New York City Council
Committee on Justice System

Hearing re: The Technology Gap Between Public Defenders and DAs
January 29, 2020
Written Testimony of The Bronx Defenders
By Olivia Scheck, Forensic Practice Group, Criminal Defense Practice

Chairman Lanceman, my name is Olivia Scheck, and I am an attorney in the Criminal Defense Practice of The Bronx Defenders and a member of our office's Forensic Practice Group.

The Bronx Defenders ("BxD") is a public defender non-profit that is radically transforming how low-income people in the Bronx are represented in the legal system, and, in doing so, is transforming the system itself. Our staff of over 350 includes interdisciplinary teams made up of criminal, civil, immigration, and family defense attorneys, as well as social workers, benefits specialists, legal advocates, parent advocates, investigators, and team administrators, who collaborate to provide holistic advocacy to address the causes and consequences of legal system involvement. Through this integrated team-based structure, we have pioneered a groundbreaking, nationally-recognized model of representation called holistic defense that achieves better outcomes for our clients. Each year, we defend more than 20,000 low-income Bronx residents in criminal, civil, child welfare, and immigration cases, and reach thousands more through our community intake, youth mentoring, and outreach programs. Through impact litigation, policy advocacy, and community organizing, we push for systemic reform at the local, state, and national level. We take what we learn from the clients and communities that we serve and launch innovative initiatives designed to bring about real and lasting change.

I.   Introduction

When it comes to forensic science, there is a huge gap in resources and information between public defender offices and prosecutors in this city. That gap leads to an imbalance that undermines our ability to adequately represent clients. Moreover, people charged with crimes who have the means to hire experts, utilize technology, and run tests receive better outcomes than those who do not. This is not justice. The Council should take action to provide public defenders with increased access to information and resources so that they can adequately represent impoverished New Yorkers facing criminal charges.

At BxD, we have established a Forensic Practice Group in order to more effectively confront and utilize forensic science on behalf of our clients. The Forensic Practice Group ("FPG") is a group of attorneys, each of whom is responsible for conducting trainings and consulting with others in the office on a particular area of forensic science. The specialty areas within FPG are: digital forensics, DNA, pattern evidence (e.g. ballistics and fingerprints), toxicology, false confessions and eyewitness identification. As members of FPG, our role is often to assist attorneys in identifying forensic issues and then connect them to actual scientific experts. However, retaining experts (for consultation and/or live testimony) is an extraordinarily expensive undertaking for which we do not always have adequate funding.

In addition to the expense associated with hiring experts, there are other challenges that make it difficult to effectively confront and utilize scientific evidence. In some cases, neither we, nor the available experts, have access to the technologies that are being used by law enforcement. (This is true in the context of facial recognition technology, DNA analysis, and breath alcohol testing, all of which are discussed below.) Indeed, in the digital context, we do not even have a full understanding of what technologies are being used by law enforcement.

In order to ensure that the adversarial system functions properly, we are asking the City Council to do the following:

- ensure greater transparency among police and prosecutors regarding what technologies are in use and the methodologies being employed;
- provide additional funding for defender organizations to be able to hire experts and, where necessary, purchase the technologies that are being used, and;
- in cases where it is not possible for defender organizations or independent experts to purchase the technology ourselves (for example because the manufacturers refuse to sell them to us), require law enforcement to allow independent experts access.

The widening gulf between law enforcement and defenders in access to forensic technology undermines our ability to adequately represent our clients. In what follows, we identify topics of concern in the four FPG areas where access to forensic technology is most at issue: digital forensics, DNA, pattern evidence, and toxicology.

II.   Digital Forensics

In anticipation of the new discovery reforms, the Mayor's Office of Criminal Justice ("MOCJ") provided our office with some additional funding for digital forensics. This critical infusion of resources allowed us to gain access to three computer programs, and will also allow us to hire a digital analyst who will have the skills and the time to run these and other programs as needed. These improvements, which are still being implemented, will make an enormous difference in our ability to adequately represent clients.

However, there are many digital forensic technologies being used by the NYPD and the Bronx DA, that we know little about and are unable to adequately confront, such as facial recognition technology. The City Council should provide the funding for us to license these technologies

ourselves and hire experts to operate them. In addition, the City Council should take action to ensure greater transparency about what technologies are being used by police and prosecutors, as well as the protocols they are employing, and to provide an opportunity for examination of these technologies by independent experts.

A.   **Our recent digital acquisitions demonstrate how important closing the gap can be to our clients**

To understand the importance of defenders being able to access forensic technologies, it is helpful to consider the case of Chris Shaw[1], who was arrested for robbery. Mr. Shaw immediately told his attorney that he was innocent and could not have committed the crime because he was playing basketball at the time it occurred. He was able to show his attorney his location on his phone, and the attorney took screenshots from the phone to submit to the grand jury. However the Assistant District Attorney assigned to the case refused to introduce the screenshots to the grand jury without some way of authenticating them. It might have been possible to hire an expert to extract the data and present the evidence, but it could not have been done within the timeframe required to have that evidence presented to the grand jury. As a result Mr. Shaw was unable to use the cell phone data to demonstrate his innocence.

Thanks to funding provided by the City, we will soon be in a position to ensure that this situation never happens to one of our clients again. Using one of the programs that we were recently funded to purchase, we will be able to download the information contained on our clients' phones, including their location information. Our digital analyst will then be able to serve as a witness to authenticate the data in court. This is just one way in which having these new resources will allow us to better represent our clients.

In addition to the program mentioned above, which will allow us to preserve and analyze all of the information contained on our clients' phones, we have also been able to license two other programs that will help us serve our clients. One of the programs will allow us to instantly analyze call data records. The third program will allow us to organize and analyze social media records. Having access to theses programs is an extremely important step towards leveling the playing field.

B.   **Still, more transparency and resources are needed**

While acquiring these programs will greatly improve the quality of our advocacy, there are many digital forensic tools that we do not have access to and, potentially, don't even know exist. For example, the NYPD is increasingly using facial recognition software in its investigations. Without access to the software, we are unable to fully probe its reliability or access information that could be exculpatory for our clients. For example, we know that NYPD's facial recognition software can produce hundreds of possible matches, called a "candidate list," for any given input photo and also that it assigns a "confidence ratio" to each of those results.[2] In a case where our

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[1] Pseudonyms used throughout to protect client confidentiality.

[2] For information on facial recognition technologies, see The Georgetown Law Center on Privacy and Technology website: https://www.law.georgetown.edu/privacy-technology-center/

client has been wrongly accused, these candidate lists could contain the identity of the actual perpetrator. Yet we have never received a candidate list as part of discovery, and we would have no way of identifying these alternate suspects since we do not have access to the facial recognition technology used by the NYPD.

In order to effectively represent our clients, we need to be able to understand and test law enforcement's technology. This point is well-made by the example of Stingray technology, which imitates cell towers in order to intercept cell phone users' location information. Defense attorneys did not know that this technology existed until it was discovered by a hacker in California.[3] Similarly in New York, the NYPD used stingrays for years in secret until it was forced to disclose their use following litigation. Once the use of Stingrays became known, defense attorneys were able to challenge it as violating the Fourth Amendment. The courts agreed and concluded that law enforcement must obtain a warrant before employing Stingrays to collect people's information. As this example demonstrates, defense attorneys cannot challenge or be prepared to confront technologies that we do not know exist.

On this point, BxD reiterates its support for the POST Act, which would require the NYPD to disclose to the public information about the surveillance technologies it uses or seeks to acquire. If we do not compel law enforcement to disclose the technologies used against our clients and fund defenders adequately so that, where applicable, we can acquire licenses and hire experts to explore these technologies, people accused of crimes will simply not be in a position to confront the evidence against them.

III.   DNA

We face an unprecedented expansion of the use of DNA evidence in our clients' cases. Police and prosecutors in the Bronx now test DNA in more cases than ever before. Instruments used for DNA testing have become far more sensitive in recent years, allowing for analysis of smaller and smaller quantities of DNA. In order to keep apace with technological and operational demands in cases involving DNA evidence, we need additional resources, including **access to STRmix**, the software that is used by the Office of the Chief Medical Examiner ("OCME") to analyze DNA samples, and a staff member who can operate it.

A.   Analyzing DNA mixtures is a complex task that relies on variable assumptions

Currently, much of the DNA evidence coming from the OCME involves poor quality mixtures of DNA from multiple contributors. For example, the DNA on a firearm may be from multiple different people whose DNA was deposited at different times either when various people touched the gun or when it was transferred to the gun through some other mechanism. Nevertheless, our clients face lengthy prison sentences based on OCME's analysis of this DNA.

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[3] How a Hacker Proved Cops Used Secret Government Phone tracker to Find Him, Cyrus Farivar, Politico.com: https://www.politico.com/magazine/story/2018/06/03/cyrus-farivar-book-excerpt-stingray-218588

Analyzing these mixtures in order to determine whose DNA may be present is an extremely complicated task. Indeed, analysts at crime labs were unable to analyze samples like this until a few years ago. Now, OCME uses a proprietary software known as STRmix, which was developed and marketed by a company from New Zealand to produce a statistic that is supposed to inform the court about how strongly the evidence shows whether or not a person's DNA is present in one of these complex mixtures. The software relies on advanced concepts in computer science, mathematics, statistics, biology and probability to estimate how strong the support is for the proposition that a person's DNA is present or not.

This is far from a settled area of science. Notably, one federal court recently excluded STRmix DNA results from a criminal trial because of the degree of uncertainty in the analysis performed by the government.[4] A New York State court excluded STRmix results in a case where the results appeared inconsistent with the results from a different software that was designed to perform the same analysis.

Experts in the field agree there is no "ground truth" or correct answer when it comes to determining how likely it is that a person contributed to a mixture of DNA. There is simply too much uncertainty in the complex analyses performed by the computer. STRmix and other similar systems can arrive at different results. Nonetheless, the statistic generated by STRmix is presented in court cloaked in the aura of infallibility associated with scientific testing.

B. **To effectively represent clients in cases where DNA evidence is at issue, we need a copy of STRmix and a person who can operate it**

In order to probe the reliability of the results offered by the prosecution's experts, defense attorneys need access to the same software that is used by the OCME. This is especially important since the experts who are available to consult with defense attorneys also do not have access to STRmix. Without this access, the defense cannot investigate DNA results to see if OCME's statistics should be challenged in court, or if different statistics — including statistics excluding a client — should be presented to a jury. Public defenders also need staff with training on STRmix and other software for DNA analysis, so that we can operate the technology ourselves, without always incurring the expense of hiring an expert.[5]

IV. **Pattern Evidence**

In the field of pattern evidence, which includes ballistics and fingerprints, the biggest challenge we face is being able to afford sufficient access to expert witnesses who can testify about the technology and methods that are being used by law enforcement. While technically the burden is placed on the prosecution to establish the reliability of the forensic evidence they are seeking to introduce in court, defense attorneys must work with experts to understand whether forensic techniques are reliable and then be able to challenge their introduction. Hiring experts in order to properly understand and litigate the reliability of a forensic discipline can cost tens of

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[4] United States v. Gissantaner, No. 1:17-CR-130, 2019 WL 5205464 (W.D. Mich. Oct. 16, 2019)

[5] This is approach has been successfully employed at the Sacramento County public defender's office, where they have a staff member with a science masters degree available to consult on DNA cases.

thousands of dollars. When we have sufficient resources to effectively challenge new types of forensic evidence, we create precedent others can rely on. However, when these issues are not properly litigated, it can open the floodgates to unreliable scientific evidence.

A recent Frye hearing jointly litigated by BxD and the Legal Aid Society is instructive. The first Frye hearing of its kind on the admissibility of firearms toolmarking identification evidence, it was imperative to litigate the hearing robustly. BxD and LAS were able to share the costs of the experts (since we represented co-defendants), and it was still only feasible because better funded public defender organizations — particularly, The Public Defender Service for the District of Columbia — had already paid for the experts to review all the relevant materials, dissect the studies, and prepare witnesses to testify. Indeed, even while sharing expert fees, it was only feasible to utilize these experts and properly litigate the admissibility of the forensic evidence properly because another organization happened to have already worked with the experts to prepare them in a different matter. Fortunately, as a result of having access to these resources, we were able to demonstrate to the court that the evidence the prosecution sought to introduce was not, in fact, generally accepted, and the court agreed that it could not be introduced at trial.

In order to ensure that we are in a position to properly litigate these issues going forward, we are asking the City Council to provide additional funding for us to be able to hire experts as these issues with new and untested technologies arise.

V.   Toxicology

There is perhaps no area of criminal defense where public defenders are more hamstrung in their ability to meaningfully scrutinize scientific evidence than in the context of toxicology — in particular the use of breath alcohol test results in driving while intoxicated ("DWI") cases. We need the help of the City Council to obtain access to the technologies that are currently being used by the NYPD so that we can adequately assess their reliability.

A.   The technology gap is especially bad in Driving While Intoxicated cases

To prosecute DWI cases, DAs generally rely on the results of police-administered breath-alcohol tests. However, the manufacturers of breath alcohol testing devices, with the help of law enforcement, work hard to ensure that these devices never make it into the hands of independent experts. The result is that defense attorneys (particularly public defenders) often have no way to assess the reliability of the results that are used to convict their clients.

In November 2019, *The New York Times* published an exposé on the unreliability of commonly used breath-testing instruments and the challenges that defenders have faced in attempting to have them examined by independent experts.[6] The *Times* concluded that these devices "generate skewed results with alarming frequency." The report also recounted several instances in which independent experts have managed to gain access to breath-testing devices and uncovered serious problems. For example, the article notes that in 2007, the New Jersey Supreme Court

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[6] These Machines Can Put You in Jail. Don't Trust Them., Stacy Cowley and Jessica Silver-Greenberg, *The New York Times*: https://www.nytimes.com/2019/11/03/business/drunk-driving-breathalyzer.html

ordered that defense experts be permitted to examine the Alcotest 7110, the breath test that was used by law enforcement at the time. The experts reported finding "thousands of programming errors" and the court ended up mandating "modifications" to the machine's software in order for its results to be admissible as evidence.[7] Similarly, in 2016, a Massachusetts court ordered law enforcement to turn over two of their Alcotest 9510 machines to defense experts for examination. The result of that investigation, which revealed glitches in the machine's software as well as problems with the state's maintenance procedures, was the invalidation of more than two years worth of test results.[8] As these examples make clear, breath-testing devices are not infallible and independent examination of the machines' inner-workings is necessary to ensure their reliability.

<p style="text-align:center">**B.**   **We need the City Council's help to be able to adequately assess results from the NYPD's new DWI breath testing device, the Intoxilyzer 9000**</p>

In late 2017/early 2018, the NYPD transitioned to using a new device for its stationhouse breath testing: the Intoxilyzer 9000, made by a company called CMI. Whereas the previous model used by the NYPD, the Intoxilyzer 5000EN, had been studied by independent experts, who published studies on potential sources of error, the 9000 has been shielded from this type of scrutiny. To our knowledge, CMI has not allowed any independent experts (who could be hired by defense attorneys) to examine the machine, attend their trainings on how it works, or review its internal programming. It appears there is only one independent expert who has been able to examine the machine and he did so over the course of only 10 hours at an undisclosed location under clandestine circumstances.[9]

This dearth of experts who have interacted with the Intoxilyzer 9000 makes it impossible for us as public defenders to adequately challenge the reliability of the results that are offered against our clients. For example, our office went to trial last year on a case where our client appeared on video to be completely sober, but registered a .10 BAC on the Intoxilyzer 9000. As it turned out, this client worked everyday with a chemical that had been shown to artificially inflate test results on a previous model of the Intoxilyzer. At the trial, we sought to introduce expert testimony regarding the possibility that exposure to this chemical had tainted the result; however, our expert was precluded from testifying on the grounds that he had never actually interacted with an Intoxilyzer 9000 and could not, therefore, testify about whether the previously-observed phenomenon was likely to persist in the 9000. The jury convicted our client on the charge that he had been driving with a blood alcohol concentration of .08 or more, based on the Intoxilyzer 9000 test result, which we were unable to controvert.

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[7] State of New Jersey v. Chun, 943 A.2d 114 (N.J. 2008):
https://www.courtlistener.com/opinion/1989907/state-v-chun/

[8] *Commonwealth of Massachusetts v. Evando Ananias, et al*, 2017 WL 11473590 (Superior Court of Massachusetts, Department of the Trial Court, Middlesex County, February 16, 2017):
https://int.nyt.com/data/documenthelper/1924-2017-commonwealth-v-ananias-decision/213c49d9b3baeabfb77c/optimized/full.pdf#page=1

[9] Performance Characteristics of the Intoxilyzer 9000, Jan Semenoff, *Counterpoint Journal*:
https://www.counterpoint-journal.com/uploads/7/6/8/8/76880517/the_intoxilyzer_9000_iafs_2017.pdf

Our inability to gain access to the Intoxilyzer 9000 on behalf of independent experts prevents us from effectively representing clients and creates a high likelihood that innocent people will be wrongly convicted. To address this injustice, we are asking the City Council to facilitate access on behalf of independent experts to one or more of the Intoxilyzer 9000 devices that are currently in use by the NYPD. Additionally, we are asking that you require the NYPD to permit independent experts to attend their trainings on how to operate and maintain the machines.

VI. Conclusion

There is both the need and the potential for the City Council to alleviate the technology gap between public defenders and law enforcement. This can be accomplished in part through additional funding, which would allow public defenders to retain experts, license technologies (such as facial recognition technology and STRmix) and hire staff who could help us operate them. The City Council could also provide crucial assistance by requiring greater transparency from law enforcement. This means disclosing what technologies are being used, providing information about the protocols that are being followed, instructing criminalists to cooperate in providing information to defense attorneys, and, where necessary, permitting independent experts to examine technologies that are not otherwise accessible (e.g. in the case of the Intoxilyzer 9000). Only by closing this technology gap can the Council ensure that public defenders are prepared to uphold our adversarial function and effectively defend our clients.