come from the location where Bobbi Jo’s body had been found.

8. To a reasonable fact finder, the import of Tackett’s testimony is obvious: the hair and blood in Edmiston’s car *must have* come from Bobbi Jo; the semen and sperm on Bobbie Jo’s swabs *came from* Edmiston; and the soil from the truck came from the crime scene.<sup>4</sup> Outside of Edmiston’s alleged admission (which bears little independent indicia or reliability and which he vehemently denies having made), the hair, blood, semen, and soil evidence represent the only evidence – physical or testimonial – that allegedly links Edmiston to Bobbi Jo’s murder.

9. Because hair identification, conventional serology (e.g., blood typing and identifying seminal fluid), and soil analysis did not constitute “novel” scientific evidence, Judge Long did not hold a *Frye* hearing pursuant to *Commonwealth v. Topa*, 369 A.2d 1277 (Pa.1977) (*Frye* applies only to “novel scientific evidence”).<sup>5</sup> Consequently, by admitting Tackett’s

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<sup>4</sup> As the Supreme Court noted, “[t]estimony emanating from the depth and scope of specialized knowledge is very impressive to a jury. The same testimony from another source can have less effect.” *Ake v. Oklahoma*, 470 U.S. 68, 82 n.7 (1985) (citation omitted); *Commonwealth v. Topa*, 369 A.2d 1277, 1282 (Pa. 1977) (“scientific proof may in some instances assume a posture of mystic infallibility in the eyes of a jury of laymen”).

<sup>5</sup> *Frye* pertains to *Frye v. United States*, 293 F. 1013, 1014 (1923).

testimony, Judge Long assumed that the forensic science community had – long ago – adequately assessed and empirically established the reliability of the methods and procedures used to examine hair, bodily fluids, and soil. Judge Long’s decision also assumed that the forensic science community had: (1) developed empirically sound standards that could produce consistently accurate results; (2) developed adequate procedures to minimize unconscious contextual bias that affect all scientists; (3) developed precise and clearly defined terminology that cannot be misunderstood by the fact finder; (4) articulated adequate reporting standards, thereby enabling another expert to reproduce the examiner’s methodologies and verify his or her conclusions; and (5) conducted ample empirical research to identify (a) the base rate of different hair characteristics or features; (b) the error rates of hair examiners and serologists (i.e., examiner error); and (c) the errors rates of the laboratory techniques or assays used during hair and serological examinations (i.e., measurement error).

10. Tackett’s testimony implied as much, as well. While Tackett never explicitly stated that the forensic science community had generally accepted his methodologies and conclusions, the manner and nature of his testimony would have led a reasonable fact finder to believe that this was in fact true – i.e., that his hair, serology, and soil analysis methodologies and conclusions had been based upon adequate and verifiable empirical research.

11. Thanks to the National Academy of Sciences’ (NAS) recent report on the state of forensic science in the United States, we now know that Judge Long’s assumptions were wrong; that Tackett’s testimony was false, misleading, and unreliable; and that the Commonwealth and the PSP failed to disclose the fact that most – if not all – of Tackett’s hair, serology, and soil testimony had not been premised on scientifically-sound research and methodologies (let alone any research at all). The NAS, which is “the most prestigious scientific organization in the

United States,”<sup>6</sup> found serious deficiencies in the nation’s forensic science that *played a substantial role in an alarming number of wrongful convictions*. The NAS also concluded that rigorous and mandatory certification programs for forensic scientists are and have been lacking, as have been strong standards and protocols for analyzing and reporting of evidence. Furthermore, there is a dearth of peer-reviewed, published studies establishing the scientific bases and reliability of many forensic methods – particularly hair evidence of the sort relied upon by the prosecution in this case. Finally, many forensic science labs are underfunded, understaffed, and have had no effective oversight for years.

12. While the *NAS Report* focused on the present state of affairs in forensic science, the report plainly indicates that most of these problems are not recent, but have plagued the community for decades. Although defendants and defense attorneys have routinely argued that prosecution forensic evidence is unscientific and unreliable, neither defendants nor their counsel have had “independent” and “objective” evidence from a “governmental body” to prove this point.<sup>7</sup> Now, however, the “most prestigious scientific organization in the United States” finally concluded that this is in fact true. *E.g.*, *NAS Report* at P-1 (“The forensic science system,

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<sup>6</sup> This is a direct quote from the President of the American Academy of Forensic Science (AAFS), Thomas L. Bohan. Mr. Bohan made this comment in a March 15, 2009 email to all the AAFS members. The email is attached hereto as Exhibit 2.

<sup>7</sup> For the most part, when defense counsel attacked a forensic expert’s testimony as lacking scientifically basis, counsel generally introduced his or her own forensic expert, thus leading to the battle of the experts. In such situations, at least under Pennsylvania law, both experts were generally permitted to testify, with the jury being the “ultimate referee” as to which expert was more credible. *See Commonwealth v. Puksar*, 951 A.2d 267, 276 (Pa. 2008) (“The expert testimony offered at trial by both sides amounted to a battle of the experts, with the jury as the ultimate referee based upon its assessment of the credibility of the experts.”). The *NAS Report* specifically rejected this “adversarial testing” as a meaningful arbiter of scientific accuracy and reliability. *NAS Report* at S-9 (“The adversarial process relating to the admission and exclusion of scientific evidence is not suited to the task of finding ‘scientific truth.’”).

encompassing both research and practice, has serious problems [that requires] overhaul [of] the current structure that supports the forensic science community in this country.”); *id.* at S-4 (“shortcomings” in “operational principles and procedures for many forensic science disciplines . . . obviously pose a continuing and serious threat to the quality and credibility of forensic science practice.”).<sup>8</sup> As a result, the *NAS Report*, which was released on February 18, 2009, constitutes “newly discovered” evidence pursuant to 42 Pa. C.S. §§ 9545(b)(1)(i)&(ii) and gives rises to several new state and federal constitutional claims that could not have been raised or litigated earlier by the exercise of due diligence.

## **II. PROCEDURAL HISTORY**

13. Edmiston hereby incorporates the procedural history as set forth in Paragraphs 1-22 of the Petition for Habeas Corpus Relief Under Article I, Section 14 of the Pennsylvania Constitution and for Statutory Post-Conviction Relief Under 42 Pa. C.S. § 9545(b)(1)(i) & (ii).

## **III. FACTUAL CIRCUMSTANCES UNDERLYING THIS SUPPLEMENTAL PETITION**

### **A. The Commonwealth’s Case and Tackett’s Testimony**

#### **1. Judge Long Accepts Tackett’s Testimony**

14. At trial, the Commonwealth presented Tackett as a hair, serology, and soil expert. *Trial NT*, 7/6/1989, at 152-55. Pursuant to *Commonwealth v. Topa*, 369 A.2d 1277 (Pa. 1977), if a party introduces “novel scientific evidence,” the trial judge has a duty to hold a hearing to determine whether the relevant scientific community has generally accepted the novel evidence

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<sup>8</sup> A lack of quality of forensic science practice is obviously material and exculpatory because it creates legitimate doubt as to the accuracy and reliability of any supposedly scientific identification of an individual on the basis of forensic testing. A lack of credibility is obviously material and exculpatory because it impeaches both the “scientific” nature of the tests and of the “expert” who is supposedly providing “scientific” testimony based upon those tests.

or technique as valid and reliable. *Id.* at 1281 (*Frye* applies only to “novel scientific evidence”); accord *Commonwealth v. Puksar*, 951 A.2d 267, 275 (Pa. 2008); *Commonwealth v. Delbridge*, 859 A.2d 1254, 1260 (Pa. 2004) (plurality opinion) (“*Frye* only applies to novel scientific evidence”). As the Pennsylvania Supreme Court explained in *Topa*, the “requirement of general acceptance in the scientific community assures that *those most qualified to assess the general validity of a scientific method will have the determinative voice.*” *Commonwealth v. Topa*, 369 A.2d at 1281 (emphasis added). The Court reinforced this point in *Grady v. Frito-Lay, Inc.*, 839 A.2d 1038 (Pa. 2003), when it stated: “One of the primary reasons we embraced the *Frye* test in *Topa* was its assurance that judges would be guided by *scientists* when assessing the reliability of a scientific method.” *Id.* at 1044-45. The *Grady* court also added:

We believe now, as we did then, that requiring judges to pay deference to the conclusions of those who are in the *best position to evaluate the merits of scientific theory and technique when ruling on the admissibility of scientific proof*, as the *Frye* rule requires, is the better way of insuring that only reliable expert scientific evidence is admitted at trial.

*Id.* at 1045 (emphasis added). In short, “*Frye* requires the scientific community to reach some consensus as to reliability then relies on such consensus to determine the admissibility of the challenged scientific evidence.” *Blum v. Merrell Dow Pharms.*, 764 A.2d 1, 3 (Pa. 2000).

15. As these comments make clear, *Frye*'s general acceptance test is premised on three assumptions. First, it assumes that a particular scientific community has the resources and facilities to rigorously and soundly assess the reliability and validity of the proffered scientific technique or evidence. Second, it assumes that this scientific community is comprised of scientists who have the requisite training and education in science to develop and conduct comprehensive and sound experiments to assess the reliability and validity of the proffered scientific technique or evidence. And third, it assumes that these experts are actually assessing

the reliability and validity of the proffered scientific technique or evidence.

16. The trial judge, as mentioned, is only required to hold a *Frye* hearing if the scientific evidence is “novel.” Scientific evidence is not “novel” if it has been previously admitted and determined to be generally accepted by the relevant scientific community. *See, e.g., Grady v. Frito Lay*, 839 A.2d 1038 (Pa. 2003); *Blum v. Merrell Dow Pharms.*, 764 A.2d 1 (Pa. 2000).<sup>9</sup> Accordingly, if the Pennsylvania Supreme or Superior Court has previously determined that a particular type of scientific evidence or technique is generally accepted, then the evidence or technique is no longer “novel” and the trial judge is not required to hold a *Frye* hearing. Instead, the trial judge can simply take judicial notice of the evidence’s or technique’s general acceptance – i.e., its reliability and validity.<sup>10</sup>

17. Importantly, by taking judicial notice of a particular form of scientific evidence or technique, the trial judge must still make the same assumptions that the buttress *Frye*’s general acceptance test. First, the trial judge must assume that the particular scientific community has the resources and facilities to rigorously and soundly assess the reliability and validity of the proffered scientific technique or evidence. Second, the trial judge must assume that this scientific community is comprised of scientists who have the requisite training and education in science to develop and conduct comprehensive and sound experiments to assess the reliability

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<sup>9</sup> As the word “novel” implies, evidence is “novel” from a judicial perspective, if a court has yet to determine whether it is generally accepted by the relevant scientific community – i.e., it is a “new” or “novel” issue that a court has yet to address.

<sup>10</sup> *See* PA. R. EVID. 201(b); 1 SCIENTIFIC EVIDENCE (Giannelli & Imwinkelried eds. 3d ed. 1999) § 1-2, at 3 (“Once a scientific principle is sufficiently established, a court may take judicial notice of the validity of that principle.”); *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 593 n.11 (1993) (“[T]heories that are so firmly established as to have attained the status of scientific law. . . properly as subject to judicial notice under Fed. Rule Evid. 201.”).

and validity of the proffered scientific technique or evidence. Third, and perhaps most importantly, the trial judge must assume that these scientists *actually conducted* rigorous and verifiable empirical research that established – at some point – the reliability and validity of the proffered scientific technique or evidence.

18. Microscopic hair identification, blood group testing, and soil analysis were not “novel” forms of scientific evidence in 1989; each had been generally accepted by the relevant scientific community at one point or another prior to Edmiston’s trial.<sup>11</sup> As a result, Judge Long was not required to hold a *Frye* hearing and could simply take judicial notice of their reliability and validity – i.e., their general acceptance.

19. While Judge Long did not state – on the record – that he was taking judicial notice of Tackett’s hair, blood, semen, and soil testimony, in substance, this is what happened.<sup>12</sup> Indeed, after the Commonwealth laid the foundation of Tackett’s training and education in hair identification, serology, and forensic science in general, Judge Long stated: “All right, the court

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<sup>11</sup> For blood typing, see *Little v. Streater*, 452 U.S. 1, 6 (1981) (commenting that blood group testing “is universally accepted by distinguished scientific and medical authority”); *Commonwealth v. Perkins*, 546 A.2d 42, 47 (Pa. 1988); *Commonwealth v. Topa*, 369 A.2d at 1278-79; *Commonwealth v. Porter*, 323 A.2d 128, 130 (Pa. Super. 1974); *Commonwealth v. Statti*, 73 A.2d 688, 691-92 (Pa. Super. 1950). For microscopic hair testing, *Commonwealth v. McCauley*, 588 A.2d 941, 947 (1991) (microscopic hair comparisons are admissible under *Frye*); *Commonwealth v. Blasioli*, 685 A.2d 151, 161 n.20 (1996) (citing *McCauley* as concluding that microscopic hair comparisons are admissible under *Frye*), *aff’d*, 713 A.2d 1117 (1998); *Commonwealth v. Holzer*, 389 A.2d 101, 104-05 (Pa. 1978); *Commonwealth v. Petrisko*, 275 A.2d 46, 48 (Pa. 1971). For semen identification and typing, see *Commonwealth v. McCutchen*, 454 A.2d 547, 548 (Pa. 1982); *Commonwealth v. Chapman*, 386 A.2d 994 (Pa. Super. 1978). For soil analysis, see *Commonwealth v. Rhodes*, 510 A.2d 1259 (Pa. Super. 1986); *Commonwealth v. Chapman*, 386 A.2d 994 (Pa. Super. 1978); *Commonwealth v. Russell*, 326 A.2d 303, 307 (Pa. 1974); *Commonwealth v. Ghaul*, 207 A.2d 917 (Pa. Super. 1965).

<sup>12</sup> See PA. R. EVID. 201(b) (“A court may take judicial notice, whether requested or not.”).

will accept him.” *Trial NT*, 7/6/1989, at 155. Once qualified as an expert in “serology, fibers, and basic criminology,” *id.*, Judge Long admitted Tackett’s hair, blood, semen, and soil testimony without holding a *Frye* hearing. In essence, then, Judge Long used his “broad discretion” and judicially noticed (implicitly) the general acceptance of these techniques. *See Commonwealth v. Rodgers*, 605 A.2d 1228, 1234 (Pa. Super. 1992) (“Our law is well established that the trial court enjoys *broad discretion* in admitting or excluding evidence.”) (emphasis added).

20. By judicially noticing the general acceptance of these forms of forensic evidence, Judge Long *had to make* several assumptions pertaining to the forensic science community. First, Judge Long had to assume that the forensic science community had the requisite resources and facilities to rigorously and soundly assess the reliability and validity of the techniques used to identify, categorize, or individualize, hair, blood, semen, and soil evidence. Second, Judge Long had to assume that the forensic science community was comprised of scientists who had the requisite scientific training and education to develop and conduct comprehensive and sound experiments to assess the reliability and validity of the techniques used to identify, categorize, or individualize, hair, blood, semen, and soil evidence. Third, and most significantly, Judge Long had to assume that forensic scientists *actually conducted* rigorous and *verifiable* empirical research that established – at some point – the reliability and validity of the techniques used to identify, categorize, or individualize, hair, blood, semen, and soil evidence.

21. With respect to the third assumption, Judge Long also had to assume that the forensic science community had – at some point – (1) developed empirically sound standards – for techniques used to identify, categorize, or individualize, hair, blood, semen, and soil evidence – that could produce consistently accurate results; (2) developed adequate procedures for these

techniques that minimize the sources of conscious or unconscious bias; (3) developed precise and clearly defined terminology for these techniques that could not be misunderstood by the fact finder; (4) developed adequate reporting standards for these techniques that would enable another forensic scientist to reproduce the initial forensic scientist's methodologies and to verify his or her initial conclusions; and (5) conducted ample empirical research to identify the following data: (a) the base rates of different characteristics or features (e.g., hair features, blood features, soil features); (b) the error rates of forensic scientists (i.e., examiner error); and (c) the errors rates of the laboratory techniques or assays used during hair, blood, semen, and soil examinations (i.e., measurement error).<sup>13</sup>

22. As thoroughly explained *infra*, Part III.B, the *NAS Report* proves that each of these assumptions were incorrect.

## **2. Tackett's Reports, Testimony, and Conclusions**

### **a. Tackett's Reports**

23. Tackett examined numerous items relating to Bobbi Jo Matthew's murder and produced several reports. See Pennsylvania State Police Laboratory Reports by Criminalist Bruce Tackett, dated January 4, March 8, March 21, and April 7, 1989 (hereinafter *PSP Report*) (attached hereto as Exhibits 3-6). Tackett's reports were conclusory and lack pertinent data. This prevented other examiners from replicating and verifying his procedures and conclusions, which in turn renders his conclusions invalid and inherently unreliable.

24. According to the *NAS Report*,

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<sup>13</sup> Again, Judge Long *had* to make these assumptions in order to admit Tackett's testimony without holding a *Frye* hearing. In the absence of these assumptions, Tackett's testimony would be unreliable and inadmissible.

laboratory reports generated as the result of a scientific analysis should be complete and thorough. They should describe, at a minimum, methods and materials, procedures, results, and conclusions, and they should identify, as appropriate, the sources of uncertainty in the procedures and conclusions along with estimates of their scale (to indicate the level of confidence in the results).

*NAS Report*, at 6-3. The *NAS Report* also stressed that “[a]ll results for every forensic science method should [be reported and] indicate the uncertainty in the measurements that are made” and all reports “must include clear characterizations of the limitations of the analyses, including associated probabilities where possible.” *Id.* at 6-1, 6-3.<sup>14</sup> This information is critical so that another forensic scientist can replicate the initial scientist’s methodology in order to verify (or reproduce) the initial scientist’s conclusions. See *United States v. Green*, 405 F. Supp. 2d 104, 120 (D. Mass. 2005) (“Reproducibility is an essential component of scientific reliability.”).

25. Tackett’s reports, particularly his January 4, 1989 report, do not adhere to these fundamental principles of scientific reporting. Instead, his reports are terse and conclusory; they fail to identify: (1) the hypothesis tested; (2) the method or technique; (3) any instrumentation used; (4) sources of uncertainty; and (5) levels of confidence.

26. For instance, after Tackett compared several hairs collected from Edmiston’s truck to Bobbi Jo’s hair samples, he wrote the following in his January 4, 1989 report:

Blonde [sic] human Caucasian head hairs and head hair fragments found on Items #3, #5, #6, #8, #9, and #21 were compared to standard head hairs from Bobbi Jo MATTHEWS (Item #1) and were found to exhibit the same microscopic characteristics. It may be concluded that the hairs and fragments could have come from the victim.

*PSP Report* 1/4/89, Ex. 3, at 2. The inadequacy of Tackett’s reporting should be glaringly

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<sup>14</sup> See *United States v. Monteiro*, 2005 U.S. Dist. LEXIS 39062, at \*14 (D. Mass. Nov. 28, 2005) (“documentation to support conclusions must be such that in the absence of the examiner, another competent examiner or supervisor could evaluate what was done and interpret the data.”) (citation omitted).

obvious. Tackett failed to:

- Identify how he compared the hairs – i.e., did he use a microscope or some other instrument?
- Identify what “microscopic characteristics” of the known and unknown samples were the “same”?
- Identify the base rate of these “microscopic characteristics” in the Caucasian population.
- Define the phrase “same microscopic characteristics.”
- Define the phrase “could have come from.”
- Identify and discuss potential sources of uncertainty.
- The level of confidence regarding his conclusion that the “hairs and fragments could have come from the victim.”

27. Similarly, Tackett issued the following conclusion after he tested a stain inside of

Edmiston’s truck:

A light bloodstain was found on the blood lift from the upholstery under the drivers door window (Item #4). Analysis of the stain yielded results consistent with type “O” human blood.

*Id.* Once again, Tackett failed to:

- Identify what presumptive and confirmatory blood tests he used to determine that the upholstery stain was in fact human blood.
- Identify the blood typing technique he used to determine that the bloodstain was type “O” blood.
- Identify and discuss the potential sources of uncertainty regarding the presumptive and confirmatory blood tests and blood typing tests.
- Identify and discuss the level of confidence regarding his conclusion.<sup>15</sup>

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<sup>15</sup> For instance, Tackett’s report failed to incorporate the fact that Type “O” is the most common blood type for Caucasians. *See* Dale Dykes, *Probability of Inclusion in Paternity Testimony – A Technical Workshop*, AMERICAN ASSOCIATION OF BLOODBANKS (1982).

28. Furthermore, Tackett issued the following conclusion after he examined the vaginal, rectal, and oral swabs from Bobbi Jo's autopsy:

Seminal material including spermatazoa [sic] was detected on the vaginal and rectal swabs (Item #17). No seminal material was detected on the oral swabs.

*Id.* at 3. Once more, Tackett failed to:

- Identify what presumptive and confirmatory tests he used to conclusively determine the presence of semen and spermatazoa on the vaginal and rectal swabs.
- Identify and discuss potential sources of uncertainty regarding these presumptive and confirmatory tests.
- Identify the level of confidence regarding his conclusion.

29. Finally, Tackett examined soil samples recovered from Edmiston's truck and compared them with soil samples from the crime scene. Tackett issued a report on March 21, 1989 detailing the results of his examination:

The soil removed from the truck (Items #2-#5) was compared to the soil standards from the scene (Item #1). The soils were found to exhibit many similarities and some differences. It may be concluded the some [sic] of the soil from the truck could have originated from the same source as the soil from the crime scene.

*PSP Report 3/21/89*, Ex. 5. Tackett, however, once again failed to:

- Identify the techniques or instrumentation he used to examine the soil samples.
- Quantify the terms "*many* similarities and *some* differences."
- Define the term "similarities."
- Define the phrase "could have originated from."
- Identify and discuss potential sources of uncertainty.
- Identify the level of confidence regarding his conclusion that the "soil from the truck could have originated from the same source as the soil from the crime scene."

**b. Tackett's Trial and Penalty Phase Testimony**

30. Tackett testified that when he offers an opinion at trial, his opinion is based on “reasonable scientific or forensic scientific certainty.” *Penalty NT*, October 3, 1989, at 52.

When trial counsel asked what this phrase meant, Tackett offered the following explanation:

I take that phrase to mean that the conclusions I make are based on the performance of sound scientific and analytical techniques using proper controls to eliminate any possible error on the part of the analysis.

*Id.* at 53.

**1) Hair Evidence**

31. Tackett, as mentioned, compared several hairs collected from Edmiston's truck to Bobbi Jo's hair samples. At trial, Tackett testified that “there are 2 possible results” in hair comparison.

The first is you have a positive hair comparison; that means that the hair, the question hair, came from the same origin as the standard hairs or from someone with hair that was identical to that persons.

*Trial NT*, 7/6/1989, at 196. Tackett then offered the following conclusion regarding his hair examination:

My conclusion is that the hairs and hair fragments that were found on . . . Mr. Edmiston's truck, exhibited the same microscopic characteristics as the standard head hairs that were submitted from Bobbi Jo Matthews.

*Id.* at 167.<sup>16</sup> On cross-examination, Tackett added: “On the hair matches that I made in this case, in my opinion they came from Bobbi Jo Matthew or from someone with hair just like hers.” *Id.* at

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<sup>16</sup> Tackett attempted to strengthen his opinion that the truck hairs came from Bobbi Jo by testifying that these hairs “were fairly distinctive in that they were fine, thin textured, fairly long, and very light in color.” *Id.* at 168.

197.<sup>17</sup>

32. When trial counsel asked Tackett whether the hairs could have come from someone other than Bobbi Jo, Tackett testified: “Remotely possible, yes. But not very likely.” *Id.* at 197. Tackett based his quasi-statistical – “not very likely” – opinion on his experience and training: “It’s what I see when I am looking at them[.]” *Id.*

33. Finally, Tackett testified that a “couple” of the truck hairs had been “forcibly removed, like they had been pulled out.” *Id.* at 167.

34. Tackett offered similar testimony during Edmiston’s penalty hearing – i.e., Tackett testified that several hairs recovered from Edmiston’s truck “positively matched” Bobbi Jo’s hair characteristics and that it was statistically “unlikely” that the hairs came from anyone other than Bobbi Jo. *Penalty NT*, 10/3/89, at 84-89. Tackett explained what he meant by a “positive” hair match (*id.* at 87):

That indicates when I have . . . compared the question hairs found at the scene . . . to standard hairs collected from the suspect or victim, and that they exhibit the same microscopic characteristics to me. And in my opinion, that means that that hair could have originated from the same source as the standard hairs.

Tackett further explained that (*id.* at 87-88 (emphasis added)):

[A] positive hair match has... 2 possibilities; *one of them is and by far the most likely*, that the hair came from the individual, the question hair came from the same source as the standard hairs. *However, there is a possibility that it is a coincidental match that it came from someone else that has exactly the same*

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<sup>17</sup> Remarkably, Tackett offered a statistical response to trial counsel’s question, even though Tackett, himself, admitted it “would be very misleading” to offer “some probability” that the hairs “came from [Bobbi Jo] to the exclusion of [a] certain number of other people.” *Id.* What is even more confusing is that Tackett offered a statistical response to trial counsel’s question when he admitted that he was “not really a statistician[.]” *Id.* at 198. Furthermore, Tackett’s quasi-statistical – “not very likely” – opinion is premised on the notion that hair characteristics are in fact quantifiable and measurable. Confusingly, though, Tackett testified that “there is no measurable, really no measurable qualities you are looking for.” *Id.* at 197.

*microscopic characteristics. That is not very likely, but it could possibly happen.*

Tackett then engaged in the following colloquy with the Commonwealth (*id.* at 88-89):

[Mr. Creany]: Mr. Tackett, how would you categorize the likelihood of a coincidental match? And I am asking you to categorize, is it very likely, is it likely, is it very unlikely that there would be a coincidental match?

[Mr. Tackett]: I would have to say it is very unlikely there would be a coincidental match.

[Mr. Creany]: So I think the chances of a coincidental match are slight?

[Mr. Tackett]: Yes.

35. A reasonable juror, who is not versed in science or forensic science, would have interpreted Tackett's testimony in the following manner:

- The hairs from Edmiston's truck came from Bobbi Jo.
- Tackett based his conclusions on techniques that have been rigorously tested and proven to be accurate and reliable.
- Tackett's conclusion must be 100% accurate because he took adequate steps to "eliminate any possible errors."
- Hair identification, in general, must be highly accurate because it is based on "sound scientific and analytical techniques" and hair examiners take every conceivable step to "eliminate any possible errors."
- Hair examiners have accurately determined the base rate of certain hair characteristics and can opine whether a particular characteristic or combination of characteristics is rare or common in a specific population.

36. As thoroughly explained *infra*, the *NAS Report* proves that there is no scientific support for any of these conclusions, that the conclusions are materially misleading, and that each of the inferences that the jury would have drawn from this materially false testimony was incorrect.

## 2) Blood Testimony

37. At trial, Tackett testified that he examined several stains from Edmiston's truck that tested positive for type "O" blood. These stains included:

- A bloodstain from the driver's side seat (Item 10, State's Ex. 27-A).
- A bloodstain from the driver's side seat belt buckle (Item No. 2, State's Ex. 27-B).
- A bloodstain from the upholstery under the driver's door window (Item No. 4, State's Ex. 27-C).
- A bloodstain from the driver's side seat (Item No. 3).
- A bloodstain from the seat cover that was cut off (State's Ex. 34).

*Trial NT*, 7/6/1989, at 169-75.

38. Tackett also identified a human bloodstain on Edmiston's pants that also turned out to be "type O human blood." *Id.* at 178. He also testified that Bobbi Jo had type "O" blood. *Id.* at 177.<sup>18</sup>

39. A reasonable juror, who is not versed in science or forensic science, would have interpreted Tackett's testimony in the following manner:

- The blood from Edmiston's truck came from Bobbi Jo.
- The presumptive and confirmatory bloods tests had been rigorously tested and determined to be reliable and accurate for determining the presence of human blood.
- Tackett's conclusion must be 100% accurate because he took adequate steps to "eliminate any possible errors."
- Blood typing, in general, must be highly accurate because it is based on "sound scientific and analytical techniques" and serologists take every conceivable step to "eliminate any possible errors."

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<sup>18</sup> Tackett offered similar testimony during the penalty hearing. *Penalty NT*, 10/3/89, at 64-82.

40. As thoroughly explained *infra*, the *NAS Report* proves that there is no scientific support for any of these conclusions, that the conclusions are materially misleading, and that each of the inferences that the jury would have drawn from this materially false testimony was incorrect.

### 3) Semen and Sperm Testimony

41. Tackett testified that he examined the vaginal, rectal, and oral swabs from Bobbi Jo's autopsy. Tackett said he "performed a presumptive color test looking for the presence of seminal acid phosphophate." *Trial NT*, 7/6/1989, at 182. If the presumptive test was "positive," Tackett "perform[ed] an extract looking for the presence of spermatazoa [sic]." *Id.* Tackett added (*id.*):

That is what I did in this situation. The vaginal swabs were found to contain spermatazoa [sic] and so were the rectal swabs. After I extracted, I was able to conclude that there was seminal material present in . . . the vaginal and rectal swabs.

On cross-examination, Tackett admitted that "there was not a significant amount [of sperm]," but he "certain" that "there was some [sperm] there." *Id.* at 195.<sup>19</sup>

42. A reasonable juror, who is not versed in science or forensic science, would have interpreted Tackett's testimony in the following manner:

- There was semen and sperm on the vaginal and rectal swabs and that it most likely came from Edmiston.
- The presumptive and confirmatory tests had been rigorously tested and determined to be reliable and accurate tests for determining the presence of semen and sperm.
- Tackett based his conclusions on techniques that have been rigorously tested and

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<sup>19</sup> Tackett offered similar testimony during the penalty hearing. *Penalty NT*, 10/3/1989, at 81-82.

proven to be accurate and reliable.

- Tackett’s conclusion must be 100% accurate because he took adequate steps to “eliminate any possible errors.”
- Tackett presumptive and confirmatory tests used by must be highly accurate because it is based on “sound scientific and analytical techniques” and hair examiners take every conceivable step to “eliminate any possible errors.”

43. As thoroughly explained *infra*, the *NAS Report* proves that there is no scientific support for any of these conclusions, that the conclusions are materially misleading, and that each of the inferences that the jury would have drawn from this materially false testimony was incorrect.

#### **4) Soil Analysis Testimony**

44. Tackett testified that he examined five soil samples: four (4) samples collected from Edmiston’s truck; and one (1) sample collected from the crime scene. *Trial NT*, 7/6/1989, at 184. When asked by the Commonwealth what his analysis revealed, Tackett testified: “[W]hen I compared them side by side, the soil from the truck to the soil in the vile [sic], I found some similarities and a few differences. I concluded that some of the soil in the truck might have come from the scene.” *Id.* at 185.

45. A reasonable juror, who is not versed in science or forensic science, would have interpreted Tackett’s testimony in the following manner:

- The soil from Edmiston’s truck likely came from Edmiston’s truck.
- The analytical and chemical tests used by Tackett to examine the soil samples had been rigorously tested and determined to be reliable and accurate tests for distinguishing between different types of soils.
- Tackett based his conclusions on techniques that have been rigorously tested and proven to be accurate and reliable.
- Tackett’s conclusion must be 100% accurate because he took adequate steps to

“eliminate any possible errors.”

46. As thoroughly explained *infra*, the *NAS Report* proves that there is no scientific support for any of these conclusions, that the conclusions are materially misleading, and that each of the inferences that the jury would have drawn from this materially false testimony was incorrect.

### **3. The Prosecutor’s Closing Arguments**

47. The prosecutor extensively relied on Tackett’s conclusions during closing arguments. *Trial NT*, 7/14/1989, at 42-44.

#### **B. The NAS Report**

48. Recognizing the “rising nationwide criticism of forensic evidence,” *Ramirez v. State*, 810 So.2d 836, 853 (Fla. 2001),<sup>20</sup> and “that significant improvements are needed in

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<sup>20</sup> Indeed, a growing number of courts are questioning forensic science’s proclaimed accuracy and reliability. Judge Boyce Martin of the United States Court of Appeals for the Sixth Circuit has called crime labs “unreliable.” *Moore v. Parker*, 425 F.3d 250, 269 (6<sup>th</sup> Cir. 2005) (Boyce, J., dissenting). United States District Court Judge Jed Rakoff has written: “False positives – that is, inaccurate incriminating test results – are endemic to much of what passes for ‘forensic science.’” *United States v. Bentham*, 414 F. Supp. 2d. 472, 473 (S.D.N.Y. 2006). And United States District Court Judge Nancy Gertner has commented on the noticeable correlation between wrongful convictions and unreliable or invalid forensic science, noting that “recent reexaminations of relatively established forensic testimony have produced striking results.” *United States v. Green*, 405 F. Supp. 2d 104, 109 n.6 (D. Mass. 2005). Other courts and judges have made similar observations. *See, e.g., United States v. Crisp*, 324 F.3d 261, 273 (4th Cir. 2003); *United States v. Glynn*, 578 F. Supp. 2d 567, 570 (S. D. N. Y. 2008) (“Based on the *Daubert* hearings this Court conducted . . . the Court very quickly concluded that whatever else ballistics identification analysis could be called, it could not fairly be called ‘science.’”); *United States v. Diaz*, No. 05-167, 2007 U.S. Dist. LEXIS 13152, at \*35-36 (N. D. Cal. Feb. 12, 2007) (citing *Monteiro* for the conclusion that no scientific methodology exists to support a finding of a match to an absolute certainty, but permitting testimony “to a reasonable degree of ballistic certainty”); *United States v. Monteiro*, 407 F. Supp. 2d 351, 355 (D. Mass. 2006) (finding that while the underlying principles behind firearm identification may be scientifically valid, “there is no reliable . . . scientific methodology which will currently permit the expert to testify that [a casing and a particular firearm are] a ‘match’ to an absolute certainty, or to an arbitrary degree of statistical certainty.”) (Michael, J., dissenting); *Ramirez v. State*, 810 So. 2d 836, 853 (Fla. 2001)

forensic science,” *NAS Report*, at P-1, Congress directed the NAS “to conduct a study on forensic science.” *Id.* at S-1; P.L. No. 109-108, 119 Stat. 2290 (2005); H.R. Rep. No. 109-272, at 121 (2005). In the fall of 2006, the NAS established a committee to implement Congress’s charge. The committee included members of the forensic science community, legal community, and a diverse group of scientists. The committee met on eight occasions between January, 2007, and November, 2008. During these meetings, the “committee heard expert testimony” on several issues relating to the forensic science community. Between meetings, committee members reviewed “numerous published materials, studies, and reports related to the forensic science disciplines, engaged in independent research on the subject, and worked on drafts of the final report.” *Id.* at S-2. The committee, as mentioned, issued its final report on February 18, 2009.

49. At the outset of the report, the committee acknowledged what had become painfully obvious in the years preceding the report: invalid forensic evidence and exaggerated forensic testimony easily mislead numerous fact finders and had contributed to an alarming number of wrongful convictions. As the committee noted, advances in DNA testing

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(“In order to preserve the integrity of the criminal justice system . . . particularly in the face of rising nationwide criticism of forensic evidence in general . . . [,] state courts . . . must . . . cull scientific fiction and junk science from fact.”); *People v. Saxon*, 871 N.E.2d 244, 256 (Ill. App. 2007) (McDade, J., dissenting) (noting that “1/3 of the wrongful convictions” have been “linked to the misapplication of forensic disciplines” – meaning cases in which “forensic scientists and prosecutors presented fraudulent, exaggerated, or otherwise tainted evidence to the judge or jury which led to the wrongful conviction” (citing [www.innocenceproject.org](http://www.innocenceproject.org))); *State v. Clifford*, 121 P.3d 489, 503 (Mont. 2005) (Nelson, J., concurring) (noting how “long-accepted forensic science evidence has recently received greater public scrutiny not only because the ‘experts’ proffering the evidence were either astonishingly inept or downright corrupt, but also because of recent scientific developments such as DNA tests which have revealed the limitations of forensic techniques such as hair identification analysis” (citation omitted)); *State v. Quintana*, 103 P.3d 168, 170 (Utah App. 2004) (Thorne, J., concurring) (“[M]ost evidence points to a lack of consistent training of [fingerprint] examiners and an absence of any nationally recognized standard to ensure that examiners are equipped to perform the tasks expected of them.”).

revealed that, in some cases, substantive information and testimony based on faulty forensic science analyses may have contributed to wrongful convictions of innocent people. This fact has demonstrated the potential danger of giving undue weight to evidence and testimony derived from imperfect testing and analysis. Moreover, imprecise or exaggerated expert testimony has sometimes contributed to the admission of erroneous or misleading evidence.

*NAS Report*, at S-3.<sup>21</sup> The committee also commented that:

The number of exonerations resulting from the analysis of DNA has grown across the country in recent years, uncovering a disturbing number of wrongful convictions—some for capital crimes—and exposing serious limitations in some of the forensic science approaches commonly used in the United States.

*Id.* at 1-6.

50. The committee then identified and discussed several issues in forensic science that call into question – if not entirely undermine – the proclaimed reliability (and infallibility) of several non-DNA forensic identification techniques such as hair identification, serology, and soil analysis. The issues pertained to: (1) inadequate or no research regarding base rates, error rates, measurement error rates, and minimizing the risk of bias in forensic examinations; (2) inadequate or no standards in determining a match, in forensic terminology, in report writing, and in forensic science education; (3) the lack of mandatory certification for forensic examiners; and (4) inadequate funding. The following passage captures the essence of the committee’s overall findings:

Too often [forensic science facilities] have inadequate educational programs, and they typically lack mandatory and enforceable standards, founded on rigorous research and testing, certification requirements, and accreditation programs. Additionally, forensic science and forensic pathology research, education, and

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<sup>21</sup> For a more in-depth discussion of forensic science and wrongful convictions, see Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 VA. L. REV. 1 (2009); Craig M. Cooley & Gabriel S. Oberfield, *Increasing Forensic Evidence’s Reliability and Minimizing Wrongful Convictions: Applying Daubert Isn’t the Only Problem*, 43 TULSA L. REV. 285 (2007).

training lack strong ties to our research universities and national science assets.

*NAS Report*, at S-10.

51. In the end, the committee stressed that “*substantial improvement* is necessary in the forensic science disciplines to enhance law enforcement’s ability to identify those who have or have not committed a crime and to prevent the criminal justice system from erroneously convicting or exonerating the persons who come before it.” *Id.* at 1-2 (emphasis added).

### 1. No Research

52. The *NAS Report* repeatedly discussed the fact that there is no forensic science research regarding: (1) base rates for certain characteristics and features (e.g., hair characteristics, soil characteristics, bite mark characteristics); (2) error rates for forensic examiners (i.e., proficiency testing); (3) error rates for different forensic technologies (i.e., measurement error); and (4) ways in which conscious or unconscious bias can be minimized in the forensic science community. Simply put,

[t]he fact is that many forensic tests . . . have never been exposed to stringent scientific scrutiny. Most of these techniques were developed in crime laboratories to aid in the investigation of evidence from a particular crime scene, and researching their limitations and foundations was never a top priority.

*NAS Report*, at 1-6. The report added:

some forensic science disciplines are supported by little rigorous systematic research to validate the discipline’s basic premises and techniques. There is no evident reason why such research cannot be conducted.

*Id.* at S-16, 6-4 (“the forensic science disciplines suffer from an inadequate research base”). The lack of research dates back to the late 1980s:

Before the first offering of the use of DNA in forensic science in 1986, no concerted effort had been made to determine the reliability of these tests, and some in the forensic science and law enforcement communities believed that scientists’ ability to withstand cross-examination in court when giving testimony

related to these tests was sufficient to demonstrate the tests' reliability. However, although the precise error rates of these forensic tests are still unknown, comparison of their results with DNA testing in the same cases has revealed that some of these analyses, as currently performed, produce erroneous results.

*Id.* at 1-6.

53. The lack of research raises significant concerns because “[m]any of the processes used in... forensic science... are largely empirical applications of science—that is, they are not based on a body of knowledge that recognizes the underlying limitations of the scientific principles and methodologies used for problem solving and discovery.” *Id.* at 1-3. The *NAS Report* reinforced this point by noting that “many [forensic identification] techniques have been developed heuristically. That is, they are based on observation, experience, and reasoning without an underlying scientific theory, experiments designed to test the uncertainties and reliability of the method, or sufficient data that are collected and analyzed scientifically.” *Id.* at 5-1.

**a. No Base Rate Data**

54. Forensic science is concerned with individuality, but true individuality is not a legitimate scientific expectation, even for DNA testing. *See Commonwealth v. Crews*, 640 A.2d 395, 401 (Pa. 1994) (“For proving identity . . . as opposed to disproving identity, DNA can never provide absolute, conclusive proof, even though extremely low probabilities of a coincidental match provide a basis for very strong inferences of identity.”). At best, then, all forensic examiners can present to the fact finder is the likelihood of a coincidental match – i.e., what is the likelihood that a randomly-selected individual or object shares the same characteristic(s) as the crime scene print or mark. Determining the likelihood of a coincidental match, however, requires *base rate* research regarding the characteristic(s) or feature(s) under investigation – i.e.,

friction ridge characteristic, hair characteristic, bite mark characteristic.<sup>22</sup> As the *NAS Report* repeatedly noted, however, base rate data is non-existent for many of the forensic sciences, including hair and soil characteristics:

With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to consistently, and with a high degree of certainty, demonstrate a connection between evidence and a specific individual or source. In terms of scientific basis, the analytically based disciplines generally hold a notable edge over disciplines based on expert interpretation (e.g., hair identification and soil comparison).

*Id.* at S-5. The *NAS Report* specifically focused on the lack of base rate research with respect to hair evidence noting that “[n]o scientifically accepted statistics exist about the frequency with which particular characteristics of hair are distributed in the population.” *Id.* at 5-25.

55. With no base rate, many forensic examiners – like Tackett – routinely make (unjustifiable) probabilistic claims based on their experience. The *NAS Report* criticized such testimony and urged the forensic science community to finally undertake base rate research:

In most forensic science disciplines, no studies have been conducted of large populations to establish the uniqueness of marks or features. Yet, despite the lack of a statistical foundation, examiners make probabilistic claims based on their experience. A statistical framework that allows quantification of these claims is greatly needed.

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<sup>22</sup> The “social science literature defines a base rate as a proportion – the relative frequency with which an event occurs or an attribute is present in some reference population.” Jonathan J. Koehler, *When do Courts Think Base Rate Statistics are Relevant?*, 42 *JURIMETRICS J.* 373, 374 (2002). For a straightforward conversation of base rates in the polygraph context, see *State v. Porter*, 698 A.2d 739, 767 n.53 (Conn. 1997). For example, base rate data may provide data regarding how many Californians are over sixty-five or how many National Football League players were arrested in a given year. In the forensic science context, base rate data can provide information on how often a particular friction ridge fingerprint pattern appears in the human population. Likewise, it can provide data as to how often a hair characteristic or a combination of different hair characteristics appears in the Caucasian race, the African-American race, or the Latino race.

*Id.* at 6-5.<sup>23</sup> The NAS criticized such testimony due to the inherent limitations of human intuition:

[H]uman intuition is not a good substitute for careful reasoning when probabilities are concerned. As an example, consider a problem commonly posed in beginning statistics classes: How many people must be in a room before there is a 50 percent probability that at least two will share a common birthday? Intuition might suggest a large number, perhaps over 100, but the actual answer is 23. This is not difficult to prove through careful logic, but intuition is likely to be misleading.

*Id.* at 4-10. An off-shoot of the base rate research is research focused on intraindividual variability and interindividual variability. This type of research is also non-existent in forensic science:

For the identification sciences (e.g., friction ridge analysis, toolmark analysis, handwriting analysis), such studies would accumulate data about the intraindividual variability (e.g., how much one finger's impressions vary from impression to impression, or how much one toolmark or signature varies from

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<sup>23</sup> Tackett, as mentioned, claimed that it was "not very likely" that the hairs recovered from Edmiston's truck came from anyone other than Bobbi Jo. *Trial NT*, 7/6/1989, at 197; *Penalty NT*, 10/3/1989, at 88-89. This is a classic probabilistic estimate based on nothing more than Tackett's casual experience and observation. *See id.* (Tackett admitting that his "not very likely" opinion is premised on his experience). As the *NAS Report* explained, science endeavors to explain why circumstances, observed and unobserved, occur as they do. *See NAS Report*, at 4-1, 4-2. To answer these questions, scientists put forth statements, or systems of statements, which they methodically test. Testing produces empirical data, which in turn forms the foundation of scientific inferences. More importantly, scientific testing is a *structured* and *disciplined* form of observation. Accordingly, while casual or mere observation is an aspect of the scientific method, it is insufficient, standing alone, to draw valid inferences. The methodology behind the observation is what distinguishes valid and invalid inferences. Thus, a finding of fact is only as sound as the method used to discover it. *Id.* ("Typically, experiments or observations must be conducted over a broad range of conditions before the roles of specific factors, patterns, or variables can be understood."). Although the value of experience cannot be denied, as a matter of principle, scientists need to support their opinions by reference to logical reasoning and an established corpus of scientific knowledge. More importantly, while experience, training, and common sense are critical in any scientific endeavor, they cannot provide the valid and informative answers that surface when a belief or assertion is empirically tested. Thus, to use experience as a proxy for empirically supported inferences, and to claim it is just as powerful and accurate as such inferences, is not only intellectually dishonest, it increases the likelihood the examiner's conclusion(s) or identification is incorrect.

instance to instance) and the interindividual variability (e.g., how much the impressions of many fingerprints vary across a population and in what ways). With that information, one could begin to attach confidence limits to individualization determinations and also begin to develop an understanding of how much similarity is needed in order to attain a given level of confidence that a match exists.

*Id.* at 6-1 and 6-2.

56. The complete lack of base rate research renders Tackett's hair and soil testimony false, misleading, and inherently unreliable. Tackett testified that he based his conclusions on "the performance of *sound scientific* and analytical techniques using proper controls *to eliminate any possible error on the part of the analysis.*" *Penalty NT*, 10/3/1989, at 53 (emphasis added). The *NAS Report*, however, establishes that this was nothing more than materially false, misleading, and self-serving puffery: without knowing the base rate of hair and soil characteristics, Tackett could not have eliminated all possible sources of error. Instead, Tackett's failure to account for these base rates significantly increased the likelihood that he erred, especially regarding his conclusion that it was "not very likely" that the hairs from Edmiston's truck came from someone other than Bobbi Jo.

**b. No Research Aimed at Minimizing Potential Biases**

57. According to the *NAS Report*, "scientific investigations . . . must be as free from bias as possible" and "practices [must be] put in place to detect biases (such as those from measurements, human interpretation) and to minimize their effects on conclusions." *NAS Report*, at 4-2. Consequently, a "body of research is required to establish the limits and measures of performance and to address the impact of sources of variability and *potential bias.*" *Id.* at 4-9

(emphasis added).<sup>24</sup> This research is especially critical for subjective forensic assessments (e.g., hair identification) because the likelihood of falling prey to unconscious contextual biases increases when (1) an examiner confronts an ambiguous stimulus capable of producing varying interpretations and (2) the examiner is affiliated with a law enforcement or prosecutorial agency.<sup>25</sup>

58. Forensic identifications, such as hair identifications, are very subjective.<sup>26</sup> More importantly, forensic examiners encounter many situations where they are exposed to information that can easily cultivate conscious or unconscious expectations, with the most common expectation being that the suspect or defendant is guilty. It is unsurprising that this expectation is planted into a forensic examiner's psyche because all publicly-funded crime labs are annexed to the very law enforcement or prosecutorial agencies to which they provide assistance to, and the primary objective of these agencies is to identify, prosecute, and convict the guilty. Thus, working in an environment where guilt is more often than not assumed, it is easy to see how and why forensic examiners can subconsciously develop pre-examination expectations

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<sup>24</sup> Indeed, the National Resource Council emphasized in its 1996 DNA Testing Report "that '[l]aboratory procedures should be designed with safeguards to detect bias and to identify cases of true ambiguity. Potential ambiguities should be documented.'" *NAS Report*, at 4-9 (quoting NATIONAL RESOURCE COUNCIL, *THE EVALUATION OF FORENSIC DNA EVIDENCE* (1996)).

<sup>25</sup> The context bias (or observer effect) phenomenon is governed by the basic tenet of cognitive psychology, which states that an individual's desires and expectations influence how they perceive an object or situation. See ULRIC NEISSER, *COGNITION AND REALITY: PRINCIPLES AND IMPLICATIONS OF COGNITIVE PSYCHOLOGY* 43-45 (1976). To fall prey to such effects, examiners must 1) confront an ambiguous stimulus capable of producing varying interpretations, and 2) be made aware, directly or indirectly, of an expected or desired outcome. *Id.*

<sup>26</sup> Tackett admitted that hair identification is a highly subjective task. *Trial NT*, 7/6/1989, at 197.

that can influence their results. *See NAS Report*, at 6-2 (“Forensic scientists who sit administratively in law enforcement agencies or prosecutors’ offices, or who are hired by those units, are subject to a general risk of bias.”).

59. Unfortunately, as the *NAS Report* lamented, while “[s]uch research is sorely needed, . . . it seems to be lacking in most of the forensic disciplines that rely on subjective assessments of matching characteristics.” *Id.* at S-6. This is so because “forensic science disciplines are just beginning to become aware of contextual bias and the dangers it poses.” *Id.* at 6-2. As the *NAS Report* stressed, the “traps created by such biases can be very subtle, typically one is not aware that his or her judgment is being affected.” *Id.* As a result, the NAS urged the forensic science community to conduct research aimed at identifying and minimizing contextual biases:

[Subjective forensic] disciplines need to develop rigorous protocols to guide these subjective interpretations and pursue equally rigorous research and evaluation programs. The development of such research programs can benefit significantly from other areas, notably from the large body of research on the evaluation of observer performance in diagnostic medicine and from the findings of cognitive psychology on the potential for bias and error in human observers.

*Id.* at S-6.

60. The lack of research aimed at identifying and minimizing unconscious or conscious contextual biases in forensic science renders Tackett’s testimony false, misleading, and inherently unreliable, particularly his conclusions regarding the hair and soil evidence.

61. Tackett, as mentioned, claimed that his conclusions were “based on the performance of sound scientific and analytical techniques using proper controls *to eliminate any possible error on the part of the analysis.*” *Penalty NT*, 10/3/1989, at 53 (emphasis added). This statement is flat out false because neither Tackett nor the forensic science community

acknowledged the existence of contextual biases (i.e., the observer effect phenomenon) in 1989 and as a result never conducted research aimed at minimizing their impact on forensic examinations. If neither Tackett nor the forensic science community acknowledged the existence of these types of biases, neither they nor he could not have “used proper controls” to minimize, let alone *eliminate* “any possible” contextual biases that increase the likelihood of errors in forensic examinations.

62. Tackett’s methods for examining the soil and hair evidence also undermines the reliability of his conclusions. Tackett conducted single-sample testing: (1) he only compared Bobbi Jo’s hairs with the unknown truck hairs; and (2) he only compared soil from Edmiston’s truck to the soil samples collected from the crime scene. Single-sample forensic testing is equivalent to an eyewitness show-up. A show-up is an identification procedure where an eyewitness is presented with a single suspect for identification. See TECHNICAL WORKING GROUP FOR EYEWITNESS EVIDENCE, UNITED STATES DEP’T OF JUSTICE, EYEWITNESS EVIDENCE: A GUIDE FOR LAW ENFORCEMENT (1999). Eyewitness research has continually recognized an assortment of problems associated with show-ups. See Gary L. Wells et al., *Eyewitness Identification Procedures: Recommendations for Lineups and Photospreads*, 22 LAW & HUM. BEHAV. 603 (1998). The United States Supreme Court has even commented that a show-up raises reliability concerns because it is a highly “suggestive procedure.” *Manson v. Brathwaite*, 432 U.S. 98, 107 (1976).

63. Considering that forensic examiners and eyewitnesses perform comparable identification tasks, the same weaknesses and risks of error are presented during single-sample forensic evaluations. The biggest and most obvious defect is that the identifier immediately expects (consciously or unconsciously) to find inculpatory value in the object being viewed. This

expectation is rational because most individuals presume law enforcement officials do not simply collect objects or arrest individuals for no reason. The reasonable inference is if law enforcement felt so compelled to collect evidence or detain a suspect, they must have had more than a sneaking suspicion the evidence or suspect is in some way connected to the criminal offense. Research supports this notion; in one study researchers discovered that 90% of forensic examinations result in an inculpatory finding. See JOSEPH L. PETERSON ET AL., FORENSIC EVIDENCE AND THE POLICE 117 (National Institute of Justice Research Report, 1984).

64. Judge Nancy Gertner has commented on the inherent problems with forensic evidence show-ups in two cases. In her most recent opinion regarding the admissibility of firearms evidence Judge Gertner wrote:

The only weapon [the Government's expert] was shown was the suspect one; the only inquiry was whether the shell casings found earlier matched it. It was, in effect, an evidentiary "show-up," not what scientists would regard as a "blind" test. He was not asked to try to match the casings to the other test-fired Hi Point weapons in police custody, or any other gun for that matter, an examination more equivalent to an evidentiary "line-up." His work was reviewed by another officer, who did the same thing—checked his conclusions under the same conditions—another evidentiary "show-up."

*United State v. Green*, 405 F. Supp. 2d 104, 107-8 (D. Mass. 2005). Judge Gertner made a similar observation with respect to handwriting experts:

Indeed, [Professor] Denbeaux draws an interesting analogy to eyewitness identification. Courts have concluded, as a matter of law, that one-on-one show-ups are unduly suggestive. Likewise, Denbeaux suggests, are one-on-one handwriting comparisons. The outcome of this analysis, for example, may be different if Harrison were given a 'lineup' of similar handwriting exemplars to review, and asked to determine which of this group is most similar to the robbery note author.

*United States v. Hines*, 55 F. Supp. 2d at 69-70. As Judge Gertner astutely commented: "[A]n identification would be open to far less criticism if it were similar to that of photo identification.

In other words, using several unidentified writings and then determining if any of the writings were produced by the same individual.” *Id.* at 70 n.20.

**c. No Error Rate Research**

65. Forensic examiners are bound to make errors. *See NAS Report*, at 4-5 (“Scientific data and processes are subject to a variety of sources of error. For example, laboratory results and data from questionnaires are subject to measurement error, and interpretations of evidence by human observers are subject to potential biases.”). Consequently, a “key task for the scientific investigator designing and conducting a scientific study, as well as for the analyst applying a scientific method to conduct a particular analysis, is to identify as many sources of error as possible, to control or to eliminate as many as possible, and to estimate the magnitude of remaining errors so that the conclusions drawn from the study are valid.” *Id.* at 4-5.<sup>27</sup> The *NAS Report* also stated that:

[t]he existence of several types of potential error rates makes it absolutely critical for all involved in the analysis to be explicit and precise in the particular rate or rates referenced in a specific setting. The estimation of such error rates requires rigorously developed and conducted scientific studies. Additional factors may play a role in analyses involving human interpretation, such as the experience, training, and inherent ability of the interpreter, the protocol for conducting the interpretation, and biases from a variety of sources, as discussed in the next section. The assessment of the accuracy of the conclusions from forensic analyses and the estimation of relevant error rates are key components of the mission of forensic science.

*Id.* at 4-9.

66. In the courtroom setting, the need for error rate data is critical because, without such data, the fact finder cannot accurately identify the evidence’s reliability and thus its

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<sup>27</sup> “‘Error rates’ are defined as proportions of cases in which the analysis led to a false conclusion.” *NAS Report*, at 4-7 and 4-8.

probative value. As the *NAS Report* noted: “[T]he accuracy of forensic methods resulting in classification or individualization conclusions needs to be evaluated in well-designed and rigorously conducted studies. The level of accuracy of an analysis is likely to be a key determinant of its *ultimate probative value*.” *Id.* at 6-2 (emphasis added).

67. For instance, forensic scientists are fully capable of conducting proficiency tests in order to accurately identify how often their associative conclusions (or identifications) are correct (i.e., examiner error). Such data would be extremely relevant and probative to the fact finder. For instance, had Tackett testified that he misidentified hair samples in 3 out of every 10 cases where he examined hairs (i.e., a 30% error rate), the jury could have used his information to gauge how much weight and credibility it should accord his testimony.<sup>28</sup>

68. Similarly, forensic scientists are fully capable of identifying the error rates associated with particular biological and chemical tests or techniques such as DNA testing or blood typing (i.e., method error). *See id.* at 4-5 (“As with all other scientific investigations, laboratory analyses conducted by forensic scientists are subject to measurement error.”). For instance, had Tackett informed the jury that the technique he used to type the blood in Edmiston’s truck had an error rate of 25% (for every 100 blood typing tests, this particular technique misidentifies the blood type in 25 cases), the jury could have used his information to gauge how much weight and credibility it should accord his testimony.

69. Despite the importance of error rate data, “most areas of forensic science, there is

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<sup>28</sup> According to the *NAS Report*: “Proficiency testing is an integral part of an effective quality assurance program. It is one of many measures used by laboratories to monitor performance and to identify areas where improvement may be needed. A proficiency testing program is a reliable method of verifying that the laboratory’s technical procedures are valid and that the quality of work is being maintained.” *NAS Report*, at 7-11 (citation omitted).

no well-defined system exists for determining error rates, and proficiency testing shows that some examiners perform poorly.” *Id.* at 6-5, 6-1 (“Few forensic science methods have developed adequate measures of the accuracy of inferences made by forensic scientists.”). Moreover, when proficiency tests have been conducted, they have not been “sufficiently rigorous” and, thus, offer no real value to the critical question of whether forensic examiners and the techniques they rely on are accurate. *Id.* at 7-11 (“Although many forensic science disciplines have engaged in proficiency testing for the past several decades, several courts have noted that proficiency testing in some disciplines is not sufficiently rigorous.”).<sup>29</sup>

70. In terms of potential error rates for hair examiners, “an FBI study found that, of 80 hair comparisons that were ‘associated’ through microscopic examinations, 9 of them (12.5 percent) were found in fact to come from different sources when reexamined through mtDNA analysis.” *Id.* at 5-25 and 5-26. This, according to the *NAS Report*, “illustrates not only the *imprecision of microscopic hair analyses*, but also the problem with using imprecise reporting terminology such as ‘associated with,’ which is not clearly defined and *which can be misunderstood to imply individualization.*” *Id.* at 5-26 (emphasis added).

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<sup>29</sup> As one federal district court judge recently noted: “the FBI [fingerprint] examiners got very high proficiency grades, but the tests they took did not . . . [O]n the present record I conclude that the proficiency tests are less demanding than they should be.” *United States v. Llera Plaza*, 188 F. Supp. 2d 549, 565 (E.D. Pa. 2002). Similarly, another federal district court judge said this about a document examiner’s remarkable ability to score perfectly on all his proficiency tests: “There were aspects of Mr. Cawley’s testimony that undermined his credibility. Mr. Cawley testified that he achieved a 100% passage rate on the proficiency tests that he took and that all of his peers always passed their proficiency tests. Mr. Cawley said that his peers always agreed with each others’ results and always got it right. Peer review in such a ‘Lake Woebegone’ environment is not meaningful.” *United States v. Lewis*, 220 F. Supp. 2d 548, 554 (S.D. W. Va. 2002); *see also United States v. Crisp*, 324 F.3d 261, 274 (4th Cir. 2003) (Michael, J., dissenting) (“Proficiency testing is typically based on a study of prints that are far superior to those usually retrieved from a crime scene.”).

71. The lack of comprehensive error rate research and the limited (recent) proficiency results render Tackett’s testimony false, misleading, and inherently unreliable. Tackett, as mentioned, claimed that his conclusions were “based on the performance of sound scientific and analytical techniques using proper controls *to eliminate any possible error on the part of the analysis.*”<sup>30</sup> This statement is false. To begin with, as the *NAS Report* acknowledged, “the interpretation of forensic evidence is not infallible. Quite the contrary. This reality is not always fully appreciated or accepted by many forensic science practitioners, judges, jurors[.]” *Id.* at 3-3. More importantly, Tackett had no clue if he was in fact committing errors or whether the methods or techniques he used were in fact accurate because he never underwent rigorous, blind proficiency testing and the PSP crime lab (or the forensic science community) never conducted comprehensive validation studies regarding the techniques and tests Tackett used to analyze and examine the hair, blood, semen, and soil evidence.<sup>31</sup>

## 2. No Standards

72. Developing and enforcing standards is critical in science because science is premised on replication. Standards “provide the foundation against which performance, reliability, and validity can be assessed.” *NAS Report*, at 6-4. Adherence to standards also “reduces bias, improves consistency, and enhances the validity and reliability of results.” *Id.* Furthermore, standards “reduce variability resulting from the idiosyncratic tendencies of the individual examiner – for example, setting conditions under which one can declare a ‘match’ in

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<sup>30</sup> *Penalty NT*, 10/3/1989, at 53 (emphasis added).

<sup>31</sup> If Tackett underwent proficiency testing at the PSP laboratory, Edmiston is entitled to these records pursuant to PA. R. CRIM. P. 902(E)(2) because there are exceptional circumstances. *See infra*, Part VII. The same can be said with any validation studies conducted by the PSP laboratory.

forensic identifications.” *Id.* Simply put, standards “make it possible to replicate and empirically test procedures and help disentangle method errors from practitioner errors.” *Id.* Without them there is no basis to ascertain the degree of accuracy or reliability of a purported “match.”

73. Despite the importance of standards, the forensic science community has yet develop adequate and rigorous standards for either determining a match or writing a forensic report. Likewise, the forensic science community has failed to develop a precise vocabulary to ensure that the fact finder is not misled to believe that an item of evidence has been individualized and that it could only have come from the defendant or an instrument in the defendant’s possession. Finally, the forensic science community has failed to develop adequate education, certification, and accreditation standards. As the *NAS Report* noted:

Although there have been notable efforts to achieve standardization and develop best practices in some forensic science disciplines and the medical examiner system, most disciplines still lack best practices or any coherent structure for the enforcement of operating standards, certification, and accreditation. Standards and codes of ethics exist in some fields, and there are some functioning certification and accreditation programs, but none are mandatory. In short, oversight and enforcement of operating standards, certification, accreditation, and ethics are lacking in most local and state jurisdictions.

*Id.* at S-17. All of these defects were present with the respect to the forensic evidence in this case.

**a. No Standards for Determining a Match**

74. The forensic science community has yet to develop empirically sound and “rigorous protocols for performing subjective interpretations” such as hair and soil comparisons. *Id.* at 6-4. Indeed, a brief examination of Tackett’s hair testimony makes it painfully obvious that determining whether a particular hair “matches,” is “consistent with,” or “positively matches” an unknown hair is entirely left to the examiner’s whim or so-called experience. *Trial NT*,

7/6/1989, at 165-68. The *NAS Report* supports this conclusion: “There appear to be no uniform standards on the number of features on which hairs must agree before an examiner may declare a “match.” *NAS Report*, at 5-25. While Tackett discussed in great detail the different morphological components of human hair and the procedures he used to examine the hairs (i.e., comparison microscopic), Tackett never identified the number of features on which hairs must agree before an examiner could have said with any scientific accuracy that “My conclusion is that the hairs and hair fragments that were found on the vehicle . . . exhibited the same microscopic characteristics as the standard head hairs that were submitted from Bobbi Jo Matthews.” *Id.* at 167.<sup>32</sup>

75. The inability to replicate (or understand for that matter) Tackett’s “positive match” is further complicated by Tackett’s deplorable reporting or documentation skills and his reliance on vaguely defined terms that can be easily misconstrued by the fact finder to mean that individualization has been achieved – when in fact it has not.

**b. No Standardized Terminology and Report Writing Requirements**

76. Science, as previously mentioned, is premised upon replication. Replication of results leads to increased confidence regarding the validity of a particular technique, test, or instrument. *See NAS Report*, at 4-3 (“The validation of results over time increases confidence.”). Replication, however, can only occur if scientists precisely define terms, processes, context, results, and limitations of the results and their experiment. *Id.* at 4-2 (noting that the “key elements of good scientific practice” include “precision when defining terms, processes, context,

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<sup>32</sup> Tackett’s penalty phase testimony suffers from the same problem. *Penalty NT*, 10/3/1989, at 88-89.

results, and limitations”). Consequently, “laboratory reports generated as the result of a scientific analysis should be complete and thorough. They should contain, at minimum, ‘methods and materials,’ ‘procedures,’ ‘results,’ ‘conclusions,’ and, as appropriate, sources and magnitudes of uncertainty in the procedures and conclusions (e.g., levels of confidence).” *NAS Report*, at S-15.<sup>33</sup>

77. Despite the critical importance of precisely defining terms, processes, procedures, context, and limitations, the *NAS Report* noted that while “[s]ome forensic laboratory reports meet this standard of reporting . . . *most do not.*” *Id.* at 6-3 (emphasis added). The *NAS Report* added:

[R]eports contain only identifying and agency information, a brief description of the evidence being submitted, a brief description of the types of analysis requested, and a short statement of the results (e.g., “The green, brown plant material in item #1 was identified as marijuana”). The norm is to have no description of the methods or procedures used, and most reports do not discuss measurement uncertainties or confidence limits.

*Id.* As a result, the *NAS Report* concluded that “[t]here is a critical need in most fields of forensic science to raise the standards for reporting and testifying about the results of investigations.” *Id.* at 6-3. Indeed, injustices have occurred and death sentences overturned because forensic examiners failed to adequately define and describe terms, processes, procedures, context, and the limitations of their results and techniques.<sup>34</sup>

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<sup>33</sup> See also *id.* at 6-1 (“All results for every forensic science method should indicate the uncertainty in the measurements that are made, and studies must be conducted that enable the estimation of those values.”); *id.* at 6-3 (“Forensic science reports, and any courtroom testimony stemming from them, must include clear characterizations of the limitations of the analyses, including associated probabilities where possible.”).

<sup>34</sup> The United States Court of Appeals for the Ninth Circuit recent criticized a California Department of Justice serologist, who provided critical testimony at Herman Atkins’ rape trial, for a lab report that “lacked specificity and was arguably misleading,” and because he “was not

78. Not surprisingly, this description accurately describes Tackett's four conclusory

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as forthcoming in explaining information as he should have been." *Atkins v. County of Riverside*, 151 Fed. Appx. 501, 506 (9th Cir. 2005). The serologist's testimony and "misleading" lab report played a role in Atkins' wrongful rape conviction. See Fred Dickey, *Worst-Case Scenario; The Story of Herman Atkins' Years Imprisoned as an Innocent Man Might Scare the Hell Out of You. It Should*, L.A. TIMES, June 25, 2000, at 16.

Similarly, an "unclear and ambiguous" FBI DNA report allowed Joyce Gilchrist to falsely claim that the FBI's DNA tests in Alfred Brian Mitchell's capital murder case were inconclusive and did not rule out the possibility Mitchell deposited the semen and sperm recovered from the victim. See *Mitchell v. Ward*, 150 F. Supp. 2d 1194, 1123, 1126 (W.D. Okla. 1999). The FBI's DNA examinations, however, unequivocally excluded Mitchell as a possible donor of the sperm or semen. The FBI even communicated this information to Gilchrist a year before she testified. *Id.* at 1126 ("Over a year before Petitioner was tried and convicted of rape and anal sodomy, Agent Vick's DNA testing revealed that Petitioner's DNA was not present on the samples tested.") (emphasis in original). The FBI's DNA analyst admitted, however, "that there [was] no way to tell from his report that: 1) he obtained no DNA profile results from the rectal swabs; 2) he obtained no DNA profile results unlike the victim for the vaginal swabs; and 3) he obtained no DNA profile results unlike the victim or Taylor for the panties." *Id.* The DNA analyst also "testified that it is clear from the report provided to the defense that Mitchell's DNA was not revealed in the FBI testing." *Id.* at 1126 n.46. In short, the FBI's terse DNA report failed to adequately inform Mitchell's attorneys that all DNA tests excluded Mitchell as a possible donor of the semen and sperm. *Id.* at 1126 n.45 ("the defense was not aware that the FBI's DNA testing revealed the critical fact that Mitchell's DNA was not present on the samples tested."). Moreover, the report was so "unclear and ambiguous" that another DNA expert failed to realize, like defense counsel, that all the FBI's DNA tests excluded Mitchell. *Id.* at 1127. The Tenth Circuit Court of Appeals ultimately vacated Mitchell's death sentence because of the "unclear and ambiguous" report and Gilchrist's subsequent misconduct. See *Mitchell v. Gibson*, 262 F.3d 1036, 1063 (10<sup>th</sup> Cir. 2001) ("The laboratory performed DNA testing on these items and prepared a report, which was couched in convoluted language that did not clearly recite the test results.").

The Florida Supreme Court overturned Gerald D. Murray's first-degree murder conviction and death sentence in part because "there was a general sloppiness in documenting the [forensic] tests which even the analyst admitted was below the standards normally accepted." *Murray v. State*, 838 So. 2d 1073, 1081 (Fla. 2002). As the Florida Supreme Court explained: "Because of the clerical errors and the below-standard documentation and paperwork, other experts who were retained by the defense were unable to adequately review the test results since necessary portions of the documentation were missing." *Id.*

Finally, Guy Paul Morin's wrongful murder conviction in Canada can be attributed in part to forensic scientists who "failed to communicate accurately the limitations of their findings to ... the Court." Kent Roach, *Inquiring into the Causes of Wrongful Convictions*, 35 CRIM. L. BULL. 152, 162-63 (1999).

laboratory reports. *See PSP Reports 1/4/89, 3/8/89, 3/21/89 & 4/7/89, Exs. 3-6.* Tackett's four laboratory reports are terribly written. Tackett left out so much critical information that it effectively prevented another expert from reviewing, replicating, and validating his procedures and results. The inability to replicate Tackett's procedures and results renders all of his conclusions invalid and inherently unreliable.

79. The forensic community has also failed to precisely define critical terms that are often used "in reports and in court testimony to describe findings, conclusions, and the degrees of association between evidentiary material (e.g., hairs, fingerprints, fibers) and particular people or objects." *NAS Report*, at 6-3. Such terms, as the *NAS Report* noted, "include but are not limited to 'match,' 'consistent with,' 'identical,' 'similar in all respects tested,' and 'cannot be excluded as the source of.'" *Id.*<sup>35</sup> This "imprecision in vocabulary stems in part from the *paucity of research in forensic science* and the corresponding limitations in interpreting the results of forensic analyses." *Id.* (emphasis added). Not surprisingly, then, the *NAS Report* stressed that many forensic science disciplines, including pattern recognition experts such as hair and soil examiners, "critically need to standardize and clarify the terminology used in reporting and testifying about the results and in providing more information." *Id.* at 6-5. Precisely defining these terms is critical because, as the *NAS Report* explained, "such terms can have a profound effect on how the trier of fact in a criminal or civil matter perceives and evaluates evidence." *Id.*

80. As mentioned above, the recent FBI hair comparisons study must be stressed here once again. The study, as mentioned, found that out of 80 hair comparisons that were "associated" through microscopic examinations, 9 of them (or 12.5%) were found false positives

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<sup>35</sup> As the *NAS Report* noted, "the forensic science disciplines have not reached agreement or consensus on the precise meaning of any of these terms." *Id.* at 6-3.

– i.e., they came from different sources when reexamined with mitochondrial DNA tests. After reviewing the study, the NAS concluded that the study’s result “illustrate[] not only the imprecision of microscopic hair analyses, but also the problem with using *imprecise reporting terminology* such as ‘associated with,’ which is not clearly defined and which can be *misunderstood to imply individualization.*” *Id.* at 5-25 and 5-26 (emphasis added).

81. Tackett repeatedly used such terms or phrases as “exhibited the same microscopic characteristics,”<sup>36</sup> “positive hair comparison,”<sup>37</sup> and “positive hair match,”<sup>38</sup> when he described his hair examinations. Indeed, he used each phrase to imply that the unknown hairs from Edmiston’s truck could have – and most likely did – come from Bobbi Jo. While Tackett repeatedly used these terms and phrases, he failed to precisely explain what these terms actually meant. For instance, even though Tackett admitted that he cannot individualize a hair to a particular person, *Penalty NT*, 10/3/1989, at 87, his failure to precisely define these terms and his quasi-statistical claim that it was “very unlikely” that the unknown hairs came from anyone other than Bobbi Jo, significantly increased the likelihood that the jurors “misunderstood” his testimony “to imply individualization.” This, in turn, renders Tackett’s hair misleading and inherently unreliable.<sup>39</sup>

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<sup>36</sup> *Trial NT*, 7/6/1989, at 167.

<sup>37</sup> *Id.* at 196.

<sup>38</sup> *Penalty NT*, 10/3/1989, at 87, 91.

<sup>39</sup> The same problems persist regarding Tackett’s soil comparison testimony. *See Trial NT*, 7/6/1989, at 185 (“I found some similarities . . . [and] concluded that some of the soil in the truck might have come from the scene.”).

**c. No Certification Standards**

82. Professional competence is typically determined by some recognized set of standards. For instance, would-be lawyers must take (and do well on) the LSAT to gain admission into law school and then pass the bar before they can step foot into a courtroom to argue a motion. Similarly, future doctors must take (and do well on) the MCAT to gain admission into medical school and then pass their medical boards before they can practice medicine. Many professions, even those where one's life or liberty is not at stake, require members to be licensed or certified.<sup>40</sup> This is not the case in forensic science because "most jurisdictions do not require forensic practitioners to be certified, and most forensic science disciplines have no mandatory certification programs." *NAS Report*, at S-4; accord *State v. Quintana*, 103 P.3d 168, 170 (Utah Ct. App. 2004) (Thorne, J., concurring) ("[M]ost evidence points to a lack of consistent training of [fingerprint] examiners and an absence of any nationally recognized standard to ensure that examiners are equipped to perform the tasks expected of them.").

83. Consequently, the forensic examiner's competency has routinely been gauged by two non-scientist groups of individuals: judges and jurors. Judges decide whether an examiner is qualified to testify as an expert, while jurors decide whether the expert's testimony and conclusions are credible. Under this system, then, "courts are required to accept or reject the expert's own claims of expertise, or that of his employer, without the benefit of an impartial and rigorous assessment of his or her capabilities." Joseph L. Peterson & John E. Murdock, *Forensic*

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<sup>40</sup> As the *NAS Report* explained: "In other realms of science and technology, professionals, including nurses, physicians, professional engineers, and some laboratorians, typically must be certified before they can practice." *NAS Report*, at 7-12.

*Science Ethics: Developing an Integrated System of Support and Enforcement*, 34 J. FORENSIC SCI. 749, 750-51 (1989). This “case-by-case adjudicatory approach . . . is not well suited to address the systematic problems in many of the various forensic science disciplines. Judicial review, by itself, will not cure the infirmities of the forensic science community.” *NAS Report*, at 3-20.

84. The lack of mandatory certification programs is disconcerting because the “quality and relevance” of undergraduate and graduate forensic science programs is “uncertain.” *Id.* at 8-16 (“It appears that there are no formal and systematically applied standards or standardization requirements for forensic science education programs, making the quality and relevance of existing programs uncertain.”). Indeed, the *NAS Report* strongly suggested that current and past forensic science programs have not adequately trained students on the fundamental practices of science and the scientific method):

To correct some of the existing deficiencies, it is crucially important to improve undergraduate and graduate forensic science programs. The legitimization of practices in the forensic science disciplines must be based on established scientific knowledge, principles, and practices, which are best learned through formal education.

*Id.* at 8-17.

85. While Tackett testified that he had been qualified as an expert in more than one hundred cases, he never testified (nor could he) that he took and passed a national or state certification test establishing that he possessed, at the very least, a base-level understanding of chemistry, biology, hair, geology (i.e., soil comparison), and the scientific method. This fact, coupled with the fact that Tackett never underwent rigorous, blind proficiency testing, renders Tackett’s testimony inherently unreliable.

#### IV. JURISDICTION

86. Because this is a second or successive petition, its timeliness is governed by 42

Pa. C.S. § 9545(b). This section, *Time for Filing a Petition*, states:

(1) Any petition under this subchapter, including a second or subsequent petition shall be filed within one year of the date the judgment becomes final, unless the petitioner proves that

(i) *the failure to raise the claim previously was the result of interference by government officials with the presentation of the claim in violation of the constitutional laws of the Commonwealth or the Constitutional laws of the United States; or*

(ii) *the facts upon which the claim is predicated or known to the petitioner could not have been ascertained by the exercise of due diligence . . . .*

(2) Any petition invoking an exception provided in (1) shall be filed within *sixty (60) days of the date the claim could have been presented.*

87. The “exceptions are triggered by an event that occurs outside the control of the petitioner.” *Commonwealth v. Bennett*, 930 A.2d 1264, 1267 (Pa. 2007). It is the petitioner’s burden to allege and prove that one of the timeliness exceptions applies. *See Commonwealth v. Beasley*, 741 A.2d 1258, 1261 (Pa. 1999).

88. Edmiston’s petition is timely because his petition alleges and he proves that the release of the *NAS Report* provides newly discovered evidence that triggers subsections (b)(1)(i) and (ii).

##### A. Government Interference

89. To trigger subsection (b)(1)(i)’s timeliness exception, petitioner may plead and prove that the Commonwealth violated its *Brady* responsibilities. *See Commonwealth v. Beasley*,

741 A.2d 1258, 1261 (Pa. 1999).<sup>41</sup> To prevail on a *Brady* claim, a petitioner must demonstrate that “the evidence was favorable to [him], either because it is exculpatory or because it impeaches; the evidence was suppressed by the prosecution, either willfully or inadvertently; and prejudiced ensued.” *Commonwealth v. Burke*, 781 A.2d 1136, 1141 (Pa. 2001). No *Brady* violation occurs where the petitioner knew or could have uncovered the evidence at issue with reasonable diligence. *See Commonwealth v. Johnson*, 863 A.2d 423, 426 (Pa. 2004); *Commonwealth v. Morris*, 822 A.2d 684, 696 (Pa. 2003). Edmiston satisfies each requirement.

**1. The Commonwealth Failed to Disclose Impeachment and Exculpatory Evidence, Failed to Correct Materially False Testimony it Had Elicited, and Affirmatively Argued Based Upon this Materially False Testimony.**

90. The *NAS Report* establishes that prior to Edmiston’s trial, Tackett and the Commonwealth knew or should have known that:

- There were no empirically tested standards for hair and soil comparison and blood and semen identification that could produce consistently accurate results;
- There were no empirically tested procedures in forensic science to minimize the sources of bias that affect all scientific observers; that he, himself, did not use procedures aimed at minimizing the likelihood of contextual biases;
- There was base rate data regarding different hair and soil characteristics;
- There was no empirical data establishing that he could accurately associate an unknown hair to a known hair sample on a consistent basis;
- There was no empirical data establishing that he could accurately determine the likelihood of whether an unknown hair came from a known source on a consistent basis;
- There was no empirical data establishing that he could accurately determine the likelihood of whether an unknown sample of soil came from a known sample;
- There was no empirical data establishing that he could properly employ

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<sup>41</sup> *See Brady v. Maryland*, 373 U.S. 83 (1963).

presumptive and confirmatory blood tests in order to accurately identify the presence of human blood on a consistent basis;

- There was no empirical data establishing that he could properly employ blood typing tests in order to accurately identify the blood type of a particular blood sample on a consistent basis;
- There was no empirical data establishing that he could properly employ presumptive and confirmatory semen tests in order to accurately identify the presence of semen on a consistent basis;
- There was no empirical data regarding the known error rates of these presumptive and confirmatory blood and semen tests;
- There were no empirically tested and accepted standards for declaring a match between an unknown hair sample and a known hair sample.

91. Tackett and the Commonwealth failed to disclose this exculpatory and impeachment information to Edmiston's trial attorneys in violation of *Brady v. Maryland*, 373 U.S. 83 (1963). The prosecution knowingly presented false and materially misleading evidence, in violation of *Napue v. Illinois*, 360 U.S. 264 (1959). It failed to correct false and misleading evidence, even if this evidence had not been intentionally elicited. *Giglio v. United States*, 405 U.S. 150 (1972). It then affirmatively argued this evidence, inducing the jury to rely upon material misimpressions of fact and of the credibility of Commonwealth witnesses. *Napue*, *Giglio*; see also *United States v. Agurs*, 427 U.S. 97 103 (1976).

92. Moreover, even if the Commonwealth did not actually know about this information at the time of trial, that would be beside the point. Tackett was a Commonwealth agent, acting on its behalf, when he examined the physical evidence and testified at trial and the sentencing hearing, and, as such, his knowledge of this information is (and was) imputed to the Commonwealth. See *Kyles v. Whitley*, 514 U.S. 419, 437 (1995) ("The individual prosecutor has a duty to learn of any favorable evidence known to the others acting on the government's behalf

in the case, including the police.”).<sup>42</sup> Moreover, the prosecution’s duty to disclose exculpatory and impeachment evidence is ongoing. *Pennsylvania v. Ritchie*, 480 U.S. 39, 60 (1987); *Imbler v. Pachtman*, 424 U.S. 409, 427 n.25 (1976) (“after a conviction the prosecutor also is bound by the ethics of his office to inform the appropriate authority of after-acquired or other information that casts doubt upon the correctness of the conviction”). Whenever the prosecution should have come to learn of the extensive material forensic falsehoods that formed the basis of this conviction and death sentence, it had an ongoing duty to disclose them.

## 2. Due Diligence

93. Edmiston must pled and prove that he could not have obtained the *NAS Report* until February 18, 2009, even through the exercise of due diligence. *Commonwealth v. Stokes*, 959 A.2d 306, 310 (Pa. 2008); *Commonwealth v. Breakiron*, 781 A.2d 94, 98 (Pa. 2001).

Edmiston satisfies this requirement.

94. The NAS had complete control and discretion as to how it framed its findings, conclusions, and recommendations and to when it released its reports. Edmiston’s new state and federal constitutional claims are premised entirely on the NAS’s findings, conclusions, and

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<sup>42</sup> See also *Gibson v. Superintendent*, 411 F.3d 427, 442 (3d Cir. 2005) (The prosecutor’s duty to disclose extends beyond the information that he or she possesses, to include information in the hands of police investigators working on the case.”); *Commonwealth v. Gibson*, 951 A.2d 1110, 1127 (Pa. 2008) (“The prosecution’s duty under *Brady* incorporates disclosure of all exculpatory evidence, regardless of whether the defense specifically requests such materials, and extends to evidence in the possession of police agencies of the same government bringing the prosecution.”); *Commonwealth v. Carson*, 913 A.2d 220, 244 (2006); *Commonwealth v. Lambert*, 884 A.2d 848, 854 (2005). As the Third Circuit explained in *Gibson*: A prosecutor is “the ‘architect’ of the criminal proceeding” and therefore “has a responsibility not just to disclose what he or she knows, but to learn of favorable evidence known to others acting on the government’s behalf, weigh the materiality of all favorable evidence and disclose such evidence when it is reasonably probable that it will affect the result of the proceedings.” *Gibson*, 411 F.3d at 443.

recommendations. As such, Edmiston could not have obtained this information any sooner than February 18, 2009 – the date the NAS released its final report. *See Commonwealth v. Fisher*, 870 A.2d 864, 870 (Pa. 2005) (“we agree with the PCRA court to the extent that this information” from the National Academy of Science’s report on Comparative Bullet Lead Analysis “only became available to Petitioner in November of 2003 when it was reported”).

### 3. Prejudice

95. To answer the prejudice inquiry, a PCRA court must determine “whether ‘the favorable evidence could reasonably be taken to put the whole case in such a different light as to undermine confidence in the verdict.’” *Strickler v. Greene*, 527 U.S. 263, 290 (1999) (citation omitted); *accord Commonwealth v. Burke*, 781 A.2d at 1141. Prejudice or “materiality” must be assessed “collectively, not item by item.” *Kyles v. Whitley*, 514 U.S. 419, 436 (1995). Relying on this standard, the failure to disclose the wide range of exculpatory and impeachment forensic evidence – which was the core of the case against Edmiston – unquestionably caused him prejudice.

96. Edmiston’s conviction is premised on two things: (1) Tackett’s forensic testimony; and (2) Edmiston’s alleged confession. With the alleged confession a subject of intense factual dispute, and riven with indicia of unreliability,<sup>43</sup> Tackett’s testimony was critical for the Commonwealth’s case. Without his testimony the Commonwealth could not link Bobbi Jo to Edmiston’s truck, nor could it take the dispute over the fabricated confession beyond the

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<sup>43</sup> The “confession” was not in writing; it was never adopted by Edmiston; the map that he allegedly drew was mishandled by the PSP, who shockingly claimed not to have any working copying machines and rather than take it to an outside photocopier decided to redraw it themselves; and it was this redrawn map – not anything drawn by Edmiston – that purportedly led to the discovery of Bobbi Jo’s body.

realm of Edmiston's word against that of the troopers. And if the forensic work of the PSP was shown to be shoddy and unprofessional, the credibility of their testimony concerning the alleged confession would similarly be undermined. The prosecutor's closing argument emphasized the importance of Tackett's contribution and what it meant for the Commonwealth's case. *Trial NT*, 7/14/1989, at 42-44. Consequently, had Tackett and the Commonwealth timely disclosed the aforementioned information prior to trial, Edmiston could have effectively undermined the two pillars that buttressed his conviction and death sentence.

97. Had the Commonwealth timely disclosed this information, trial counsel could have moved in limine or in a pretrial motion to quash, pursuant to the Due Process Clauses of the United States and Pennsylvania Constitutions and the Eighth Amendment, compelling the Commonwealth to establish the accuracy and reliability of Tackett's hair, blood, semen, and soil testimony.<sup>44</sup> Similarly, trial counsel could have challenged Judge Long's implicit decision to judicially notice the general acceptance of Tackett's hair, blood, semen, and soil testimony.<sup>45</sup>

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<sup>44</sup> Such a hearing would not technically be considered a *Frye* hearing because Pennsylvania courts had, for years, generally accepted hair, soil, semen, and blood evidence. Instead, one focus on the hearing would be to re-assess or re-evaluate these initial general acceptance determination in light of the information disclosed by Tackett and the Commonwealth. The hearing would have established that, in light of contemporary knowledge, the evidence lack acceptance in the relevant scientific community, and it would have established the scientific unreliability and inaccuracy of the testimony. Whether denominated a *Frye* hearing or something else, Edmiston's trial counsel could have vigorously argued that admitting Tackett's testimony, in light of these disclosures and admissions, would render Edmiston's trial fundamentally unfair.

<sup>45</sup> A party against whom a fact may be noticed must have the opportunity to be heard on the propriety of taking judicial notice. *See* PA. R. EVID. 201(e); *In re Schlesinger*, 172 A.2d 835 (Pa. 1961) (Disbarment Subcommittee and Court of Common Pleas took judicial notice that one of major purposes of Communist party was overthrow of United States government. It was error to not allow attorney, who was involved in disbarment hearings for his membership in Communist Party, opportunity to provide evidence negating findings of court and Subcommittee). Thus, judicial notice does not prohibit a party against whom a fact is noticed

Under either approach, Tackett's testimony would have been barred under state and federal law because of its material falsity and its inherently unreliability.<sup>46</sup> Without Tackett's allegedly

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from introducing evidence to disprove the fact.

<sup>46</sup> Tackett's testimony would have been barred under federal due process principles because it would render Edmiston's trial fundamentally unfair and his death sentence a product of material misapprehensions of fact. Further, as described earlier, *see supra* n.3, the United States Supreme Court has repeatedly emphasized that the death penalty – because of its unique severity and irrevocability – is qualitatively different from any other punishment and, therefore, requires heightened reliability under the Eighth Amendment. Evidence that so obviously lacks scientific reliability also lacks the reliability constitutionally required to be admitted as evidence to take a defendant's life and would be thereby be excluded.

Indeed, in light of the NAS Report, Tackett's testimony would not be admissible in federal court pursuant to *Daubert v. Merrell Dow Pharmaceutical*, 509 U.S. 579 (1993). In *Daubert*, the Supreme Court articulated the legal framework for distinguishing between reliable science and "science that is junky." *Kuhmo Tire Co. v. Carmichael*, 526 U.S. 137, 159 (1999) (Scalia, J., concurring). This framework requires a district court to consider five (non-exhaustive) factors. First, whether the "theory or technique... can be (and has been tested)." *Daubert v. Merrell Dow Pharmaceutical*, 509 U.S. at 593. Second, "whether the theory or technique has been subjected to peer review and publication." *Id.* Third, whether the technique has a "known or potential rate of error." *Id.* at 594. Fourth, whether there exists any "standards controlling the technique's operation." *Id.* Fifth, whether the technique is "generally accepted" by the scientific community. *Id.* These factors should assist district courts in determining "whether the reasoning or methodology underlying the testimony is... valid and of whether that reasoning or methodology properly can be applied to the facts in issue." *Id.* at 592-593.

Relying on these five factors, Tackett's hair evidence would not be admissible. First, the known error rate for hair identification is nearly 12 %. *See NAS Report*, at 1-10. Second, there are no reliable or valid standards for hair identification or soil analysis. As currently practiced, hair and soil analysis are entirely subjective. Third, there is no research identifying the base rates for different hair or soil characteristics. With no base rate research, forensic examiners cannot opine as to the likelihood of a coincidental match. This in turn creates a Rule 403 problem. Fed. R. Evid. 403 "permits the exclusion of relevant evidence if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury[.]" *Daubert v. Merrell Dow Pharmaceutical*, 509 U.S. at 595 (citation omitted). If a forensic examiner testifies that an unknown hair "matches" or is "consistent with" a known hair, this is by all means relevant evidence. However, if the forensic examiner cannot inform the fact finder as to the likelihood of a coincidental match (because the forensic science community has neglected to conduct such research), the probative value of this evidence is greatly outweighed by the danger of unfair prejudice because, as the NAS Report acknowledged, the terms "match" or

incriminating hair, blood, semen, and soil testimony, there is a reasonable probability that the outcome of Edmiston's trial and sentencing hearing would have been different.

98. Second, as alluded to above, the undisclosed evidence affected the jury's calculus of Tackett's credibility, and that of the entire police investigation.<sup>47</sup> As the United States Supreme Court noted a half-century ago: "The jury's estimate of the truthfulness and reliability of a given witness may well be determinative of guilt or innocence[.]" *Napue v. Illinois*, 360 U.S. 264, 269 (1959); *Giglio v. United States*, 405 U.S. 150, 154 (1972) ("When the reliability of a given witness may well be determinative of guilt or innocence, nondisclosure of evidence affecting credibility falls within [*Brady's*] general rule."). To accurately gauge a witness's credibility, however, the jury must be provided with the most accurate information regarding a particular witness's competency and capabilities. The undisclosed evidence would have significantly undermined Tackett's credibility, substantially weakened the Commonwealth's case against Edmiston, and created a reasonable probability of a different outcome.

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"consistent with" are routinely "misunderstood to imply individualization," *NAS Report*, at 5-25. Individualization, as the NAS Report recognized, is not possible. *Id.* at 5-37 ("The committee received no evidence of an existing scientific basis for identifying an individual to the exclusion of all others.").

<sup>47</sup> *Accord United States v. Scheffer*, 523 U.S. 303, 313 (1998) (citations and internal quotations omitted) ("the fundamental premise of our criminal trial system is that the jury is the lie detector. Determining the weight and credibility of witness testimony, therefore, has long been held to be the part of every case [that] belongs to the jury[.]"); *Barefoot v. Estelle*, 463 U.S. 880, 902 (1983) ("[I]t is a fundamental premise of our entire system of criminal jurisprudence that the purpose of the jury is to sort out the true testimony from the false, the important matters from the unimportant matters[.]"); *United States v. Bailey*, 444 U.S. 394, 414-15 (1980) ("The Anglo-Saxon tradition of criminal justice, embodied in the United States Constitution and in federal statutes, makes jurors the judges of the credibility of testimony offered by witnesses. It is for them, generally, and not for appellate courts, to say that a particular witness spoke the truth or fabricated a cock-and-bull story.").

99. Third, the undisclosed evidence affected the jury’s calculus regarding Edmiston’s confession. Had trial counsel been timely provided the undisclosed information, they could have used this information to attack the credibility of Edmiston’s alleged confession.<sup>48</sup> Indeed, had the jury known that much of Tackett’s testimony was false, misleading, and inherently unreliable,<sup>49</sup> it would have seriously questioned whether Edmiston’s confession was accurate and trustworthy because there would have been no reliable scientific evidence corroborating Edmiston’s non-recorded confession.

100. Individually and collectively, each of these situations establishes that had the Commonwealth and Tackett timely disclosed the aforementioned impeachment and exculpatory evidence “there is a reasonable probability ... the result of [Edmiston’s] proceeding[s] would have been different.” *Commonwealth v. Burke*, 781 A.2d at 1141 (quotations and citations omitted).

## **B. After-Discovered Evidence**

101. Subsection (b)(1)(ii) provides that “the facts upon which the claim is predicated

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<sup>48</sup> Edmiston had a due process right to present evidence showing that his alleged confession was fabricated and false, and the jury had every right to consider this evidence, even though Judge Long deemed his alleged confession or (admissions) voluntary and knowing. *See Lego v. Twomey*, 404 U.S. 477, 485-86 (1972) (noting that nothing in the Supreme Court’s prior confession cases “questioned the province or capacity of juries to assess the truthfulness of confessions” and that a confession may be shown to be “insufficiently corroborated or otherwise ... unworthy of belief.”); *Jackson v. Denno*, 378 U.S. 368, 386 n.13 (1964) (noting that “questions of credibility, whether of a witness or a confession, are for the jury.”).

<sup>49</sup> The United States Supreme Court “has made clear that the truth or falsity of a statement is not the determining factor in the decision whether or not to exclude it.” *Michigan v. Tucker*, 417 U.S. 433, 448 n.23 (1974). Accordingly, “[c]onfessions, even those that have been found to be voluntary, are not conclusive of guilt.” *Crane v. Kentucky*, 476 U.S. 683, 689 (1986) (emphasis added).

were unknown to petitioner and could not have been ascertained by due diligence.” 42 Pa. C.S. § 9545(b)(1)(ii). Commonly referred to as the “after-discovered” or “newly-discovered” evidence exception, this exception “does not require a merits analysis of the claim in order for it to qualify as timely and warranting merits review.” *Commonwealth v. Lambert*, 884 A.2d 848, 852 (Pa. 2005). Instead, subsection (b)(1)(ii) has two components that must be alleged and proved: (1) “the *facts* upon which the claim was predicated were *unknown*”; and (2) “could not have been ascertained by the exercise of *due diligence*.” 42 Pa. C.S. § 9545(b)(1)(ii) (emphasis added); *Commonwealth v. Bennett*, 930 A.2d 1264, 1272 (Pa. 2007). If the “petitioner alleges and proves these two components, then the PCRA court has jurisdiction over the claim under this subsection.” *Commonwealth v. Bennett*, 930 A.2d at 1272.

102. Edmiston satisfies these two components because his new state and federal constitutional claims are premised on facts that were unknown *or unavailable* to him and could not have been ascertained by the exercise of due diligence. Edmiston’s new claims are based entirely on the NAS’s conclusions and findings regarding the current state of forensic science. These conclusions and findings were not made public until February 18, 2009, and neither Edmiston nor his attorneys could have learned of these conclusions and findings any sooner. *See Commonwealth v. Fisher*, 870 A.2d at 870 (finding that petitioner could not have accessed the information or conclusions contained in an NAS report on Comparative Bullet Lead Analysis until the NAS published its report in November 2003).

## **V. GROUNDS FOR RELIEF**

103. The purpose of the PCRA Act is to prevent a “fundamentally unfair conviction,” *Commonwealth v. Weinder*, 577 A.2d 1364, 1374 (Pa. Super. 1990), and to “provide an action where persons convicted of crimes they did not commit . . . may obtain collateral relief.”

*Commonwealth v. Carbone*, 707 A.2d 1145, 1148 (Pa. Super. 1998) (citing 42 Pa. C.S. § 9542).

The “goal . . . is to afford relief to a convict whom the system may have failed.” *Commonwealth v. Robinson*, 496 A.2d 402, 402 (Pa. Super. 1985) (under the PCHA).

104. These principles apply with equal force to Stephen Edmiston’s case. Not only is Edmiston innocent of the crime for which he was convicted, his “fundamentally unfair conviction” is a direct result of “systemic failures” by Cambria County’s criminal justice system and the forensic science system.

**A. PCRA’s Statutory Requirements**

105. Edmiston must satisfy four general requirements to be eligible for relief under the PCRA Act. *See* 42 Pa. C.S. § 9543(a)(1)-(a)(4).

106. First, Edmiston must show that he has been convicted of a crime under the laws of this Commonwealth and is serving a sentence of imprisonment, probation or parole for the crime, awaiting execution of a death sentence for the crime or serving a sentence that must expire before the individual has to commence serving the disputed sentence. *See* 42 Pa. C.S. §9543(a)(1).

107. Second, Edmiston must have a cognizable claim – i.e., his conviction or sentence must have resulted from one or more of seven categories of errors or violations specified in the PCRA Act. *See* 42 Pa. C.S. § 9543(a)(2).

108. Third, Edmiston must show that claims raised have not been previously litigated or waived. If a claim has been finally litigated it cannot be raised again; if it has not been previously litigated, it can be raised at the PCRA level only if he can show that the claim has not been waived. *See* 42 Pa. C.S. § 9543(a)(3). An issue is previously litigated if the highest court to which the petitioner could have appealed as a matter of right has addressed the issue on its merits. *See* 42 Pa. C.S. § 9544(a); *Commonwealth v. Perlman*, 572 A.2d 2, 4 (Pa. Super. 1990);

*Commonwealth v. McFadden*, 587 A.2d 740, 742 (Pa. Super. 1991).

109. Fourth, Edmiston must demonstrate that the failure to litigate could not have been a rational, tactical, or strategic choice by counsel. *See* 42 Pa C.S. § 9543(a)(4).

110. Besides the foregoing prerequisites, Edmiston must also satisfy additional requirements before a PCRA court can claim jurisdiction. *See* 42 Pa. C.S. § 9545(b).

111. First, PCRA petitions (excluding DNA petitions pursuant to 42 Pa. C.S. § 9543.1), including second or subsequent petitions, must be filed within one year of the date the judgment becomes final, unless the petition alleges and the petitioner proves that:

(1) the failure to previously raise the claim was the result of interference by government officials with the presentation of the claim in violation of the Constitution or laws of this Commonwealth or the Constitution or laws of the United States;

(2) the facts upon which the claim is predicated were unknown to the appellant and could not have been ascertained by the exercise of due diligence; or

(3) the right asserted is a constitutional right that was recognized by the Supreme Court of the United States or the Supreme Court of Pennsylvania after the time period provided in this section and has been held by that court to apply retroactively.

42 Pa. C.S. § 9545(b)(1). *See supra*, Part IV.

112. Second, any petition asserting one of the exceptions shall be filed within 60 days of the date the claim could have been raised. *See* 42 Pa. C.S. § 9545(b)(1). *See also supra*, Part IV.

113. Third, for purposes of the PCRA Act, a judgment becomes final at the conclusion of direct review, including discretionary review in the Supreme Court of the United States and the Supreme Court of Pennsylvania, or at the expiration of time for seeking review.

114. Fourth, for purposes of the PCRA Act, “government officials” shall not include

defense counsel, whether appointed or retained.

115. In light of the foregoing, current counsel will demonstrate that the new state and federal constitutional claims arising from the *NAS Report* satisfy all of these requirements and that this Court therefore has jurisdiction to consider and rule on their merits.

**B. Edmiston Is Currently on Death Row**

116. Edmiston is currently on Pennsylvania's death row for the aforementioned crimes committed in the Commonwealth, satisfying the first prerequisite. *See* 42 Pa. C.S. §9543(a)(1).

**C. Edmiston Alleges Cognizable Claims of Error**

117. Edmiston alleges state and federal constitutional violations that: (1) undermine the truth-determining process; (2) establish ineffective assistance of counsel; and (3) demonstrate that his sentence is illegal, satisfying the second requirement. *See* 42 Pa. C.S. §§ 9543(a)(2)(i), 9543(a)(2)(ii) and 9543(a)(2)(vii).

**D. Edmiston's Claims Have Not Been Previously Litigated**

118. The state and federal constitutional claims raised herein Edmiston have not been previously litigated, satisfying the third requirement. *See* 42 Pa. C.S. § 9543(a)(3).

**VI. CLAIMS FOR RELIEF**

**GUILT-PHASE CLAIMS**

119. The *NAS Report* gives rise to the following new state and federal constitutional claims related to the guilt phase of Edmiston's trial.

**SUPP. CLAIM 1. EDMISTON WAS DENIED HIS RIGHT TO DUE PROCESS BECAUSE FALSE, MISLEADING, AND UNRELIABLE EVIDENCE UNDERMINED THE FUNDAMENTAL FAIRNESS OF THE ENTIRE TRIAL.**

120. The *NAS Report* establishes that the hair, blood, serology, and soil evidence presented during Edmiston's trial and sentencing hearing was false, misleading, unreliable and

“so extremely unfair that its admission violates fundamental concepts of justice.” *Dowling v. United States*, 493 U.S. 342, 352 (1990); U.S. CONST. AMEND. VI, XIV; PA. CONST., Art. I, §§ 1, 9. As depicted by the Commonwealth’s testimony, the crime in this case was brutal.<sup>50</sup> The perceived brutality of the case, however, only increases the level of prejudice in this case; for, as several courts have noted in the past, “it is in just these circumstances, when the crime itself is likely to inflame the passions of jurors, that courts must be vigilant in ensuring that the demands of due process are met.” *McKenzie v. Smith*, 326 F.3d 721, 727-28 (6th Cir. 2003). These principles have their roots in *Chambers v. Mississippi*, 410 U.S. 284, 302-03 (1973), which held that trial errors cannot “defeat the ends of justice” or otherwise deprive a defendant of his right to a fair trial.

121. To make out a due process claim in this context, the admission of the hair, blood, serology, and soil evidence (considered cumulatively with the evidence related to the nondisclosure of the black-and-white autopsy photographs and color slide transparencies) “undermine[d] the fundamental fairness of the entire trial.” *Keller v. Larkins*, 251 F.3d 408, 413 (3d Cir. 2001). A claim arises under this “fundamental fairness” standard whenever “the probative value of . . . evidence, though relevant, is greatly outweighed by the prejudice to the accused from its admission.” *Bisaccia v. Attorney Gen.*, 623 F.2d 307, 313 (3d Cir. 1980).<sup>51</sup>

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<sup>50</sup> However, as Petitioner’s already pending innocence petition sets forth in great detail, the crime depicted by the Commonwealth’s evidence simply did not occur. Bobbi Jo Matthews was not kidnapped, raped, scalped, eviscerated, burned, and murdered. She was backed over by a car at a low rate of speed, with the undercarriage or some other metal object on the underside of the car, slicing her skull with precision; the muffler, or some other hot object, causing burns; and the weight of the car when the tire ran across her tiny torso expelling her colon from her body through her anal and vaginal cavities, like toothpaste being expelled from the force of extreme pressure on the toothpaste tube or air being expelled from a billows.

<sup>51</sup> In *Brown v. O’Dea*, 227 F.3d 642 (6th Cir. 2000), the Sixth Circuit articulated the issue another way: “Whether the admission of prejudicial evidence constitutes a denial of

122. Edmiston easily satisfies this standard. As Justice Blackmun explained more than a quarter century ago:

[U]nreliable scientific evidence is widely acknowledged to be prejudicial. The reasons for this are manifest. “The major danger of scientific evidence is its potential to mislead the jury; an aura of scientific infallibility may shroud the evidence and thus lead the jury to accept it without critical scrutiny.” Where the public holds an exaggerated opinion of the accuracy of scientific testimony, *the prejudice is likely to be indelible*.

*Barefoot v. Estelle*, 463 U.S. 880, 926-27 (1985) (Blackmun, J., dissenting) (emphasis added).

Likewise, the Pennsylvania Supreme Court has recognized that “scientific proof may in some instances assume a posture of mystic infallibility in the eyes of a jury of laymen.”

*Commonwealth v. Topa*, 369 A.2d 1277, 1282 (Pa.1977) When that evidence is false, the prejudice is obvious.

123. Individually and collectively, the NAS Report demonstrates that, while the hair, blood, serology, and soil evidence may have been relevant, its probative value was “greatly outweighed by the prejudice to the accused from its admission.” *Bisaccia*, 623 F.2d at 313. Indeed, if the only evidence supporting a defendant’s conviction turns out to be false, unreliable, and invalid, it is axiomatic that his trial was fundamentally unfair, his conviction unjust, and his death sentence unconscionable.

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fundamental fairness turns upon whether the evidence is ‘material in the sense of a crucial, critical highly significant factor.’” *Id.* at 645 (quoting *Leverett v. Spears*, 877 F.2d 921, 925 (11th Cir. 1989)). If the Court is left with “grave doubt” whether the erroneous admission of evidence had “a substantial and injurious effect or influence in determining the jury’s verdict” then “the petitioner must win. *O’Neal v. McAninch*, 513 U.S. 432, 445 (1995). Edmiston easily crosses this threshold because the hair, blood, serology, and soil evidence without question was a “critical” and “highly significant” factor in Edmiston’s conviction and death sentence. Indeed, it was the only evidence “objective” evidence presented by the Commonwealth that linked Edmiston to Bobbi Jo’s death.

**SUPP. CLAIM 2. EDMISTON WAS DENIED HIS RIGHT TO DUE PROCESS BECAUSE THE COMMONWEALTH KNOWINGLY PRESENTED FALSE EVIDENCE.**

124. The *NAS Report* establishes that the Commonwealth knowingly presented false evidence in violation of Edmiston's state and federal constitutional rights. See U.S. CONST. AMENDS. VI, XIV; PA. CONST., Art. I, §§ 1, 9.

**A. The Legal Standard**

125. The Commonwealth violates a defendant's state and federal due process rights when it: (1) knowingly presents false testimony; or (2) fails to correct the record when it learns that one of its primary witnesses testified falsely. See *Giglio v. United States*, 405 U.S. at 155; *Napue v. Illinois*, 360 U.S. at 269; *Mooney v. Holohan*, 294 U.S. 103 (1935); *Robinson v. Arvonio*, 27 F.3d 877, 883 (3rd Cir. 1994); *United States v. Biberfeld*, 957 F.2d 98, 102 (3d Cir. 1992). Thus, in order to make out a constitutional violation Edmiston must show that: (1) Tackett knowingly provided materially false testimony; (2) the Commonwealth knew or should have known that Tackett's testimony was materially false; (3) the Commonwealth failed to correct these material falsehoods after they were elicited (whether intentionally or not); or (4) the Commonwealth affirmatively argued to the jury based upon these falsehoods – whether knowingly or not. To be entitled to relief, Edmiston would be required to show that there was any reasonable likelihood that the false testimony and/or argument could have affected the jury's verdict. *Napue v. Illinois*, 360 U.S. at 271; *Giglio v. United States*, 405 U.S. at 154; *United States v. Agurs*, 427 U.S. at 103; *Lambert v. Blackwell*, 387 F.3d 210, 242-43 (3d Cir. 2004).

126. Edmiston satisfies these requirements and is entitled to relief.

## **B. The Standard Applied**

### **1. Tackett Committed Perjury**

127. A “person is guilty of perjury... if in any official proceeding he makes a false statement under oath or equivalent affirmation, or swears or affirms the truth of a statement previously made, when the statement is material and he does not believe it to be true.” 18 Pa. C.S. § 4902(a). Falsification “is material, regardless of the admissibility of the statement under rules of evidence, if it could have affected the course or outcome of the proceeding.” 18 Pa. C.S. § 4902(b).

128. Tackett committed perjury. First, he testified at an official proceeding – i.e., Edmiston’s trial and sentencing hearing. Second, Tackett testified under oath at both hearings. Third, Tackett made several statements that he *knew* were untrue when he made them at both hearings. Fourth, and most importantly, Tackett’s false statement “could have affected the course or outcome of the proceeding.” 18 Pa. C.S. § 4902(b).

129. Tackett testified that he based his conclusions on “the performance of *sound scientific* and analytical techniques using proper controls *to eliminate any possible error on the part of the analysis.*” *Penalty NT*, 10/3/1989, at 53 (emphasis added). The *NAS Report* establishes that this testimony is false and that Tackett knew his testimony was false.

130. Tackett knew that his hair, blood, semen, and soil procedures were neither “sound” nor “scientific” because he knew that the forensic science community never: (1) adequately tested these procedures to ensure that they were reliable and valid; (2) collected base rate data regarding different characteristics or features, such as hair and soil characteristics; (3) conducted rigorous research to identify unseen and unconscious contextual biases; (4) developed and implemented procedures aimed at minimizing the impact of contextual biases; and (5)

conducted rigorous proficiency testing to ensure that its examiners were accurate and competent at their respective tasks. Similarly, for the very same reasons, Tackett knew that he did not use techniques and procedures that eliminated “all possible errors.”

## **2. The Commonwealth Knew or Should Have Known that Tackett’s Testimony was False**

131. Tackett served as an agent for the Commonwealth during pre-trial proceedings, Edmiston’s trial, and Edmiston’s sentencing hearing. Moreover, Tackett’s employer – the Pennsylvania State Police (PSP) – is a full-time Commonwealth agent; its primary purpose is to investigate offenses and assist local prosecutorial agencies in prosecuting offenses. Indeed, the PSP’s “core purpose” is to “seek justice,” [www.psp.state.pa.us](http://www.psp.state.pa.us), which is the same “core” objective prosecutors seek. *See Berger v. United States*, 295 U.S. at 88. Consequently, given the intimate relationship between the Commonwealth and the PSP, the Commonwealth should have known that Tackett’s testimony was false – if it did not already know.

## **3. Tackett’s Testimony Went Uncorrected**

132. The Commonwealth has never corrected Tackett’s false testimony.

## **4. Prejudice – The Reasonable Likelihood Standard**

133. The materiality analysis proceeds differently for *Brady* and *Napue* claims. Whereas a *Brady* violation is material when “there is a reasonable probability that . . . the result of the proceeding would have been different,” *United States v. Bagley*, 473 U.S. at 682, a *Napue* violation requires that the conviction be set aside whenever there is “any reasonable likelihood” that the false testimony could “have affected the judgment of the jury.” *Napue v. Illinois*, 360 U.S. at 271; accord *United States v. Bagley*, 473 U.S. at 679 n.9; *Giglio v. United States*, 405

U.S. at 154.<sup>52</sup>

134. Tackett, as mentioned, played an indispensable role in the Commonwealth's case. Consequently, there is a reasonable likelihood that Tackett's testimony affected the jury's verdict and death sentence.

**SUPP. CLAIM 3. THE COMMONWEALTH FAILED TO DISCLOSE MATERIAL EXCULPATORY AND IMPEACHMENT EVIDENCE IN VIOLATION OF EDMISTON'S RIGHTS UNDER *BRADY V. MARYLAND*.**

135. The *NAS Report* proves that Tackett (and thus the Commonwealth) failed to disclose material exculpatory and impeachment evidence regarding the unreliability of hair identification, serology, and soil analysis.<sup>53</sup> The evidence relating to the scientific unreliability of the "science" underlying the hair identification, serology, and soil analysis in this case is obviously material and exculpatory because it creates legitimate doubt as to the accuracy and reliability of any supposedly scientific identification of Edmiston as the perpetrator of the purported crimes for which he was convicted. Similarly, the scientific defects in the analyses performed in this case are obviously material and exculpatory. Similarly, the lack of scientific credibility of the "science" underlying the hair identification, serology, and soil analysis performed in this case is obviously material and exculpatory because it impeaches Tackett's credibility both because the tests he performed were not, in fact, meaningfully scientific and because Tackett's truthfulness and credibility would be undermined by exposure of the fact that he failed to follow scientific protocols and procedures, failed to perform any actual scientific

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<sup>52</sup> Even "in cases of egregious prosecutorial misconduct, such as the knowing use of perjured testimony, we have required a new trial only when the tainted evidence was material to the case." *Smith v. Phillips*, 455 U.S. 209, 220 n.10 (1982). Once *Brady* or *Napue* claims are deemed material, however, there is no need for harmless error analysis. See *Kyles v. Whitley*, 514 U.S. at 436.

<sup>53</sup> Edmiston incorporates herein the facts and argument presented *supra*, Part III.

testing, and yet provided what turns out to be false testimony, both as to the supposed objectivity, reliability, and scientific nature of the tests and to the allegedly “scientific” conclusions he drew from them.

136. The failure to disclose this information undermines confidence in Edmiston’s trial and requires relief. *See* U.S. CONST. AMENDS. VI, XIV; *Kyles v. Whitley*, 514 U.S. at 437; PA. CONST., Art. I, §§ 1, 9; *Commonwealth v. Gibson*, 951 A.2d 1110, 1127 (Pa. 2008); *Commonwealth v. Strong*, 761 A.2d 1167 (Pa. 2000).

**SUPP. CLAIM 4. EDMISTON WAS DENIED A MEANINGFUL OPPORTUNITY TO PRESENT A COMPLETE DEFENSE BY THE FAILURE TO DISCLOSE MATERIAL EXCULPATORY AND IMPEACHMENT EVIDENCE.**

137. Edmiston’s meaningful defense claim is an offshoot of his *Brady* claim. Tackett’s and the Commonwealth’s failure to disclose the fact that forensic science was premised on nothing more than subjective and unreliable identifications and associations premised on unsubstantiated and error prone methods and techniques deprived Edmiston’s trial counsel from presenting a “complete defense.”<sup>54</sup>

138. As mentioned, had this information been timely disclosed, trial counsel could have used it to bar Tackett’s testimony, to undermine Tackett’s credibility, and to undermine confidence and reliability in Edmiston’s confession. *See supra*, Part III. Simply put, the failure to timely disclose the aforementioned information, deprived Edmiston of the basic right to have the prosecutor’s case encounter and “survive the crucible of meaningful adversarial testing.” *United*

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<sup>54</sup> As the United States Supreme Court has repeatedly noted, “Whether rooted directly in the Due Process Clause of the Fourteenth Amendment or in the Compulsory Process or Confrontation clauses of the Sixth Amendment, the Constitution guarantees criminal defendants ‘a meaningful opportunity to present a complete defense.’” *Crane v. Kentucky*, 476 U.S. 683, 690 (1986) (quoting *California v. Trombetta*, 467 U.S. 479, 485 (1984)); *Holmes v. South Carolina*, 547 U.S. 319, 324 (2006).

*States v. Cronin*, 466 U.S. 648, 656 (1984).

**SUPP. CLAIM 5. THE COMMONWEALTH’S EVIDENCE AND ARGUMENT RENDERED EDMISTON’S TRIAL FUNDAMENTALLY UNFAIR AND VIOLATED HIS RIGHT TO A JURY VERDICT BASED SOLELY UPON THE TRUE FACTS OF THE OFFENSE PROVEN BEYOND A REASONABLE DOUBT.**

139. The *NAS Report* establishes that the Commonwealth knew or should have known that Tackett’s hair, serology, and soil testimony lacked any indicia of reliability. Despite this knowledge or awareness, the Commonwealth argued that Tackett’s testimony was reliable and thus highly incriminating.<sup>55</sup> The Commonwealth’s willingness to endorse and present evidence that it knew or should have known was false, misleading, and inherently unreliable “so infected [Edmiston’s] trial with unfairness as to make the resulting conviction a denial of due process.” *Darden v. Wainwright*, 477 U.S. 168, 181 (1986) (quoting *Donnelly v. DeChristoforo*, 416 U.S. 637, 643 (1974)); U.S. CONST. AMENDS. VI, XIV; PA. CONST., Art. I, §§ 1, 9, 13.

140. In addition, the Fourteenth Amendment affords criminal defendants the “right to a verdict based solely upon the evidence and the relevant law.” *Chandler v. Florida*, 449 U.S. 560, 574 (1981). The Sixth Amendment affords the right to have a jury properly “determine the facts, . . . apply the law to those facts[,] and draw the ultimate conclusion.” *United States v. Gaudin*, 515 U.S. 506, 514 (1995). The Sixth and Fourteenth Amendments also guarantee a verdict based upon proof of every element of an offense proven beyond a reasonable doubt. *Apprendi v. New Jersey*, 530 U.S. 466 (2000); *In Re Winship*, 439 U.S. 1001 (1970); *Sandstrom v. Montana*, 442 U.S. 510, 520-24 (1970); *Commonwealth v. Turner*, 317 A.2d 298, 300 n.3 (Pa. 1974); *Commonwealth v. Shaffer*, 288 A.2d 727 (Pa. 1972). This prosecutorial misconduct diverted the jury’s attention from the true facts and denied Edmiston the opportunity to be judged based upon

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<sup>55</sup> *Trial NT*, 7/14/1989, at 42-44.

appropriate evidence (and argument) of every element of the offenses with which he was charged, proven beyond a reasonable doubt.

**SUPP. CLAIM 6. EDMISTON’S RIGHT TO DUE PROCESS WAS VIOLATED BECAUSE TACKETT’S FALSE AND UNRELIABLE TESTIMONY LED TO THE CONVICTION OF AN INNOCENT MAN.**

141. Tackett’s false and unreliable testimony ultimately led to the conviction of an innocent person. This violated Edmiston’s state and federal due process rights and his Article I, Section 1 inalienable right to defend life and liberty. *See Herrera v. Collins*, 506 U.S. 390 (1993); U.S. CONST. AMENDS. VI, XII, XIV; PA. CONST., Art. I, §§ 1, 9, 13.<sup>56</sup>

**SUPP. CLAIM 7. EDMISTON’S CONVICTION MUST BE OVERTURNED BECAUSE OF THE CUMULATIVE PREJUDICE FROM ALL OF THE CONSTITUTIONAL ERRORS IN THIS CASE.**

142. Constitutional claims of error are to be considered cumulatively as well as individually, and that cumulative error or the cumulative effect of prejudice from a range of claims may collectively provide a basis for relief whether or not the effect of individual deficiencies warrants relief. *See Commonwealth v. Sattazahn*, 952 A.2d 640, 670-71 (Pa. 2008) (conducting review of cumulative prejudice from individual errors).<sup>57</sup> Individually and

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<sup>56</sup> As the Pennsylvania Supreme Court recently noted, “Colorable claims of actual innocence hold a favored place in the law.” *See Commonwealth v. Williams*, 594 Pa. 366, 388 (Pa. 2007); *accord Schulp v. Delo*, 513 U.S. 298, 325 (1995) (“concern about the injustice that results from the conviction of an innocent person has long been at the core of our criminal justice system.”). Although 42 Pa. C.S. § 9543 does not use the term “actual innocence” in enumerating cognizable claims, the Act specifically states that it is intended to “provide[ ] for an action by which persons convicted of crimes they did not commit . . . may obtain collateral relief.” 42 Pa. C.S. § 9542; *accord Commonwealth v. Abu-Jamal*, 833 A.2d 719, 728 (Pa. 2003). Thus, Edmiston’s actual innocence claim is cognizable under the Act.

<sup>57</sup> *Kyles v. Whitley*, 514 U.S. 419, 436-37 (1995) (cumulative prejudice from state’s failure to reveal multiple pieces of exculpatory evidence undermined fairness of trial and entitled defendant to relief); *Taylor v. Kentucky*, 436 U.S. 478, 488 (1978) (cumulative prejudicial effect of prosecutor’s misstatements and improper jury instructions undermined fairness of trial, necessitating relief); *Donnelly v. DeChristoforo*, 416 U.S. 637, 639 (1974); *Commonwealth v.*

cumulatively, each constitutional error was prejudicial and denied Edmiston his clearly established state and federal constitutional rights. *See* U.S. Const. Amends. VI, XII, XIV; PA. CONST., Art. I, §§ 1, 9, 13.

#### PENALTY-PHASE CLAIMS

143. The *NAS Report* gives rise to the following new state and federal constitutional claims related to the penalty phase of Edmiston’s trial.

**SUPP. CLAIM 8. TACKETT’S FALSE, MISLEADING AND UNRELIABLE TESTIMONY VIOLATED EDMISTON’S EIGHTH AMENDMENT RIGHT TO HEIGHTENED RELIABILITY IN CAPITAL SENTENCING.**

144. The *NAS Report* establishes that Tackett presented false, misleading, and inherently unreliable evidence. Because of the unparalleled severity and irreversibility of the death penalty, the Eighth Amendment imposes a heightened standard “for reliability in the determination that death is the appropriate punishment in a specific case,” *Woodson v. North Carolina*, 428 U.S. 280, 305 (1976) (plurality opinion); *see also Godfrey v. Georgia*, 446 U.S. 420, 427-28 (1980); *Mills v. Maryland*, 486 U.S. 367, 383-84 (1988). This heightened need for reliability requires the provision of “accurate sentencing information [as] an indispensable prerequisite to a reasoned determination of whether a defendant shall live or die,” *Gregg v. Georgia*, 428 U.S. 153, 190 (1976).<sup>58</sup> This Eighth Amendment requirement of truth in capital

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*Johnson*, 966 A.2d 523, 532 (Pa. 2009) (“if multiple instances of deficient performance are found, the assessment of prejudice properly may be premised upon cumulation”); *Commonwealth v. Bricker*, 487 A.2d 346, 354 (Pa. 1985) (plurality); *Commonwealth v. Wallace*, 455 A.2d 1187 (Pa. 1983) (new trial granted for effect of multiple *Brady* violations).

<sup>58</sup> *See also Deck v. Missouri*, 544 U.S. 622, 632 (2005) (“The Court has stressed the ‘acute need’ for reliable decisionmaking when the death penalty is at issue.”); *Monge v. California*, 524 U.S. 721, 732 (1998) (noting that the Court has repeatedly “recognized an acute need for reliability in capital sentencing proceedings.”); *Strickland v. Washington*, 466 U.S. 668, 704 (1984) (Brennan, J., concurring in part and dissenting in part) (“We have consistently required that capital proceedings be policed at all stages by an especially vigilant concern for procedural fairness and for the accuracy of factfinding”).

sentencing renders Edmiston’s death sentence unconstitutional because Tackett’s testimony infused the sentencing hearing’s fact-finding process with material and prejudicial falsehoods. U.S. CONST. AMEND. VIII; PA. CONST., Art. I, §§ 1, 13.

145. Moreover, the constitutional invalidity of Edmiston’s death sentence is not dependent upon the falsity of the forensic evidence in this case – although it is most assuredly false. The inherent unreliability of the evidence in this case – non-science masquerading as science – is enough. In Edmiston’s case, “[i]t is impossible to square admission of this purportedly scientific but actually baseless testimony with the Constitution’s paramount concern for reliability in capital sentencing. . . . The admission of unreliable [forensic evidence], offered with unabashed claims of [accuracy and reliability], create[d] an intolerable danger that” Edmiston’s death sentence was “imposed erroneously.” *Barefoot v. Estelle*, 463 U.S. at 923-24 (Blackmun, J., dissenting).

146. Edmiston has demonstrated above that, in light of the NAS Report, Tackett’s testimony flunks the test of scientific reliability set forth in *Daubert v. Merrell Dow Pharmaceutical*, 509 U.S. 579 (1993), and more closely resembles, in Justice Scalia’s words, “science that is junky.” *Kuhmo Tire Co. v. Carmichael*, 526 U.S. 137, 159 (1999) (Scalia, J., concurring). The “theory or technique” underlying Tackett’s testimony, was not one that “can be (and has been tested).” *Daubert v. Merrell Dow Pharmaceutical*, 509 U.S. at 593. Nor has Tackett’s theory or technique ever “been subjected to peer review and publication,” either at the time of trial or since. *Id.* The only part of Tackett’s testimony for which there is a known error rate, *id.* at 594, is his hair evidence, and that rate of error is nearly twelve percent. *See NAS*

*Report*, at 1-10.<sup>59</sup> Tackett’s testing had no “standards controlling the technique’s operation.” *Daubert*, 509 U.S. at 594. And for all the reasons discussed throughout this pleading, Tackett’s techniques were not valid science and are not “generally accepted” by the scientific community. *Id.* The probative value of such evidence “is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury[.]” *Daubert v. Merrell Dow Pharmaceutical*, 509 U.S. at 595 (citation omitted). Tackett’s testimony purporting to match the forensic evidence to Edmiston – i.e., “individualization” – is, as the NAS Report recognized, not scientifically possible. *Id.* at 5-37 (“The committee received no evidence of an existing scientific basis for identifying an individual to the exclusion of all others.”).

147. Given the inherently unreliable and hugely prejudicial nature of this evidence, and given the heightened reliability and need for accuracy in capital proceedings, the admission of this evidence, the prosecution’s argument endorsing this evidence, and the jury’s reliance upon this evidence in convicting Edmiston and sentencing him to death violates the Eighth Amendment.

**SUPP. CLAIM 9. EDMISTON’S DEATH SENTENCE VIOLATES DUE PROCESS BECAUSE ITS IMPOSITION WAS BASED UPON A MATERIAL MISAPPREHENSION OF FACT.**

148. A sentence that is imposed on the basis of inaccurate information that was material to the sentencing decision violates due process. *Townsend v. Burke*, 334 U.S. 736, 741 (1948); *Roberts v. United States*, 445 U.S. 552, 556 (1980); *United States v. Tucker*, 404 U.S. 443, 447 (1972). The Pennsylvania Supreme Court has long ago acknowledged this fundamental

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<sup>59</sup> As currently practiced, hair and soil analysis are entirely subjective. There is no research identifying the base rates for different hair or soil characteristics. With no base rate research, forensic examiners cannot opine as to the likelihood of a coincidental match. So any identification testimony from Tackett in these areas had no legitimate scientific basis.

principle. *Commonwealth ex rel. Elliott v. Baldi*, 96 A.2d 122, 126 (Pa. 1953) (“if we believed that the sentencing Court . . . imposed its sentence upon an erroneous state of assumptions or material facts which guided or controlled its decision, we would grant the writ in accordance with the principle of *Townsend v. Burke*”); see also *Commonwealth v. Maxwell*, 421 A.2d 699, 703 (Pa. Super. 1980); *Commonwealth v. Cowan*, 418 A.2d 753 (Pa. Super. 1980). The *NAS Report* establishes that Edmiston’s death sentence is predicated upon “materially untrue” testimony and that the jury therefore “imposed its sentence upon an erroneous state of assumptions or material facts which guided or controlled its decision.” That death sentence must be reversed. See U.S. CONST. AMENDS. XIV; PA. CONST., Art. I, §§ 1, 9.

**SUPP. CLAIM 10. EDMISTON WAS DENIED HIS RIGHT TO AN IMPARTIAL PENALTY-PHASE JURY.**

149. The material falsehoods exposed by the *NAS Report* also skewed the sentencing jury’s consideration and weighing of aggravating and mitigating evidence in a manner that made the jury “uncommonly willing to condemn a man to die.” *Witherspoon v. Illinois*, 391 U.S. 510, 521 (1968). The impairment of mitigation violated the cardinal Eighth Amendment principle that the jury must be able to consider and give full effect to all relevant mitigating evidence. *Tennard v. Dretke*, 542 U.S. 274, 285 (2004); *Penry v. Johnson*, 532 U.S. 782, 797 (2001); *Eddings v. Oklahoma*, 455 U.S. 104, 110 (1982); *Lockett v. Ohio*, 438 U.S. 586, 605 (1978); *Commonwealth v. Moody*, 382 A.2d 442, 446-47 (Pa. 1977). The jury’s reliance on these misrepresentations significantly impaired its ability to do so, and to fairly consider imposition of a life sentence. That also violated Edmiston’s Sixth Amendment and Article I, § 9 right to an impartial sentencing-phase jury. See U.S. CONST. AMENDS. VI, VIII, XIV; PA. CONST., Art. I, §§ 1, 9, 13; *Commonwealth v. Ingber*, 531 A.2d 1101, 1102 (Pa. 1987).

**SUPP. CLAIM 11. EDMISTON IS ACTUALLY INNOCENT OF ALL AGGRAVATING CIRCUMSTANCES.**

150. Tackett’s sentencing hearing testimony played a critical role in establishing the aggravating circumstances that Edmiston supposedly committed the killing by means of torture and that the killing was committed during the course of an alleged rape. However, had the jury been privy to the *NAS Report*’s findings, conclusions, and recommendations, “no reasonable juror would have found [Edmiston] eligible for the death penalty under the applicable state law.” *Sawyer v. Whitley*, 505 U.S. 333, 336 (1992). Moreover, Edmiston’s innocence of even a single aggravating circumstance has constitutional relevance here, because under Pennsylvania law when – as here – the jury has found some mitigation, the invalidation (here through innocence) of any aggravating circumstance requires reversal. *E.g.*, *Commonwealth v. Bolden*, 753 A.2d 793, 799 (Pa. 2000).

**SUPP. CLAIM 12. EDMISTON IS ENTITLED TO RELIEF BASED UPON THE CUMULATIVE PREJUDICIAL EFFECT OF THESE CONSTITUTIONAL ERRORS.**

151. As in the guilt phase, constitutional errors are to be assessed cumulatively. *E.g.*; *Lesko v. Lehman*, 925 F.2d 1527, 1541 (3d Cir. 1991) (cumulative prejudicial effect of prosecutor’s penalty phase remarks entitled petitioner to new sentencing hearing, even if individually the remarks may not have been sufficiently prejudicial to warrant relief). Individually and cumulatively, each constitutional error was prejudicial and denied Edmiston his clearly established state and federal constitutional rights. *See* U.S. Const. Amends. VI, VIII, XIV; PA. CONST., Art. I, §§ 1, 9, 13.

**VII. EDMISTON IS ENTITLED TO DISCOVERY**

152. The *NAS Report*, without question, establishes that there are “exceptional

circumstances” that warrant post-conviction discovery. *See* PA. R. CRIM. P. 902(E)(1).<sup>60</sup> In his DNA-testing motion under 42 Pa. C.S. § 9543.1, Edmiston requested access to the following information from the PSP crime lab: (1) all editions and versions of the lab’s quality control manual dating back to 1988;<sup>61</sup> (2) all annual audit reports relating to its operations dating back to 1988;<sup>62</sup> (3) all annual reviews or audit reports relating to the lab’s quality control system dating back to 1978;<sup>63</sup> (4) all documentation, reports, manuals, memos, computer disks, or articles generated after 1988 relating to the general acceptance or validity of those procedures utilized by Bruce Tackett in preparation for Edmiston’s trial;<sup>64</sup> (5) all technical procedural manuals relating to blood analysis, semen analysis, and hair identification dating back to 1988;<sup>65</sup> (6) all records,

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<sup>60</sup> In his DNA-testing motion pursuant to 42 Pa. C.S. § 9543.1, Edmiston identified two additional reasons that satisfy the “exceptional circumstances” standard. *See DNA Memo of Law* at 46-60. First, this is a capital case. *See id.* at 50. That prospect, by itself, constitutes an exceptional circumstance because of the death penalty’s “severity and irrevocability.” *Enmund v. Florida*, 458 U.S. 782, 797 (1982). As the United States Supreme Court has frequently held, the finality of death magnifies the “need for reliability,” *Woodson v. North Carolina*, 428 U.S. 280, 305 (1976), and, accordingly, the need for reliable pre-trial and *post-conviction* fact-determination procedures. *See McFarland v. Scott*, 512 U.S. 849, 855 (1994). Second, Edmiston identified various PSP examiners who have fabricated results or committed serious errors and ethical violations. *See DNA Memo of Law* at 50-58.

<sup>61</sup> AMERICAN SOCIETY OF CRIME LABORATORY DIRECTORS, LABORATORY ACCREDITATION BOARD MANUAL, Rule 1.4.2 (2003) (“All elements of a laboratories quality system must be clearly documented and in a quality manual which is kept current under the responsibility of a quality manager.”).

<sup>62</sup> ASCLD Rule 1.4.2.3 (“each lab must conduct an annual audit of its operations”).

<sup>63</sup> ASCLD Rule 1.4.2.4 (“The quality system requires that laboratory management conduct a review at least once yearly to ensure the continued suitability and effectiveness of such a system.”).

<sup>64</sup> ASCLD Rule 1.4.2.5 (“Procedures used must be generally accepted in the field or supported by data gathered and recorded in a scientific manner.”).

<sup>65</sup> ASCLD Rule 1.4.2.7 (“The written technical procedures should include descriptions of sample preparation methods, controls, standards, and calibration procedures. They should also

documentation, reports, memos, manuals, or computer disks dating back to 1988 relating to the calibration of the instrumentation utilized by Bruce Tackett in preparation for Edmiston's trial;<sup>66</sup> (7) all documentation, reports, bench memos, papers, notebooks, computer disks, or articles relating to Incident Nos. C3-297089, A2-555460, A3-555460; (8) the case record generated for Edmiston's trial<sup>67</sup> – including all: (a) bench notes or narratives describing the examinations performed by Bruce Tackett or any other lab employee who worked on physical evidence relating to Edmiston's case and trial; (b) photographs taken by Bruce Tackett or any other lab employee who took photographs of the physical evidence relating to Edmiston's case and trial; (c) photocopies/xeroxes made by Bruce Tackett or any other lab employee who photocopied or xeroxed documents, lab reports, bench notes, or photographs relating to Edmiston's case and trial; (d) drawings or diagrams made by Bruce Tackett or any other lab employee who drafted diagrams or depictions of the crimes scenes, the physical evidence, or results from forensic examinations relating to Edmiston's case or trials;(e) worksheets created or completed by Bruce Tackett or any other lab employee who created worksheets relating to Edmiston's case and trial; and (f) computers disks that contain objects identified in (a) through (e) created by Bruce Tackett or any other lab employee who assisted in the preparation of Edmiston's trial; (9) all reports, from 1988 on, that document when or if Bruce Tackett's casework was technically reviewed,

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include a discussion of precautions, possible sources of error, and literature references.”).

<sup>66</sup> ASCLD Rule 1.4.2.13 (“Instruments/equipment must be properly calibrated and calibration records maintained for all calibrated instruments.”).

<sup>67</sup> ASCLD Rules 1.4.2.14-15 (“A laboratory case record consists of both examination documentation and administrative documentation which may be received or generated by the laboratory. The laboratory must maintain each case record in a designated location or locations, as specified by its policy, under a unique case designator, usually a laboratory case number.”).

who conducted the reviews, the outcomes of the reviews, and whether corrective actions had to be taken, and if so, what corrective action was taken; (10) all copies of the lab's testimony review policy dating back to 1988;<sup>68</sup> (11) all reports, memos, or documents, from 1988 on that identifies when Bruce Tackett's testimony was reviewed, who performed the review, and whether corrective action had to be taken due to discrepancies in his testimony or reports; (12) all editions and versions of the lab's proficiency testing policy manual dating back to 1988; (13) all records, reports, memos, or computer disks that identify or store the actual proficiency tests taken by Bruce Tackett after 1988; (14) all documents, reports, memos, records, or computer records that identify Bruce Tackett's proficiency tests results relating to all forms of serological testing dating back to 1988; and (15) all documents, reports, memos, records, or computer disks that identify Bruce Tackett's proficiency tests results relating to all forms of hair identification or trace evidence analysis dating back to 1988. Finally, Edmiston requests all documents, records, memos, and computer disks, regarding Dr. Herrin's DNA testing at Cellmark Diagnostic Laboratories.

153. The *NAS Report* establishes the materiality of every one of these requests and makes clear the centrality of this evidence to this case. Indeed, the only way the Commonwealth can counter the allegations presented in the instant petition is to establish that: (1) the procedures and techniques used by Tackett underwent rigorous validation studies that demonstrated their validity and accuracy; (2) Tackett underwent rigorous proficiency testing that demonstrated he could: (a) accurately link an unknown hair to a known hair sample; (b) accurately determine the likelihood of a coincidental match between an unknown hair and a known hair that "positively

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<sup>68</sup> ASCLD Rule 1.4.2.18 ("The laboratory must have a written procedure whereby the testimony of each examiner is monitored at least once each year.").

matched” one another; (c) properly conduct presumptive and confirmatory blood and semen testing in order to accurately determine whether human blood or semen was present on a particular item of evidence; (d) accurately determine whether an unknown soil sample came from a known soil sample; and (e) accurately determine the likelihood of a coincidental match between an unknown soil sample and a known soil sample that share “similar” characteristics.

154. To meet this burden, the Commonwealth must produce the documents and evidence requested by Edmiston. If the Commonwealth fails to produce this documentation, then there is absolutely no evidence – outside of Tackett’s own unsubstantiated testimony – establishing the reliability and validity of Tackett’s testimony and the procedures, tests, and techniques he relied on; the *NAS Report* makes this fact abundantly clear. If the forensic science system is scientifically fractured in 2009, common sense dictates that the unreliability of what passed for science in the PSP at the time of this trial was even worse. With no documentation to counter the *NAS Report*’s allegations, Tackett’s testimony is false, misleading, and inherently unreliable violating a range of Edmiston’s clearly established state and federal constitutional rights. *See supra*, Part VI.

155. Because the Commonwealth must produce this documentation and evidence to overcome the allegations made in this petition and in the *NAS Report*, Edmiston is entitled to this documentation and evidence so he can adequately defend against and undermine the Commonwealth’s arguments. Moreover, as the *NAS Report* makes clear, there is a strong possibility that granting the requested discovery will bolster Edmiston’s new state and federal constitutional claims. The astonishing fact that *none* of this material has ever been provided despite its overwhelming significance constitutes yet another extraordinary circumstance justifying discovery.

## VIII. CONCLUSION

156. It is beyond dispute that “the Fourteenth Amendment cannot tolerate a state criminal conviction obtained by the knowing use of false evidence.” *Miller v. Pate*, 386 U.S. at 7; *Giglio v. United States*, 405 U.S. at 153 (“[D]eliberate deception of a court and jurors by the presentation of known false evidence is incompatible with rudimentary demands of justice.”) (internal quotations omitted). Nor, too, does the Eighth Amendment. The “government of a strong and free nation does not need convictions based upon such testimony. It cannot afford to abide with them.” *Mesarosh v. United States*, 352 U.S. 1, 14 (1956). Edmiston’s conviction and death sentence implicate these fundamental constitutional principles.

157. Simply put, Edmiston’s conviction and death sentence are premised on false, misleading, and inherently unreliable testimony from Bruce Tackett – a vital Commonwealth witness. Tackett’s testimony “has poisoned the water in this reservoir, and the reservoir cannot be cleansed without first draining it of all impurity.” *Id.* If the Court “has any duty to perform in this regard, it is to see that the waters of justice are not polluted. Pollution having taken place here, the condition should be remedied at the earliest opportunity.” *Id.*

158. Stephen Edmiston is innocent and his conviction and death sentence are the product of false, misleading, and inherently unreliable testimony and prosecutorial argument that, without question, influenced the jury during its trial and sentencing hearing deliberations. There is scarcely a stitch of evidence in the prosecution’s case that escapes this taint. The only just response at this Court’s disposal is to afford Mr. Edmiston discovery and an evidentiary hearing at which he can prove these facts. Then the Court must grant him relief.

**PRAYER FOR RELIEF**

For all of the above-stated reasons and those presented in the submissions accompanying this Petition, Petitioner prays:

1. That the Commonwealth be ordered to Answer this Petition;
2. That leave to amend the Petition, if needed, be granted;
3. That an evidentiary hearing on the claims and any and all disputed issues of fact be granted;
4. That discovery as may be necessary to a full and fair resolution herein be allowed;
5. That Petitioner's conviction and sentence be vacated.

Respectfully submitted,

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Dated: April 17, 2009

**CERTIFICATE OF SERVICE**

I hereby certify that on this date I caused a true and correct copy of the foregoing *Supplemental Petition for Post-Conviction Relief Based Upon Additional Newly Discovered Evidence and Consolidated Memorandum of Law in Support of Petition and Pending Motion for Discovery* to be served by electronic service and FIRST CLASS MAIL, POSTAGE PREPAID upon the following person:

Jennifer Buck, Esq.  
Deputy Attorney General  
Office of the Attorney General  
16<sup>th</sup> Floor  
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Renee Edelman, Esq.

Dated: April 17, 2009