Tiffany Roy, JD D-ABC
ForensicAid, LLC
Tiffany.Roy@gmail.com

Dear Commission Members,

My name is Tiffany Roy and I am a forensic DNA expert and lawyer. I am writing to express my grave concern about a series of events that have transpired in the state of New York with regard to forensic DNA evidence being analyzed there. My concerns involve the February 2018 audit of the New York State Police Crime Laboratory by ANAB, the subsequent remedial actions taken by the New York State Police Lab and accepted both by ANAB and the DNA Subcommittee, and my review of documents related to NYSP Lab Case: **17HL-03487**.

The ANAB Audit

I have concerns about the placement of the findings from the February 2018 ANAB audit of the NYSP Lab. There were several findings of concern regarding the DNA Unit in this audit. The audit team from ANAB consisted of Rebecca Dian, David Jackson, Kenneth Jones, Britton Morin, Catherine Nigra and Kacie Waiters. All of these individuals have been identified by ANAB as experts qualified to perform audits in the area of forensic DNA analysis. These auditors work in public crime laboratories, some of them in technical leadership positions and quality management.

Several serious findings were reported in section 8, the validation section of the audit document. These describe some interpretations being performed which were not validated by the lab. The Y-Filer and Globalfiler validations were reviewed and compared to the procedures at the lab. There were several analyses being performed which were not verified through validation. Specifically, the Y-Filer validation was only performed for mixtures up to two contributors, but procedures allowed analysts to interpret higher order mixtures (3+ contributors). This means any Y-Filer cases processed at NYSP which included mixtures of more than two individuals were analyzed using methods that were not verified to be valid or reliable.

Similar findings were reported for the Globalfiler Kit, which is now the standard STR kit used by the laboratory. The audit team assessed the 4:1 ratio used by the laboratory for identifying major contributors and found that the validation did not support the use of this method. Additionally, like Y-Filer, analyses on Globalfiler samples were also being performed which were not fully validated by the lab. Auditors noted there were procedures for interpreting four person mixtures even though the validation only tested mixtures up to three people. Any casework analysis performed on Globalfiler four person mixtures was not validated by the lab. Further, auditors noted no validation or procedure guidance on how to identify a major mixture, which would be required for the use of the restricted CPI. The auditors noted the analysts did not appear to understand the application of the restricted CPI, and they reviewed and cited three cases as objective evidence of nonconformance.

The finding involving the restricted CPI is the most concerning to me because the auditors identified cases which had been affected by this nonconformance. I contrast this audit with the audit performed on the DC Department of Forensic Sciences in April 2015[1] which resulted in the cessation of DNA casework at that lab until the technical nonconformances were addressed. The allegations here are similar to those found at the DC Lab. It is unclear to me why the restricted CPI concerns were not included in section 9 under analytical procedures, specifically 9.6.4. In this except taken from the actual February 2018 audit, the standard reads;

[1] *ANAB Audit of DC Department of Forensic Sciences Surveillance and Remote Surveillance Audit Report, April 24, 2015. https://dfs.dc.gov/page/anab-report-april-2015*

9.6.2	Has the 1996 National Research Council report and/or a court-directed method been used for the statistical interpretation of a DNA profile for a given population and/or hypothesis or relatedness, and are these calculations derived from an established population database(s) appropriate for the calculation?	☒	☐	☐
9.6.3	Does the laboratory have and follow specific documented statistical interpretation guidelines if genetic analyses that are not addressed by Standard 9.6.2 are being performed?	☒	☐	☐
9.6.4	Does the laboratory have and follow documented procedures for mixture interpretation to include the following:	☒	☐	☐

a. Major and minor contributors? Yes ☒ No ☐

b. Inclusions and exclusions? Yes ☒ No ☐

c. Policies for reporting results and statistics? Yes ☒ No ☐

The auditors expressed to the New York State Police that the procedures were insufficient and analysts were confused in interviews. They provided the following feedback to NYSP about the CPI issue, which auditors curiously listed under requirement 4.2.1:

Summary of Nonconforming Work Event(s):

The following was identified as a nonconformance during the accreditation assessment by ANAB that occurred February 5-9, 2018:

Requirement 4.2.1, from ISO/IEC 17025:2005:

Has the laboratory established, implemented, and maintained a management system appropriate to the scope of its activities? Has the lab documented its policies, systems, programs, procedures, and instructions to the extent necessary to assure the quality of the test/calibration results? Is the system's documentation communicated to, understood by, available to, and implemented by appropriate personnel?

NOTE 1 (from ANAB Accreditation Requirement)
When the testing laboratory is part of a larger organization, some management system elements may be contained in organization documents.

NOTE 2 (from ANAB Accreditation Requirement)
"…document … to the extent necessary to assure the quality of test results" includes analysis and data interpretation to arrive at a test result, opinion or interpretation.

Under "Nonconformity Resolution," the following information was provided:

The Biology discipline has not documented interpretation procedures to the extent necessary to provide clear guidance on the proper application of the restricted CPI statistic as it applies to the interpretation of evidentiary DNA profiles.

This clearly describes that the laboratory has not documented interpretation procedures to the extent necessary to provide clear guidance on the proper application of the restricted CPI. I am concerned this was not addressed as a technical or analytical concern in any way. It may also be a management concern, but it is certainly technical. The issues here closely resemble the issues addressed in the audit of the DC lab, including several findings of validation deficiencies and improper case handling. The auditors

further provided NYSP with three cases they identified as being processed incorrectly using restricted CPI as objective evidence.

> **Investigation of Nonconforming Work**:
> Applicable objective evidence listed by the lead assessor included: "interviews; Biology case records."
>
> Review of documentation/procedures included D7.2.1 Interpretation of STR DNA Profiles (GlobalFiler) and D7.8 DNA Mixture Macro. The test records were examined for NYSP laboratory case numbers 17ML-00215, 17HL-01814, and 17HL-03487. In addition, the SWGDAM Interpretation Guidelines for Autosomal STR Typing by Forensic DNA Testing Laboratories effective 01/12/2017 were reviewed.

I am deeply concerned that though these cases were identified to the laboratory through some formal or informal communication, they were not identified in any of ANAB's formal audit documentation. I am also concerned the CPI issue was listed under standard 9 in the DC Audit, but not in the NYSP audit. The DC audit had comparable technical and analytical nonconformances, but the outcomes were very different. The following is an excerpt from the DC audit report on actions *required* by ANAB;

> **Laboratory Actions Required by ANAB:**
>
> The laboratory's DNA section is not in compliance with the FBI QAS or the ISO/IEC 17025 standard. The non-compliance is in two general areas: technical and quality management system. For the technical area, staff were not competent (lack of completed training) and were using inadequate procedures (not fully validated and/or inadequately written). For the quality management system, there was a failure to address these issues before any casework was performed and a failure of not stopping casework when a compliant was received and/or when management including the DNA technical leader became aware of these issues.
>
> DNA case work shall be suspended until all the nonconformities are successfully resolved. A completed assessment of whether everyone understands the new concept and whether all factors of mixture interpretation must be determined. This will include at a minimum the revalidation of test procedures, new interpretation guidelines based on these method validations for DNA mixture cases, creation of new procedures based on the interpretation guidelines, training of staff on the new procedures, competency testing of these new procedures, and authorizations of trained and competent DNA staff.
>
> The laboratory will use its corrective action process to document these activities and to monitor the effectiveness of the new processes placed into service.

The issues described above by Pat Bencivenga in the DC audit could have been written about the NYSP audit. Verbatim. There were technical issues with incomplete validations, as well as a similar issue regarding application of the CPI statistic which affected case work. There was a failure of the quality management system to address these issues before casework was affected, and a failure of not stopping casework when auditors identified these issues to management, including the DNA technical leader.

In my experience dealing with CPI issues are often not discovered by auditors. In Washington DC as well as in Broward County, audit teams were not able to discover the complex and specific issues identified by external independent experts. I contrast those situations with the NYSP audit. In this case, ANAB need only rely on the expertise of their own experts. To their credit, this audit team did identify this complicated issue. However, there appears to breakdown in the system response.

At no point in the formal written corrective actions do NYSP state they will review cases identified by the auditors, or any other cases. They propose clarified wording in their mixture macro tool and additional training for their analysts. It is unclear who will provide that training and whether or not technical leadership and lab management will also undergo additional training. Lead assessor, Nita Bolz, notifies the laboratory that she consulted with the audit team and the proposed remedial measures were deemed acceptable to rectify the nonconformity. It's unclear what discussions took place, but I am

concerned these measures were not afforded due scrutiny by the DNA audit team. The cases identified by the audit team were active cases. The auditors recognized that the restricted CPI was not applied properly in those cases. As such, any corrective action should have formally included a review of those cases to determine the extent to which casework was affected. This is particularly concerning to me given that the cases identified by the audit team had not yet been adjudicated.

I am concerned that because the merger between ASCLD LAB and ANAB resulted in a revised audit document, the auditors were not as familiar with the new document, and as such, misplaced some of these nonconformances. I am concerned the new document created confusion on where to include certain findings. Whatever the reason, I urge this Commission to investigate why these major nonconformances, similar in many respects to the findings in the DC audit, resulted in starkly different responses. I urge this Commission to communicate directly with the DNA auditors themselves to understand the importance of these nonconformances rather than relying on the interpretation of the NYSP Lab. This Commission has the authority to interview each auditor, as well as members of the quality assurance team at NYSP.

I also urge ANAB, Pamela Sale and Laurel Farrell, to investigate why nonconformities that were clearly described to the laboratory as analytical procedure nonconformities were listed in the management documentation section rather than the FBI QAS audit document. I echo the sentiments of the Texas Commission on Forensic Science in their report on *US v. Torney*[2]. Accrediting bodies play an important role in ensuring the quality of the work done in the Nation's Crime Labs. While it's important to evaluate the verification of procedures and validation of technologies with in the labs, when nonconformances are discovered, it's also vitally important to evaluate the impact of those nonconformances on case work if we are to maintain public trust in the profession. This is the reason why auditors review case files during an audit.

<u>The NYSP Response</u>

I have serious concerns regarding the NYSP response to the nonconformities identified by the audit. In general, there are several steps involved in investigating a nonconformity that involve root cause analysis and corrective action that do not appear to have been addressed in this investigation. The recommended steps of a proper root cause analysis are;

- Occurrence of adverse event
- Safety/Quality personnel notified
- Safety/Quality manager assigns a Safety Assessment Score to the event
- Safety/Quality manager charters an interdisciplinary team to investigate
- Gather and Analyze Info related to the adverse event
- Determine root cause and contributing factors
- Determine actions to address root cause
- Determine how to measure outcomes
- Present analysis and proposed actions to leadership
- Implement actions and examine outcomes for effectiveness[3]

I am concerned with the failure to properly assess outcomes of the nonconformances and how the remedial measures will prevent these nonconformances from occurring in the future. What was the effect of these adverse events on the casework? In order to know this, a review of the ***case work*** affected by

[2] Texas Commission on Forensic Science *Final Report on National Medical Services, Inc (NMS) DNA Analysis in Case of U.S. v. Torney* retrieved at http://www.txcourts.gov/media/1441526/final-report-national-medical-services-inc-nms-in-case-of-us-vs-torney-04202018.pdf

[3] *Guidelines for the Use of Root Cause Analysis (RCA) to Reduce Error and Improve Quality in Forensic Science Laboratories* retrieved from https://www.nist.gov/sites/default/files/documents/2016/11/22/guidelines_for_the_use_of_root_cause_analysis_to_reduce_error_and_improve_quality_in_forensic_science_labs.hollway.labmgmt.pdf

these issues should have been performed. Reviews of affected Y-Filer, Globalfiler and restricted CPI case work should have part of the formal corrective action plan. A laboratory system truly interested in quality would want to know how casework was impacted, even if that includes a comprehensive retroactive review.

At the March 21, 2018 Commission meeting, the following exchange took place between Marvin Schechter and Dr. Russell Gettig;

> ***(Unofficially transcribed from video of 3-21-18 Commission meeting)***
>
> ***Starting 0:29:22***
>
> ***MS:*** *What I'm more zeroing in on, Mr. Wickenheiser, is the issue of, did this finding of a lack of understanding or being more specific prompt you to do a review of any past reports of DNA testing and reporting to see if the results were correct in view of these new findings?*
>
> ***RW:*** *Ok, perhaps if I could refer that to Dr. Gettig.*
>
> ***RG:*** *Yeah, one thing I wanted to mention is that--it's the analysts who are being interviewed--and in any of our analysis, the report goes through an extensive review process. It goes through a peer review process, ok, by a peer, another analyst. It goes through what we call a secondary review, usually by a supervisor or somebody who, an analyst who is well versed in the technology and the protocols. And finally, there's an administrative review done on it. So, to my knowledge, nothing improper has gone out in any of our reports because anything that would be improper would be caught on a review and corrected. A lot of times it wasn't necessarily that something was wrong, it's a matter of the actual interpretation, to make sure the interpretation that is being followed by the analyst follows, you know, follows the protocol.*
>
> ***MS:*** *So, so if the interpretation was incorrect based upon, not on the substantive part or the repeatability, but the interpretation was wrong, and the finding of ANAB was that people didn't understand exactly how to interpret these, did the fact of that lack of interpretation--notwithstanding that you had a process in place for catching mistakes beforehand--after this finding, did it cause you to go back and take a look and see if there had been any misinterpretations based upon the lack of understanding of what ANAB was now finding?*
>
> ***RG:*** *Well they had flagged three cases in their review and we went and looked at those cases and there was nothing improper, or incorrect, that went out in the report in those cases. Currently, you know, I'm reviewing all of this particular kind of interpretation. Analysts will come and I'll review it and I haven't found any problems at this point. But I have not looked at any past cases.*
>
> ***MS:*** *You have not?*
>
> ***RG:*** *I have not looked specifically now at any past cases, no. Because I don't have any reason to believe that they are not correct.*
>
> ***Ending at 0:32:14***[4]

I struggle to understand Dr. Gettig's line of reasoning given that the auditors identified a list of cases, presumably for a reason. Why else would the auditors "flag" cases for the lab to review? The fact

[4] Unofficial Transcript of excerpts from March 21, 2018 meeting Video Clips at: https://www.youtube.com/watch?v=S-6dPG3s1Bo&t=0s&list=PLcfRwlrt2Ir0sG_G5XQP9WJ3rPBeIDdxW&index=32

that Dr. Gettig reviewed the three cases and found no issue makes me question *his* understanding of the use of the restricted CPI. Like Dr. Gettig, I have also reviewed data from one of the identified cases. I can conclusively say there were *serious errors* in the identification of a major mixed profile and the application of the restricted CPI calculation. I agree with the ANAB auditors and I disagree with Dr. Gettig. I have concerns that these errors were not identified at the laboratory because many of the analysts, including the technical leadership, have incomplete understanding of when restricted CPI should apply. The problems are the hardest to address when bad information flows from the top down. In that event, errors would not be detected in any technical or administrative review. And further, there appears to be an unresolved discrepancy between Dr. Gettig's assessment of the identified case files and the auditors' assessment. There should have been a detailed discussion between Dr. Gettig and the DNA auditors to determine exactly what the issues were that the auditors saw and why those were problematic. There is no documentation that this exchange ever occurred.

Additionally, I agree with the concerns of the auditors: The method employed for determining a major contributor at NYSP Lab DNA Unit is unreliable and unsupported by good science. See the excerpt from Appendix A authored by the auditors from the February 2018 QAS audit;

> **Non-Compliance:**
> **Globalfiler Validation Study** - The Globalfiler Validation Study included a mixture study, comprised of a series of two- and three-person mixtures in varying ratios. The mixture study determined the ratios at which a single major contributor could be deduced from a mixture. Laboratory policy as defined in the validation study is that a 4:1 ratio will be used to deduce a major contributor. However the validation does not conclusively support this decision.

Not only do I believe the 4:1 ratio method being employed by NYSP is improper in their application, I also believe it is unverified by the data described by the NYSP in their validation summaries.

I reviewed the revised NYSP protocols provided to the DNA Subcommittee in the last meeting on May 11, 2018. Even the new protocols demonstrate a suspect-driven approach to analysis and use of the CPI. The very definition of suspect-driven CPI is that the interpretation varies depending on who is being compared to the data. In version 5 of the *Interpretation of STR DNA Profiles (Globalfiler)* drafted on 4/6/2018, I was alarmed to see the statement;

> The examples below illustrate the possibility of an evidence profile resulting in two different opinions, based on which reference samples are available for comparison.
> ~~In a scenario where two individuals are simultaneously compared against a mixture profile, it may be possible that a locus is inclusionary with respect to one of the included donors and inconclusive with respect to the second included donor. Since the donors are simultaneously compared against the locus and are deemed included and inconclusive, the locus will be deemed inconclusive with respect to the simultaneous inclusion.~~

The protocol, which can be accessed publicly using the link in the footnotes, follows with several pages of suspect-centric interpretation[5]. Evidence DNA profiles are interpreted before comparison to known standards. It's driven by the data alone, determinations as to what loci are suitable for comparison and statistical calculations must be made before the known samples are introduced to the process. The data is set, and the interpretation is set, regardless of what "reference samples are available for comparison."[6] The NYSP indicated to the DNA Subcommittee members that the procedures they reviewed are draft versions, not the final copies. The DNA Subcommittee should request the final working versions of these procedures in their next meeting. It also does not appear that the ANAB auditors reviewed these documents, and these should be provided to ANAB also.

---

[5] http://www.criminaljustice.ny.gov/pio/open-meetings/5-11-2018-dna/18.05.11-%20DNA%20Draft%20Binder_Legal_RED-1of5.pdf

[6] *Evaluation of forensic DNA mixture evidence: protocol for evaluation, interpretation, and statistical calculations using the combined probability of inclusion Bieber et al. BMC Genetics (2016) 17:125 DOI 10.1186/s12863-016-0429-7*

Other references are made to the suspect-centric analysis. In the Urfan Mukhtar memo dated February 28, 2018, guidance is provided on changes to the interpreted loci following a comparison. See;

> d. Following a comparison, an individual may be determined to be included as a donor to a profile, however possesses a genotype at a locus that was not detected. A single instance of this situation is allowed, with the stipulation that the remaining data does not necessitate an exclusion and sound scientific reasoning is documented by the analyst for the missing information (*e.g.*, allelic drop at larger molecular weight loci, visible activity below the analytical threshold) (For additional information, see Joel Sutton/Director Ray Wickenheiser communication on February 27, 2018 on restricted CPI).

It is unclear what the communication with Joel Sutton included, but the instruction here is vague and supports a practice that is not acceptable. It indicates that it is acceptable to drop that locus and proceed with an inclusion and statistical calculation without the "single locus." While the instance described may not necessitate an exclusion, it certainly does not allow for an inclusion/CPI calculation given the determination to drop the locus would be made post comparison. The suspect-centric approach to analysis is widely rejected by the DNA Community because it can result in false inclusions and overstated statistical evidence weights with match or inclusion associations. This practice is expressly prohibited by the SWGDAM interpretation guidelines and is further described as inappropriate in *Evaluation of forensic DNA mixture evidence: protocol for evaluation, interpretation, and statistical calculations using the combined probability of inclusion* by Bieber et al.[7]

I urge the Commissioners to investigate the proposed remedial actions more closely. The Commission, through the DNA Subcommittee, must examine the actual data from the Y-Filer and Globalfiler validation studies instead of relying on the summary prepared by NYSP. A quorum of the DNA Subcommittee has reviewed and approved the NYSP proposed remedial measures, but it is unclear what their review entailed. Without the actual data, I am concerned the DNA Subcommittee was painted an incomplete picture of the validations. Additionally, Dr. Fred Bieber was not present during the DNA Subcommittee meeting where these matters were discussed. He is a foremost expert in the area of mixed DNA profile analysis and the Combined Probability of Inclusion. I respectfully request that he be provided an opportunity to review these documents, in light of my concerns, to determine their validity. It may also be necessary to involve experts outside the Commission who have expertise in addressing these types of systemic lab issues, such as those involved with the review of the Austin, Texas and Washington, DC labs. No matter who performs the function, a review of mixed DNA casework, especially casework involving the application of major and minor profile resolution, mixed major profile resolution and the application of the restricted CPI should be undertaken.

Lab Case: **17HL-03487**

I was contacted in late May regarding a consulting review on case 17HL-03487. I was asked to review a sample of significance in the case, Item 015J-K, which was identified as swabs from the magazine of a 9mm pistol. The sample was a complex mixture with low level data. My interpretation of the profile varied significantly from what was reported by NYSP. Using a binary analysis, I found that Omarrio Morrison was excluded from the major profile. The analyst from the NYSP, Cheryl Strevell, found that Omarrio Morrison could not be excluded, and the probability of selecting an unrelated individual with a profile that would be included in the mixture is 1 in 14.33 million.

The analysis of 015J-K by Ms. Strevell and the NYSP constitutes a false inclusion. I could find no documentation in the case file to support her use of the restricted CPI. Ms. Strevell reported a single major profile matching an unidentified male, not a mixed major profile as would be necessary to employ a

[7] *Evaluation of forensic DNA mixture evidence: protocol for evaluation, interpretation, and statistical calculations using the combined probability of inclusion Bieber et al. BMC Genetics (2016) 17:125 DOI 10.1186/s12863-016-0429-7*

restricted CPI. In the case file, I did find a draft report retained in the case file where Ms. Strevell also initially excluded Mr. Morrison from the interpretable portion of the profile. Sometime between the initial analysis on November 17th 2017 and the final draft on December 8, 2017, Ms. Strevell's own opinion changed from exclusionary to inclusionary on 015J-K based on some interaction with one of her reviewers. This change was made after comparison to the known standards associated with the case and necessitated removal of 4 loci she had previously deemed suitable for comparison. I found no documentation in the case file to explain why 4 exculpatory loci had been removed post comparison, despite recommendations by the National Commission on Forensic Science[8] and legal requirements under *Brady v. Maryland*[9] to maintain this documentation in the case file and provide it to defense counsel for review. Removal of loci post comparison indicates a biased, suspect-centric approach. Based on the Mukhtar memo, this practice would not be allowed at their laboratory today.

The report for case 17HL-03487 was issued on December 8, 2017 and the case file was "flagged" by the DNA auditors from ANAB in February 2018. In May 2018, three months after it had been identified as problematic by the ANAB auditors, the DNA evidence from Lab Case: 17HL-03487 was admitted over objection into evidence at the trial of Omarrio Morrison.

I respectfully request to have my concerns added to the agenda for the June 15, 2018 Commission meeting. It lies well within the authority of the Commission to investigate fully all of the claims contained in this letter. I implore this Commission, ANAB and any other body with the authority to do so, to formally investigate the concerns that have been described in this letter using the full breadth of their resources. The systems in place to identify problems with forensic science in the state of New York must act to prevent further introduction of bad science into it's courtrooms and to preserve public trust in its justice system. Certainly false inclusions, suspect-centric interpretation, overstated evidence weights and incorrect case evidence analysis is not something the Commission condones.

Sincerely,

Tiffany A. Roy, JD D-ABC

[8] National Commission on Forensic Science *Views of the Commission Documentation, Case Record and Report Contents* retrieved from https://www.justice.gov/archives/ncfs/file/818191/download

[9] Brady v. Maryland 373 u.s. 83