

[J-63-2020]
IN THE SUPREME COURT OF PENNSYLVANIA
EASTERN DISTRICT

SAYLOR, C.J., BAER, TODD, DONOHUE, DOUGHERTY, WECHT, MUNDY, JJ.

COMMONWEALTH OF PENNSYLVANIA	:	No. 780 CAP
	:	
Appellee	:	Appeal from the Order dated May 13,
	:	2019 of the Court of Common Pleas of
v.	:	Lackawanna County at No. CP-35-CR-
	:	0000748-1983
DAVID CHMIEL	:	
	:	
Appellant	:	
	:	SUBMITTED: July 14, 2020

OPINION

CHIEF JUSTICE SAYLOR

DECIDED: October 21, 2020

In this serial, capital post-conviction appeal, Appellant challenges the validity of expert testimony based upon microscopic comparison of hair samples.

For more than a century, forensic examiners have appeared in various criminal trials, employing a form of analysis known as microscopic hair comparison analysis. *See, e.g., Knoll v. State*, 12 N.W. 369, 370 (Wis. 1882). This entails “side-by-side, microscopic comparisons of hair samples in an effort to ascertain whether hairs from a crime scene matched hairs from a subject.” *U.S. v. Butler*, 955 F.3d 1052, 1053 (D.C. Cir. 2020).

The absence of common standards for comparison and of studies sufficiently validating examiners’ results has yielded longstanding criticisms, some from prominent sources. *See, e.g., Nat’l Research Council, Strengthening Forensic Science in the United States: A Path Forward* 161 (2009) (positing that courts “have recognized that

testimony linking microscopic hair analysis with particular defendants is highly unreliable”); see also *Williamson v. Reynolds*, 904 F. Supp. 1529, 1558 (E.D. Okla. 1995) (determining that microscopic hair comparison analysis was unreliable and inadmissible under the federal screening test pertaining to scientific evidence), *disapproved on other grounds Nguyen v. Reynolds*, 131 F.3d 1340, 1354 (10th Cir. 1997). A watershed was reached in April 2015, when the Federal Bureau of Investigation (the “FBI”) participated in a joint press release with the United States Department of Justice (the “DOJ”), the Innocence Project, and the National Association of Criminal Defense Lawyers (the “NACDL”), entitled, “FBI Testimony on Microscopic Hair Analysis Contained Errors in at Least 90 Percent of Cases in Ongoing Review.”

This press release disclosed the initial findings of the above agencies and organizations, premised on an ongoing joint investigation, indicating that FBI microscopic hair analysts had committed “widespread, systematic error, grossly exaggerating the significance of their data under oath with the consequence of unfairly bolstering the prosecution’s case[.]” See Petition for Post-Conviction Relief dated June 16, 2015, in *Commonwealth v. Chmiel*, No. 83-CR-748 (C.P. Lackawanna), at Ex. C. The release also related that the FBI had trained many state and local hair examiners throughout the country using “the same scientifically flawed language.” *Id.* at 2. The continuing reviews of criminal cases in light of such irregularities -- as well as similar over-claiming and overstatements associated with other feature-comparison methods of analysis, such as firearm toolmark, bite mark, tire tread and shoe tread examinations -- are reported to have contributed to the exoneration of numerous individuals. See President’s Council of Advisors on Science and Technology, *Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods* 3

(Executive Office of the President Sept. 2016) [hereinafter the “President’s Council Report”].

On September 21, 1983, after invading the home of three elderly siblings -- James, Angelina, and Victor Lunario -- Appellant stabbed them to death during the course of a robbery.¹ In the aftermath, police found a makeshift mask at the scene that had been fashioned from a sweater sleeve. This distinctive sweater was soon identified as having belonged to Appellant’s brother, Martin Chmiel.

After initially denying any involvement, Martin eventually admitted that he and Appellant had jointly planned to burglarize the victims’ home. Further, Martin disclosed that Appellant had privately confessed that he had proceeded with a robbery of his own accord and killed the Lunarios after Angelina screamed. Martin provided investigators with numerous non-public details about the robbery and murders, which he asserted had been related to him by Appellant. See *Chmiel*, No. 83-CR-748, *slip op.* at 16-17 (cataloguing such details). Several witness statements established an alibi for Martin, in that the witnesses told police that he had been at a remote, forested location watching for brush fires at the time the killings were believed to have occurred. Accordingly, the investigation centered on Appellant.

¹ The underlying facts are related in greater detail in *Commonwealth v. Chmiel*, 585 Pa. 547, 563-69, 889 A.2d 501, 509-13 (2005). The PCRA court’s opinion also contains an extensive treatment of the facts with accompanying citations to the record. See *Commonwealth v. Chmiel*, No. 83-CR-748, *slip op.* at 11-21 (C.P. Lackawanna May 13, 2019).

Appellant was arrested and brought to trial on three counts of first-degree murder and other crimes on three occasions, the last of which occurred in 2002.² Martin Chmiel testified consistent with the police interviews in which he incriminated Appellant.

Of particular relevance here, investigators attested to having found samples of hair on the sweater mask located at the crime scene. The Commonwealth presented microscopic hair comparison analyses of those evidence samples as related by George Surma, a then-retired forensic scientist previously employed by the Pennsylvania State police. Mr. Surma testified that he had examined the hairs in 1984, and two taken from the mask, in particular, were “microscopically similar” to samples of Appellant’s hair but were not similar to samples taken from Martin Chmiel. N.T., Aug. 27, 2002, at 19, 23. According to Mr. Surma, Martin could be excluded as a contributor. *See id.* at 20-21. On cross-examination, Mr. Surma agreed that he could never say, based upon microscopic comparison alone, that an evidence sample was “the same” as a hair taken from a subject or that an evidence sample derived from any particular individual. *Id.* at 26, 30. Indeed, Mr. Surma conceded that two hairs taken from his own head might appear dissimilar upon microscopic examination. *See id.* at 27.

Additionally, an expert in mitochondrial DNA testified that neither Appellant nor Martin Chmiel could be excluded as sources of these two evidence samples. *See* N.T., Aug. 29, 2002, at 166.³ Because, however, a mixture of profiles was present in the evidence samples, the expert didn’t perform a database search, and accordingly, was

² Appellant had twice secured new trials for unrelated reasons. *See Commonwealth v. Chmiel*, 558 Pa. 478, 738 A.2d 406 (1999); *Commonwealth v. Chmiel* 536 Pa. 244, 639 A.2d 9 (1994).

³ Mitochondrial DNA is inherited from a subject’s mother, and correspondingly, Appellant’s and Martin Chmiel’s mitochondrial DNA was found to be identical. *See id.* at 152, 166.

unable to supply probabilistic information concerning how likely it was that Appellant or Martin were contributors. See *id.* at 173.⁴

Appellant testified in the defense case. Significantly, he admitted to having conspired with Martin Chmiel, on various occasions during the months preceding the victims' murders, to burglarize the victims' home. See, e.g., N.T., Sept. 4, 2002, at 140, 235. Appellant related that it was either his or Martin's idea to make masks and that he was present when Martin fashioned them from the sweater. See *id.* at 141-143. By his own admission, Appellant participated in several trips in which he and Martin drove by the Lunarios' residence, either as part of the planning or in an attempt to perpetrate the burglary. See, e.g., *id.* at 144, 153. It was Appellant's testimony that the latest of these events occurred approximately two-and-one-half weeks before the killings. See *id.* at 151-153. Appellant stated that, when he and Martin drove by the residence, they found the Lunarios were at home. See *id.* at 153. Thus, Appellant maintained, the contemplated burglary was thwarted, since "that was part of the original plan, that if we did [proceed with the burglary], we would do it when they weren't home so no one would get hurt." *Id.* Subsequently, Appellant claimed, he withdrew entirely from the conspiracy. See *id.* at 157 (reflecting Appellant's testimony that, "I says [to Martin,] I don't want to hear anything more about robbing the Lunarios or robbing anyone.").

Appellant also admitted to having been in possession of the sweater masks for several months after their making. See *id.* at 145, 157. He asserted, however, that at the time he refused to proceed further with the conspiracy, he threw the bag containing the masks into a dumpster in Martin's presence, "just so you know where it's going."

⁴ In discussing a sample of hair matching the profile of one of the victims, the witness did indicate that the frequency of the most common mitochondrial DNA in the population is six to seven percent, and therefore, it would be expected that 94 percent of individuals wouldn't have that type of DNA. See N.T., Aug. 29, 2002, at 168, 175.

See *id.* at 157. According to Appellant, “that was the end of that.” *Id.* Confronting the testimony of the numerous witnesses supporting Martin’s alibi and others undermining his own version of the events on the night of the killings, Appellant asserted that those witnesses were engaged in a longstanding conspiracy to lie in order to implicate him. See, e.g., N.T., Sept. 5, 2002, at 31, 45-49, 84-85.

Appellant was convicted and sentenced to death, and the judgments of sentence were affirmed on direct appeal. See *Chmiel*, 585 Pa. 547, 889 A.2d 501. This Court also affirmed the denial of post-conviction relief on Appellant’s first petition following the 2002 retrial. See *Commonwealth v. Chmiel*, 612 Pa. 333, 30 A.3d 1111 (2011). Notably, several of the rejected claims entailed the allegations that Appellant’s trial counsel was ineffective for failing to challenge the admissibility of Mr. Surma’s testimony pursuant to *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923),⁵ and for failing to obtain an expert witness to rebut that evidence. See *Chmiel*, 612 Pa. at 382-87, 30 A.3d at 1140-42.

In June 2015, Appellant filed a serial PCRA petition, citing prominently to the joint press release of the FBI, the DOJ, the Innocence Project, and the NACDL; contending that his convictions were based upon “unreliable scientific evidence”; and arguing that the joint press release was confirmatory. Petition for Post-Conviction Relief in *Chmiel*, No. 83-CR-748, at 7, 12. According to the petition, Mr. Surma “was trained by the FBI and . . . provided the same scientifically unsupportable testimony that the FBI now disclaims” in the joint press release. *Id.* at 1. Although Appellant’s petition was facially untimely under the PCRA’s one-year time bar, see 42 Pa.C.S. §9545(b)(1), he posited

⁵ Pennsylvania adheres to the *Frye* screening test, which bars novel scientific evidence from the courtroom until the underlying methodology has achieved general acceptance in the relevant scientific community. See *Walsh v. BASF Corp.*, ___ Pa. ___, ___, ___ A.3d ___, ___, 2020 WL 41315151, *6-7 (July 21, 2020).

that the joint press release constituted a newly-discovered fact, implicating an exception to the time bar. See *id.* §9545(b)(1)(ii). Appellant sought relief under the Sixth, Eighth and Fourteenth Amendments to the United States Constitution and Article I, Section 9 of the Pennsylvania Constitution.

Appellant was aware that, in addition to Mr. Surma's testimony, the mitochondrial DNA evidence also implicated him. See Petition for Post-Conviction Relief in *Chmiel*, No. 83-CR-748, at 6. It was his position, however, that:

[t]he unique facts of this case . . . mean that mitochondrial DNA testing of the hairs could not correct the unreliable microscopic hair comparison conclusions. That is because mitochondrial DNA testing in this case was unable to exclude either [Appellant] or Martin Chmiel. As a consequence, the mitochondrial DNA testing did not confirm Surma's findings that the hairs could have come from [Appellant] but not Martin Chmiel. Therefore, even after the advent of mitochondrial DNA testing, [Appellant's] case still remains subject to the widespread concern expressed in the [joint] press release -- *i.e.*, that introduction of "scientifically flawed" microscopic hair comparison lab reports and testimony undermined the reliability of defendants' trials.

Id. at 11 (footnote and citation omitted).

The PCRA court dismissed the petition as untimely; however, this Court reversed on appeal and remanded for further proceedings. See *Commonwealth v. Chmiel*, 643 Pa. 216, 173 A.3d 617 (2017). In finding that the relevant timeliness exception was met, the Court discerned two newly-discovered facts, namely, the FBI's public acknowledgment of widespread error by its own analysts, as well as the revelation that the agency had provided erroneous training to many state and local analysts. See *id.* at 230, 173 A.3d at 625-26. Thus, the Court found that Appellant was entitled to a merits determination of his claim, since "the FBI press release indicates that Surma's trial

testimony may have exceeded the limits of science and overstated to the jury the significance of microscopic hair analysis.” *Id.* at 230, 173 A.3d at 625.

Notably, this Court also rejected the Commonwealth’s position that the challenge was previously litigated. Finding that the rejection of the prior post-conviction claims “was premised on the lack of support for [Appellant’s] view that, at the time of his 2002 trial, forensic hair microscopy was no longer an accepted science,” the Court determined:

[Appellant’s] current claim is premised upon the fact that, since the FBI’s April 20, 2015 admission, microscopic hair analysis no longer is considered to be scientifically reliable. This issue does not rest upon the evidence and arguments made in [Appellant’s] prior PCRA ineffectiveness claim. [Appellant’s] prior PCRA claim and the current claim are premised on discrete legal grounds.

Id. at 234, 173 A.3d at 628.

On remand, the PCRA court conducted a hearing, at which Appellant presented testimony from Mr. Surma; James Palenik, a senior research microscopist; and Maria Cuellar, Ph.D., who was offered as an expert in the field of statistics and probability and their application to forensics and the law.

Mr. Surma testified, in relevant part, that he wasn’t trained by the FBI but had learned about microscopic hair comparison analysis primarily from others in his office, albeit that some of his colleagues were trained by the FBI and had shared some of what they had learned. See N.T., Aug. 16, 2018, at 28-33. Similar to his trial testimony, Mr. Surma continued to recognize inherent limitations of microscopic hair comparison analysis. See, e.g., *id.* at 34 (acknowledging the possibility that more than half of the population could share common hair characteristics).

Mr. Palenik also pervasively confirmed the various limitations of microscopic hair comparison analysis, including by way of reference to the lack of uniform standards to

govern the assessment and the absence of any mechanism to assess the numerical probability associated with a putative match. See *id.* at 59-65. He also acknowledged that there are no studies demonstrating accuracy or repeatability in the field. See *id.* at 70-71. For these reasons and others, Mr. Palenik characterized the technique as a “first step” and related that he would personally render no opinion without supporting DNA analysis. *Id.* at 67-68.

Additionally, Mr. Palenik expressed discomfort with attesting to an opinion, based on microscopic hair comparison analysis, to a reasonable degree of scientific certainty. See *id.* at 69. Nevertheless, he maintained that microscopic hair comparison analysis does have scientific foundational validity, albeit that it is:

absolutely essential that . . . the triers of fact . . . understand what those very specific limitations are in the field and not to overstate the case. It’s one of the reasons that you see hair microscopists when people use the words -- for instance, lawyers will use the word match, and you’ll see a noticeable cringe on people’s faces -- scientists’ faces who do hair examinations when they say that because we’re not -- that’s not what’s being said.

Id. at 72-73, 79. According to Mr. Palenik, the fact that there is presently a subjective dynamic in microscopic hair comparison analysis does not undercut the validity of the approach. See *id.* at 80.

Dr. Cueller testified, however, that, for this form of feature-comparison analysis to have scientific validity, an examiner would need to employ statistics and probability; otherwise any results are scientifically meaningless. See *id.* at 106-107. In this vein, she opined that it is impossible to conclude whether any given examiner’s conclusion is valid without some metric to gauge accuracy. See *id.* at 112.

Dr. Cueller defined the two measures for scientific validity as accuracy and consistency. See *id.* Accuracy, she said, entails some litmus for assessing proximity to

true values. *See id.* Dr. Cueller spoke of consistency in terms of repeatability. *See id.* (“And then consistency has to do with if we were going to repeat this method or this examination several times, will we get the same answer each time?”). Neither can exist, she attested, in a regime under which there is no common understanding about what particular features should be subject to comparison or the weight to be ascribed to any given feature. *See id.* at 115-125. It was her conclusion that, absent studies assessing true and false positives and negatives, microscopic hair analysis cannot be adjudged to be either accurate or consistent. *See id.* Thus, Dr. Cueller depicted the analysis as being entirely subjective and lacking in scientific validity. *See id.* at 123, 125. Notably, in a lengthy interchange with the PCRA judge, she also expressed the opinion that other forms of generally accepted expert evidence (such as medical professionals’ opinions about the cause of a skull fracture or pathologists’ opinions interpreting tissue samples) suffer from scientific invalidity based on the same rationale. *See id.* at 133-138.

In addition to the witnesses, Appellant also presented the PCRA court with a November 2012 agreement that was published by the FBI, the Innocence Project, and the NACDL addressing “what the science of microscopic hair examinations support.” N.T., Aug. 16, 2018, Ex. 10, at 1 (the “2012 Agreement”). This agreement identified the following three types of errors associated with microscopic hair comparison analysis testimony:

Error Type 1: The examiner stated or implied that the evidentiary hair could be associated with a specific individual to the exclusion of all others. This type of testimony exceeds the limits of the science.

Error Type 2: The examiner assigned to the positive association a statistical weight or probability or provided a likelihood that the questioned hair originated from a

particular source, or an opinion as to the likelihood or rareness of the positive association that could lead the jury to believe that valid statistical weight can be assigned to a microscopic hair association. This type of testimony exceeds the limits of the science.

Error Type 3: The examiner cites the number of cases or hair analyses worked in the lab and the number of samples from different individuals that could not be distinguished from one another as a predictive value to bolster the conclusion that a hair belongs to a specific individual. This type of testimony exceeds the limits of the science.

Id.; see also DOJ, 65 *Forensic Science and Forensic Evidence I*, at 6-7 (Jan. 2017).

The 2012 Agreement also discussed “appropriate” testimony by a microscopic hair comparison examiner as follows:

[t]he examiner’s testimony appropriately reflected the fact that hair comparison could not be used to make a positive identification, but that it could indicate, at the broad class level, that a contributor of a known sample could be included in a pool of people of unknown size, as a possible source of the hair evidence (without in any way giving probabilities, an opinion as to the likelihood or rareness of the positive association, or the size of the class) or that the contributor of a known sample could be excluded as a possible source of the hair evidence based on the known sample provided.

Id.

Furthermore, Appellant introduced a document entitled “FBI Microscopic Hair Comparison Analysis (MHCA) Review Lab Report/Transcript Review Guidance,” which was provided to FBI examiners to aid in identifying errors via an enumeration of examples of the three types of acknowledged flaws. N.T., Aug. 16, 2018, at 146, Ex. 11. Appellant also offered into evidence the research report, “Strengthening Forensic Science in the United States: A Path Forward,” published by the National Academy of Sciences in August 2009 (the “NAS Report”) and the President’s Council Report. See *id.*, Exs. 13-14.

Upon consideration of the post-conviction record, the PCRA court denied relief on Appellant's petition. The court observed that the 2012 Agreement didn't categorically disapprove microscopic hair comparison analysis as a science. To the contrary, the court highlighted, a specific line of the analysis was expressly deemed appropriate. See N.T., Aug. 16, 2018, Ex. 10, at 1.

In the PCRA court's judgment, Mr. Surma confined his testimony to the appropriate analysis when he "acknowledged the recognized limitations of the applicable science." *Chmiel*, No. 83-CR-748, *slip op.* at 2. In this respect, the court reasoned that the examiner did not commit any of the errors identified in the 2012 agreement.

Instead, the court found that:

[Mr. Surma] explained that the microscopically similar features between [Appellant's] hair and three of the sweater sleeve hairs meant that he could not exclude [Appellant] as a "possible source." Surma emphasized that he was not opining that those particular hairs had the "same" characteristics, and not unlike Palenik, he agreed that hairs removed from the same head may not be microscopically similar. He never opined that an identified hair came from a specific person, and also conceded that a single hair could display the same microscopic features as hairs obtained from "multiple people." . . . Furthermore, as the 2009 NAS report and Palenik had recommended, Surma's [microscopic hair comparison] opinions were augmented by mitochondrial DNA testing of the subject hairs, producing an independent opinion by Dr. Kimberlyn Nelson that [Appellant] and Martin could not be excluded as sources of the hair.

Id. at 38.⁶

⁶ The PCRA court also opined that, in those instances in which the joint investigation has instigated post-conviction relief, the prosecutors admitted that the microscopic hair comparison examiners had overstated the significance of their analysis by committing one of the three types of acknowledged errors. See *Chmiel*, No. 83-CR-748, *slip op.* at (continued...)

Accordingly, the court concluded that Mr. Surma’s trial testimony did not “exceed[] the limits of science and overstate[] to the jury the significance of the microscopic hair analysis.” *Id.* (quoting *Chmiel*, 643 Pa. at 230, 173 A.3d at 625); see also *id.* at 39. The PCRA court also stressed that the examiner wasn’t trained by the FBI or instructed by the agency or others as to how to testify in criminal trials. See *id.*; see also *Chmiel*, 643 Pa. at 230, 173 A.3d at 625 (relating that the FBI’s 2015 revelation that it had trained many state and local analysts to provide scientifically flawed opinions in state criminal trials was an after-discovered fact establishing jurisdiction over Appellant’s serial post-conviction petition).

In terms of Appellant’s *Frye* challenge to microscopic hair comparison analysis, the PCRA court again noted that there was no indication in the joint press release of 2015 that microscopic hair comparison analysis had become an invalid science or that it presently lacked general acceptance in the relevant scientific community. See *Chmiel*, No. 83-CR-748, *slip op.* at 43 (citing David H. Kaye, *Ultracrepidarianism in Forensic Science: The Hair Evidence Debacle*, 72 WASH. & LEE L. REV. ONLINE 227, 232-33 (2015) (explaining that, “the FBI’s revelations are limited to this issue of overclaiming” by FBI examiners, and that “[s]uch overclaiming is one form of scientifically invalid testimony, but it is not the equivalent of an entire invalid science”). Similarly, the court reiterated, the 2012 Agreement confirmed that microscopic hair comparison analysis “permits a well-trained examiner to offer an opinion that a known individual can either be

(...continued)

38-39 (citing *U.S. v. Ausby*, 916 F.3d 1089, 1092 (D.C. Cir. 2019); *Duckett v. State*, 123 So.3d 393, 398 (Fla. 2017); *Strawhacker v. State*, 500 S.W.3d 716, 717 (Ark. 2016); *Jones v. U.S.*, 2019 WL 1066182, at *1 (D.C. 2019); *Wilcox v. State*, 2017 WL 2399603, at *1 (Me. Super. 2017); *Commonwealth v. Perrot*, 2016 WL 380123, at *26 (Mass. Super. 2016)).

included or excluded as a possible source of a questioned hair collected at a crime scene.” *Id.* (quoting N.T., Aug. 16, 2018, Ex. 10, at 1).

The PCRA court further noted that -- while the NAS Report cautions that “microscopic studies alone are of limited probative value” for individualization and should be accompanied by mitochondrial DNA analysis, it also does not declare microscopic hair comparison analysis to be an invalid science. *Id.* at 44 (quoting N.T., Aug. 16, 2018, Ex. 13, at 161). As to the President’s Council Report, the court observed that the authors did “not undertake a full evaluation of [the] scientific validity” of microscopic hair comparison analysis, but merely reviewed “supporting material” released by the DOJ and explained “that there are no empirical studies that establish the scientific validity and estimate the reliability of hair comparison as a forensic feature-comparison method.” *Id.* (citing N.T., Aug. 16, 2018, Ex. 14, at 7; *id.*, Addendum at 6). Moreover, the court credited the recent conclusion of the Court of Appeals of Washington to the effect that, “the [President’s Council] Report acknowledged its own dubious value to courts, stating, ‘Judges’ decisions about the admissibility of scientific evidence rest[] solely on *legal* standards; they are exclusively the province of the courts and [the President’s Council Report] does not opine on them.’” *State v. DeJesus*, 436 P.3d 834, 841 (Wash. Ct. App. 2019) (emphasis in original).

Most importantly, in the judgment of the PCRA court, the only expert in microscopic hair comparison analysis presented by Appellant -- Mr. Palenik -- testified that the analysis continues to be a valid science, despite the lack of uniform standards. See *Chmiel*, No. 83-CR-748, *slip op.* at 4. The court stressed that this testimony was contradicted by Dr. Cueller, who testified that she “did not agree with [Mr. Palenik’s] final conclusion that the hair microscopy is valid.” *Id.* at 45 (citing N.T., Aug. 16, 2018, at 123). Citing *Mudano v. Philadelphia Rapid Transit Company*, 289 Pa. 51, 137 A. 104

(1927), the court found this conflict to be fatal to Appellant's claim. See *id.* at 60, 137 A. at 107 (pronouncing that, if a party bearing the burden of proof on an issue "calls more than one expert, there must be no absolute contradiction in their essential conclusions"). The PCRA court also specifically undertook to credit Palenik's testimony that microscopic hair comparison analysis remains a valid science. See *Chmiel*, No. 83-CR-748, *slip op.* at 46 ("The competent and credited testimonial evidence did not establish that [microscopic hair comparison analysis] has become 'junk science' . . . or that it has lost its general acceptance in the relevant scientific community[.]").

In any event, the court explained that, to secure a new trial under the PCRA, Appellant was required to demonstrate that the exclusion of microscopic hair comparison evidence in the case would likely compel a different verdict. See, e.g., *Commonwealth v. Small*, 647 Pa. 423, 442, 189 A.3d 961, 972 (2018) (setting forth the elements of an after-discovered evidence claim). Irrespective of the microscopic hair comparison evidence, the court concluded, "there was more than sufficient evidence to convict [Appellant] of first-degree murder beyond a reasonable doubt and to similarly sustain the death sentences." *Chmiel*, No. 83-CR-748, *slip op.* at 3, 47.

In this regard, the PCRA court reiterated that Appellant had confessed to Martin Chmiel many "intricate details of the murders and robbery," none of which had been publicly disclosed prior to that time. *Id.* at 47. It was the court's position that Martin "had an ironclad alibi that was confirmed by multiple independent sources"; whereas, Appellant "was unable to identify any person who could account for his whereabouts at the time of the murders." *Id.* The court also quoted passages from its 2003 decision addressing Appellant's challenge to the sufficiency of the evidence, where the court had stressed that Appellant's own testimony was "[p]erhaps the most incriminating evidence against" him, highlighted that that testimony was "riddled with inconsistencies that were

at variance with his previous testimony,” and observed that “the prosecutor thoroughly exposed those contradictions on cross-examination.” *Commonwealth v. Chmiel*, No. 83-CR-748, *slip op.*, 2003 WL 25287182, at *70 (C.P. Lackawanna Aug. 20, 2003).

In his present appeal, Appellant posits that his conviction rested “in large part” upon Mr. Surma’s testimony, who he depicts as being the Commonwealth’s “key witness.” Brief for Appellant at 1-2; *see also id.* at 11 (“The microscopic hair evidence and argument presented in Mr. Chmiel’s case were both the linchpin of the Commonwealth’s prosecution and the grenade to Mr. Chmiel’s defense.”). Based on the record created before the PCRA court, Appellant maintains his position that microscopic hair comparison analysis lacks scientific foundational validity. As such, he argues that any conclusions derived from such analysis are meaningless and therefore inadmissible. Even if such analysis is deemed admissible in the abstract, it is Appellant’s position that the evidence and testimony admitted at his trial overstated the reliability in a way that improperly misled the jury. *See id.* at 12.⁷

This Court has substantial concerns about the appropriate use of microscopic hair comparison analysis in the courtroom, and we take this opportunity to admonish that testifying examiners must acknowledge the inherent limitations and assiduously avoid the forms of over-claiming and overstatement condemned by the FBI, the DOJ, the Innocence Project, and the NADCL.

We decline, however, to use this case as a vehicle to categorically disapprove microscopic hair comparison analysis and bar it from the courtroom. Significantly, this Court has not historically required validation and metrics on the order of those suggested by Appellant to support expert testimony in general, or expert feature-

⁷ Appellant’s position that microscopic hair comparison analysis should be disapproved is supported by the Innocence Project, as *amicus curiae*.

comparison in particular. Indeed, before the product rule commonly associated with DNA evidence was approved in *Commonwealth v. Blasioli*, 552 Pa. 149, 713 A.2d 1117 (1998), this Court permitted the admission of DNA comparison evidence without any accompanying information relating the probability that evidence samples derived from suspects. See *Commonwealth v. Crews*, 536 Pa. 508, 519-20, 640 A.2d 395, 400-01 (1994). The Court had, in fact, prohibited the presentation of statistical evidence and opined that the fact of matching DNA fragments was relevant, although not conclusive, evidence, given that it suggests an association. See *id.* at 523-24, 640 A.2d at 402-03.⁸

Moreover, the *Frye* test invoked by Appellant concerns *novel* scientific evidence, see *supra* note 5, and we are unpersuaded that Appellant has established such novelty relative to the more-than-a-century-old practice of comparing hairs under a microscope. Although the national agencies' and organizations' revelation of abuses are greatly disconcerting, their pervading concern with over-claiming was made manifest in the documentation presented to the PCRA court. Accord *McDonald v. State*, 296 So.3d 382, 384 (Fla. 2020) (*per curiam*) (observing that "the science behind hair comparison analysis has not been discredited"). And we agree with the PCRA court and the Commonwealth that Mr. Surma recognized, before the jury at Appellant's trial, the inherent limitations associated with his own analysis and did not over-claim within the purview of the types of errors subject to the joint investigation of the federal agencies and national organizations.⁹ Finally, Dr. Cueller was the only witness who impugned

⁸ Similarly, as previously noted, given the mixed samples that were presented to the examiners, there was no statistical information attending the mitochondrial DNA evidence presented to the jury at Appellant's trial.

⁹ Appellant's arguments subsume challenges to over-claiming by *the prosecutor*, such as his assertion of a "match" between the evidence samples and Appellant's hair. See N.T. Aug. 19, 2002, at 76-79; N.T., Sept. 6, 2002, at 175-177. However, any variance between the prosecutor's statements and the testimony presented by Mr. Surma was (continued...)

the entire field of microscopic hair comparison analysis, but nothing she said could in any way be considered to be remotely new, and thus, a proper basis for an after-discovered evidence claim.

As importantly, we differ with Appellant's position that Mr. Surma's testimony was the cornerstone of the Commonwealth's case. Appellant himself testified that: he conspired with his brother Martin in planning to burglarize the Lunarios' home, as recently as two-and-one-half weeks before the killings, see N.T., Sept. 4, 2002, at 151-153; he participated in the decision to make sweater-sleeve masks, see *id.* at 141 ("And then we also spoke about making masks -- either he said make masks or I said make masks."); he was present when Martin made two masks, *id.* at 143; he was in sole possession of the masks for several months, see *id.* at 145, 157; and he drove past the Lunarios' home repeatedly while contemplating the burglary, see *id.* at 143-44. Thus, the jury knew that Appellant was predisposed to commit a home-invasion burglary of the victims' residence in a material time frame -- an act which necessarily risks the possibility of violent confrontation -- and Appellant had been in possession of a distinctive instrumentality employed during the actual invasion, robbery, and killings that ensued.

Appellant is correct that the case involves "unique facts," in that the evidence was compelling that it was Appellant or Martin Chmiel or both -- and no one else -- that committed the crimes. Such a sharp narrowing of the focus, however, certainly is not

(...continued)

evident on the record at the time of trial, and therefore, the failure to raise and preserve a challenge is attributable to Appellant's counsel. Indeed, a relevant challenge to counsel's stewardship relative to the prosecutor's remarks was litigated in Appellant's previous post-conviction petition. See *Chmiel*, 612 Pa. at 390-96, 30 A.3d at 1144-48.

Accordingly, we conclude that the prosecutor's statements cannot serve as a predicate for Appellant's present after-discovered evidence claim.

exculpatory; rather, it is highly incriminatory. Moreover, the jury didn't have to believe Martin's alibi to convict Appellant. Instead, it could have accepted that both brothers could well have participated in the home invasion, just as they had planned it according to each of their own admissions. Moreover, since two sweater masks had been made, the fact that Mr. Surma had excluded Martin as a contributor to the evidence samples found on one of the masks did not exculpate him, as he could have worn the other mask.

Additionally, as the PCRA court related, Martin's alibi, while perhaps not being "airtight," was far superior to Appellant's alibi, which depended on several vagaries and had shifted over time. See, e.g., *Chmiel*, No. 83-CR-748, *slip op.* at 18. And it is unlikely that jurors would take Appellant's responsive accusation of a "conspiracy" among the witnesses against him as being favorable to his cause. Indeed, consistent with the PCRA court's assessment, the many inconsistencies and contradictions manifested throughout Appellant's self-serving testimony presented strong evidence of his consciousness of guilt. Accord *McDonald*, 296 So.3d at 384-85 (rejecting a claim for relief based on federal agencies' admission of over-claiming in the field of microscopic hair comparison, where the jury "heard appropriate limiting testimony" from challenged expert and the hair evidence was not the only evidence linking the defendant to an incriminating item).

Ultimately, we agree with the PCRA court that Appellant has failed to demonstrate a reasonable probability that the verdict against him would be different in a trial in which Mr. Surma's testimony would be excluded.

The order of the post-conviction court is affirmed.

Justices Baer, Todd, Donohue, Dougherty and Mundy join the opinion.

Justice Wecht did not participate in the consideration or decision in this case.