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Response of the Quattrone Center for the Fair Administration of Justice at the University of Pennsylvania Law School to the Department of Justice Notice of Public Comment Period on Advancing Forensic Science, Docket No. OLP 160

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SUMMARY

1. The improvement of forensic science and its use in the courtroom is a nonpartisan, noncontroversial need for the entire criminal justice system. DOJ is uniquely positioned to coordinate a process for achieving important improvements for all in the laboratory and in the courtroom. Without DOJ's leadership, much of the necessary work will remain undone, limiting law enforcement initiatives to the detriment of victims of crime and their families.
2. For widespread impact, DOJ must establish an independent, interdisciplinary group of forensic scientists, research scientists from other disciplines, criminal justice professionals of all types, and others to continue the work of the National Commission on Forensic Science and improve the quality and accuracy of forensic evidence and related testimony. This group should be led by an independent academic center supported by funds from the Office of Justice Programs (OJP).
3. To minimize known and ongoing errors in the administration of justice, DOJ should immediately resume the work of the Uniform Language for Testimony and Reports (ULTRs) and Forensic Science Discipline Reviews (FSDRs), and create an external advisory board for both processes comprised of individuals from the categories described above and engaged in a public and transparent process. In the absence of this work, it is likely that DOJ and other forensic science service providers will endure an expensive and damaging process of national case reviews similar to that currently experienced by the FBI microscopic hair analysis group, in which tens of thousands of criminal cases will be called into question due to inaccurate expert testimony.

DISCUSSION

The recent decision of the Department of Justice (DOJ) not to renew the National Commission on Forensic Science (NCFS) and to suspend progress on the Forensic Science Discipline Reviews (FSDRs) and Uniform Language for Testimony and Reports (ULTRs) creates a substantial void in both national and local efforts to improve the quality of forensic science itself, and reduces the quality of forensic science used to adjudicate criminal cases across the United States. DOJ must be an active participant in elevating the quality and accuracy of forensic science, to preserve and enhance its own law enforcement and criminal prosecutions initiatives and to lead the way for state and local law enforcement agencies that lack the resources to fund innovations in this important area.

The federal government has unique influence and access to resources in this space that allow it to conduct the research necessary to improve multiple fields of forensic science and set standards for otherwise

fragmented, understaffed and underfunded state and local crime labs and forensic science departments. Such efforts improve the ability of law enforcement to accurately identify perpetrators of crime and to appropriately prosecute those perpetrators.

This is not a partisan or an adversarial process. While recent discussion in the media regarding the NCFS specifically and the improvement of forensic science in general has tended to frame viewpoints as “pro-law enforcement” or “anti-law enforcement,” in actuality the role of forensic science in criminal justice is not in dispute. Policemen, prosecutors, defense attorneys, judges, and victims of crime all share a common interest in establishing objective facts surrounding a crime, and forensic science promotes that objective through the analysis of physical evidence.

While forensic analysis, when properly and carefully used, can provide objective information, it may not provide certainty and is not perfect. The philosopher Karl Popper phrased the distinction well:

Knowledge consists in the search for truth — the search for objectively true, explanatory theories. It is not the search for certainty. To err is human. All human knowledge is fallible and therefore uncertain. It follows that we must distinguish sharply between truth and certainty. . . . ***To combat the mistake, the error, means therefore to search for objective truth and to do everything possible to discover and eliminate falsehoods. This is the task of scientific activity. Hence we can say: our aim as scientists is objective truth; more truth, more interesting truth, more intelligible truth. We cannot reasonably aim at certainty.***

Since we can never know anything for sure, it is simply not worth searching for certainty; but it is well worth searching for truth; and we do this chiefly by searching for mistakes, so that we can correct them.¹

(Emphasis added.) Thus, to move forward in improving forensic science, *DOJ must seek to enhance our ability to identify objective truths through accurate, defensible, peer-reviewed scientific methods that are appropriately and carefully described both in a laboratory and courtroom setting.* This comment identifies several considerations in achieving that goal.

I. Improving the Quality of Forensic Science Requires Participation from Forensic Scientists, Research Scientists, and Criminal Justice Professionals

One reason the National Commission of Forensic Science (NCFS) was so valuable was that it assembled forensic scientists, research scientists, and criminal justice practitioners to discuss the strengths, weaknesses, and uses of forensic science and related testimony. It is crucial that both parts of the system of forensic science – scientific and legal – be coordinated. Without this coordination, scientists who do not understand the pressures and requirements of courtroom testimony (or the use of their data in plea bargaining) may make inaccurate statements about the probative value of the testimony that non-scientific attorneys, judges, and juries misinterpret or misunderstand. In addition, attorneys may use reports generated by forensic professionals in ways for which they were not designed, harming not just criminal defendants, but also crime victims and their families. Such inaccuracies damage the legitimacy of all parts of the criminal justice system to the detriment of both law enforcement agencies and victims of crime.

It is essential that DOJ convene a group that includes forensic scientists, research scientists, and criminal justice professionals to continue to improve the foundational underpinnings of comparative forensic disciplines (e.g., fingerprints, ballistics, handwriting, etc.). Forensic scientists

¹ Karl Popper, *In Search of a Better World: Lectures and Essays from Thirty Years*, 1996.

should demonstrate how such materials are used in criminal investigations and help to advance the “state of the art.” Research scientists can establish best practices in scientific development, supporting the improvement of comparative disciplines in ways that acknowledge the importance of these methods to law enforcement today, but guard against the risk of inaccurate arrests, charges, or convictions based on human error in these fields. Criminal justice professionals can ensure that the output of the combined scientific community is useful and appropriate for discovery and adjudication of criminal cases in state and federal courts, in compliance with the Constitution, federal, state, and local rules of evidence, and precedential decisions such as Daubert v. Merrill Dow Pharmaceuticals, Inc.

Some have pointed to the National Institute of Standards and Technology’s (NIST) Organization of Scientific Area Committees (OSAC) as a successor to the NCFS. The OSAC is an important gathering of forensic experts, but it is an incomplete response to the need for integrated assessment of the field of forensic science. It lacks both (a) the criminal justice and criminal procedure expertise to ensure accurate testimonial presentation of forensic science information and (b) input from external research scientists who can elevate and validate emerging forensic technologies, equipment and procedures.

An organization that can successfully address the integration of science and the law is vital to future success. By supporting an integrated approach, DOJ can prevent situations from arising such as the wholesale review of thousands of microscopic hair comparison cases currently being performed across our country due to widespread testimonial errors committed by FBI hair microscopy analysts over decades.

II. The DOJ Process Must Uphold Core Values of Independence, Fairness, and Transparency

a. Any DOJ Approach to Improving Forensic Science Must Include External Participants from Outside DOJ and the Federal Government.

The federal government has a true leadership role to play in improving forensic science. The role is partly structural and partly reputational.

The structural role is generated by the scope and scale of the challenge of verifying and validating forensic disciplines. While foundational research and validation studies could in theory be performed by state or local labs, the reality is that no individual state or locality has the scale or the money to conduct the large studies required to truly validate many essential comparative forensic disciplines (e.g., ballistics) vital to law enforcement agencies across the country and around the world. Without DOJ, this vital work simply will not get done – and law enforcement and communities across the country will suffer as a result.

The reputational role has been generated over time by the crime labs operated by DOJ or other federal agencies. The FBI, DEA, and Department of Defense all have displayed a commitment to scientific excellence that has made their labs the gold standard for forensic excellence. It is essential that DOJ continues its commitment to continuous quality improvement, and to disseminating their improvements to smaller state and local laboratories so that the overall quality of forensics in the United States is improved.

While the federal government can lead in the improvement of forensic science, the bulk of their actual implementation will continue to occur outside of the federal context, and therefore the inclusion of outside stakeholders in the group described above is essential to federal success. Any replacement for the NCFS that does not include substantial participation

from ALL scientific and criminal justice stakeholders, including state and local prosecutors, members of the defense bar, federal and state judges, victims' advocates, and others will place DOJ in an echo chamber, diminishing the value of the work that is conducted and virtually assuring that the organization's conclusions fail to address the needs of the system as a whole. Concerns from state and local prosecutors who felt underrepresented in the NCFS should be addressed, while ensuring that state and local defenders and other non-federal government scientists, police officers, researchers, and innocence advocates remain involved in the process. DOJ can facilitate appropriate and useful progress by fostering the competitive "marketplace of ideas" that our democracy prizes so highly, and using it to generate recommendations and identify both areas of consensus and areas where additional data is needed to reach consensus on forensic technologies and their use both in the laboratory and in the courtroom.

b. Any DOJ Approach to Improving Forensic Science Must Be Clearly Unbiased and Neutral.

DOJ's efforts to improve the quality of forensic science and testimony should be led by a nonpartisan individual or group of individuals whose only agenda is the creation of accurate and objective scientific data. Nothing less will satisfy DOJ's mission as a minister of justice representing all citizens – those victimized by crime and those accused of it. The leader(s) of DOJ's advancement of forensic science will need the demonstrated ability to convene groups of like-minded individuals occupying adversarial professional roles, generating consensus documents that will advance the cause of scientific and legal rigor. An academic enterprise leveraging Office of Justice Program (OJP) funding could satisfy these requirements, providing the group with much-needed credibility and support while ensuring a rapt audience for the group's learnings and recommendations.

c. Any DOJ Approach to Improving Forensic Science Must Be Transparent and Open to Public Comment.

The creation of the group, and all of its meetings, discussions, and outputs must be open, public, and transparent. The procedures used by the NCFS in this regard struck an appropriate balance between engaging the public openly and honestly and addressing the need for efficiency and finality in the creation of reports and recommendations.

III. **DOJ Should Utilize and Enhance Quality Improvement Mechanisms Used by Labs and Forensic Science Service Providers.**

It will be important that DOJ engage with current forensic science accreditors, auditors, and other trade associations – both scientific and legal – as it moves forward. These groups interact most directly with state and local crime labs, so coordination with them is essential for optimal impact. Note, however, that current accreditation processes in forensics lag those used in comparable hospital clinical labs, for example, and there is no "standards" organization for forensic science that approximates the Clinical Laboratory Standards Institute (CLSI) or other similar organizations. Thus, part of the work that is needed is to improve the quality improvement infrastructure itself. Again, this will require participation from scientists as well as non-scientific criminal justice professionals.

IV. **DOJ Should Consider a Number of Focus Areas for Future Efforts**

While the NCFS achieved many important steps forward, both supporters and skeptics of the NCFS have recognized that much work remains. Some of this work is already being contemplated by the OSAC, but much more is needed.

a. Improving Testimonial Standards for Comparative Forensic Disciplines

Perhaps the most pressing need for clarity and precision is in the testimonial standards for comparative disciplines. The FBI's inaccurate testimony regarding microscopic hair analysis, in which 26 of 28 FBI examiners were found to have given testimony that overstated the probative value of the evidence in over 95% of a sample of 268 cases tested, has led to a time-consuming, expensive, and embarrassing national review of 21,000 cases in which hair microscopy comparison analysis was improperly used at trial.^{2, 3} While the FBI and DOJ are to be commended for sponsoring a root cause analysis⁴ to understand the contributing factors that allowed these errors to occur over such a long period of time, current evidence suggest that these errors occurred both because analysts lacked sufficient awareness of the judicial process to properly describe their findings with objective accuracy in testimony, and because everyone else involved -- their supervisors, prosecutors managing the cases, defense attorneys, judges, and juries -- all lacked sufficient information to properly question or understand their data and conclusions.

The DOJ, recognizing (a) that other comparative forensic disciplines might be at risk for similar errors and (b) that testimony could and should be crafted to address these concerns going forward, created two internal groups: Forensic Science Discipline Reviews (FSDRs) and Uniform Language for Testimony and Reports (ULTRs).

The FSDRs were designed to expand DOJ's review of forensic testimony by the FBI Laboratory beyond hair matching to widely used techniques such as fingerprint examinations and bullet-tracing, potentially including the review of expert testimony from non-FBI laboratories that do analysis for DOJ.⁵ Topics for the FSDR included:

- How to prioritize disciplines
- Scope of time period
- Sampling particular types of cases
- Consideration of inaccuracies
- Levels of review
- Legal and/or forensic reviewers
- External review processes
- Ensuring community feedback on methodology
- Duty/process to inform parties⁶

² Washington Post, [FBI Admits Flaws in Hair Analysis Over Decades](#), April 18, 2015.

³ National Association of Criminal Defense Lawyers, Microscopic Hair Comparison Review Project, available at <https://www.nacdl.org/haircomparison/>.

⁴ Solicitation FY17-FBI-RFI-03-STCU03 (2017), available at www.fedbixopps.gov.

⁵ Washington Post, [Justice Department Frames Expanded Review of FBI Forensic Testimony](#), March 21, 2016.

⁶ Office of Legal Policy, U.S. Department of Justice, [Presentation of the Forensic Science Discipline Framework to the National Commission on Forensic Science](#), Mar. 21, 2016

The ULTRs, for their part, were designed to create statements approved for use in examination testimony and/or laboratory reports and statements not approved for use in examination testimony and/or laboratory reports in the comparative forensic disciplines.

It is vital that DOJ resume the work of the FSDRs and the ULTRs immediately, in a manner that aligns with the recommendations above for scientific rigor, independence, interdisciplinarity, and transparency. Pausing the activity of these groups will allow testimonial errors to continue to occur in cases across America on a regular basis, and does nothing to prevent future errors. Ultimately, such an approach virtually ensures that each of the forensic disciplines (other than single-source DNA and toxicology) will be forced to repeat the unfortunate experience of the microscopic hair comparison field, undergoing the same retrospective review of tens of thousands of cases nationwide at a date in the future and unwinding hundreds of inaccurate convictions at an operational and compensatory cost of millions of dollars.

b. Other potential areas of focus.

Other potential areas of focus by the DOJ might include (but should not be limited to):

- i. Eliminating lab testing backlogs
- ii. Improving field tests for illegal substances
- iii. Transparency of machine-based algorithms – source code accessibility and commercial transparency
- iv. Database interoperability and baseline requirements – CODIS, AFIS, facial recognition databases, etc. – to aid in quality and utility standards for law enforcement
- v. Chain of custody: testing, reporting, and preservation of forensic information
- vi. Handling and preservation of forensic evidence
- vii. Education/accreditation/certification of forensic science service providers
- viii. Pretrial discovery
- ix. Digital forensics
- x. Comparative discipline case review
- xi. Accelerating information flow from crime scene to lab results, to improve law enforcement investigations
- xii. Human factors
 1. Cognitive biases
 2. Crime lab management
 3. Crime scene investigation
 4. Medicolegal death investigation
 - a. Victim awareness
 - b. Child death
 - c. Officer safety
 - d. Officer-involved shooting
 - e. In-custody death
- xiii. Training and education for law enforcement, lawyers, judges, juries/public
- xiv. Foundational research on comparative disciplines, similar to the FBI's work on latent prints
- xv. Corrective Action lessons learned
 1. Community dissemination to service providers and legal professionals
 2. Notification to victims and defendants when corrective actions require modification to a prior conviction

3. Centralization of Corrective Action forms from all accredited labs

CONCLUSION

The state of forensic science remains in desperate need of improvement. The tens of thousands of forensic science service providers working in crime laboratories and criminal justice agencies in federal, state, and local jurisdictions across the United States deserve our support in identifying the truth about criminal incidents through precise, consistent, and accurate deployment of our nation's best scientific resources.

No one in the criminal justice system disagrees on this objective, and the Department of Justice is well-situated to lead our efforts to improve the foundational science, enhance the testimonial and evidentiary use of the information, and promote the dissemination of best practices and quality improvement initiatives across the country. This is a moral, ethical, scientific, and legal imperative, and we appreciate the willingness of the Department of Justice to consider these weighty issues.

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