# Office of the Inspector General

Commonwealth of Massachusetts

**Gregory W. Sullivan**
Inspector General

# Review of the DNA Testing Operations and the Associated Management Structure of the Executive Office of Public Safety and Security's Forensic Services Group

Special Report of the Office of the Inspector General

January 2009

## Massachusetts Office of the Inspector General

| Address: | Phone: | Internet and Fax: |
| --- | --- | --- |
| Room 1311 | (617) 727-9140 | www.mass.gov/ig |
| John McCormack State Office Building | (617) 523-1205 (MCPPO Program) | (617) 723-2334 (fax) |
| One Ashburton Place | (800) 322-1323 (confidential 24-hour hotline) | |
| Boston, MA 02108 | | |



Publication No. CR-IGO-09028-02, approved by Ellen Bickelman, State Purchasing Agent.

Printed on recycled paper.

# *Review of the DNA Testing Operations and the Associated Management Structure of the Executive Office of Public Safety and Security's Forensic Services Group*

## Introduction

The following is a report by the Massachusetts Office of the Inspector General of the DNA Testing Operations and the Associated Management Structure of the Massachusetts State Police Forensic Services Group (Massachusetts State Police Crime Laboratory). Following the requirements for receiving grant money from the National Institute for Justice, the Forensic Services Group named the Massachusetts Office of the Inspector General as the agency with the authority to investigate if there are allegations of misconduct arising from actions of Laboratory personnel.[1] Such allegations were reported in a series of newspaper articles in 2007 regarding problems related to management and functionality of the Combined DNA Index System (CODIS) DNA database and other Laboratory responsibilities related to the reporting and use of CODIS derived data. This report summarizes the observations made during the course of this office's investigation and makes recommendations related to these observations.

The Office of the Inspector General undertook this project in consultation with Dr. Robin Cotton. Dr. Cotton is a former Laboratory Director and DNA Technical Leader for Orchid Cellmark in Germantown, MD. She presently is Boston University School of Medicine's Program Director for Biomedical Forensic Sciences. Additionally, she has served as a Volunteer Inspector and an elected member of the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) board of directors. Appendix A, attached to the report, contains Dr. Cotton's Curriculum Vitae. The office and Dr. Cotton collaborated on jointly interviewing Laboratory staff and reviewing documents in this matter. We relied on Dr. Cotton to identify the areas of strength and weakness in the functions of the Massachusetts State Police Crime

[1] The Office of the Inspector General recently learned that the FY 2007 and FY 2008 Coverdell applications indicate that the State Auditor has been designated as the external and independent entity to conduct Coverdell investigations under 42 USC 3797(k)94).

Laboratory. Her expertise and extensive experience in the realm of forensic laboratory practice and management guided our review.

The Forensic Services Group is organized under the management of the Massachusetts State Police and the Laboratory Director. The State Police Crime Laboratory is organizationally within the Department of Public Safety and Security.

In response to the CODIS allegations, the Executive Office of Public Safety and Security commissioned an assessment of the Laboratory by Vance International, Inc. (Vance). In June, 2007, following the assessment, Vance's report, (the Vance Report), was released. While the Vance Report makes some excellent recommendations, its scope was relatively narrow with respect to a number of issues and it left unanswered several key questions. Appendix B, attached to this report is specifically devoted to comments on the Vance Report. This evaluation of the Vance Report was made prior to beginning the investigation reported in this document.

**Command Organization**

Our review has identified three major issues of concern related to the organizational structure of the Laboratory and its position within the Massachusetts State Police and the Department of Public Safety. These three issues arise from or are related in part to the Laboratory organization and placement with the parent organization, as follows:

> **Issue 1)** The Laboratory falls under the command structure of the Massachusetts State Police. The Colonel of the State Police appoints a Major to be in charge of the Laboratory. Since 2002, three different Massachusetts State Police Majors have served in this position. The Laboratory Director reports directly to the Major. The office interviewed the current Major and his predecessor. While both individuals demonstrated an obvious high degree of professionalism, neither had a background in science. Without such a background, the individuals are inherently hindered in their capacity to administer the Laboratory. There is no program or plan in place for the Major to gain the foundation of scientific knowledge necessary to oversee the effective development of long-term solutions to Laboratory problems, to develop sufficient understanding of issues,

to actively participate or provide effective guidance to the Laboratory Director, and to develop working relationships with other Laboratory employees. The short duration of the Majors' tenure in this position has recently been less than the full term (5 years) of a Laboratory accreditation cycle. It would be more advantageous if the service of the Major were longer.

**Issue 2)** The Laboratory employs both police officers and civilians as testifying analysts. Considerable salary discrepancies exist between these two groups.

**Issue 3)** Most management positions within the Laboratory are part of the same collective bargaining unit as non-management employees. This results in situations that represent a conflict of interest between management responsibilities and union affiliation. This issue will be discussed later in the report under Quality Assurance.

The Laboratory currently operates under the direction of the Acting Laboratory Director. Until October 24, 2008, the Acting Laboratory Director was assisted by the Acting Lead Supervisor. These two positions are currently the only two non-union employees in the group that manages Forensic Biology. Approximately seven DNA Supervisors and the DNA Technical Leader report to the Lead Supervisor position. Individual chemists engaged in DNA casework analysis or CODIS-related work report to one of seven DNA Supervisors or the DNA Supervisor-CODIS. All of these supervisory and chemist positions are currently filled with members of the same collective bargaining unit. Two other units related to DNA processing and analysis do not fall under the management of the Lead Supervisor. These are the CODIS Collection and Investigative Unit (CCIU) and the Case Management Unit (CMU). Also reporting to the Acting Laboratory Director is the Quality Assurance Manager who is responsible for the Forensic Chemistry and Forensic Biology (DNA) sections. This is also a union position.

The Acting Laboratory Director reports to the Forensic Services Group Deputy Division Commander. The Commander is an individual with the rank of Major in the Massachusetts State Police. This position, Forensic Services Group-Deputy Division Commander, reports to the Investigative Services Division Commander who in turn

reports to the Colonel of the Massachusetts State Police. The current Commander has served in this position since January, 2008. His predecessor had served for approximately one and one-half years and the Commander before that had served for approximately four years. Given that this position is held by high-ranking officers within the Massachusetts State Police command structure, it is not surprising that the persons filling this position have substantial experience and training in law enforcement but little, if any, experience in forensic science or in quality assurance of laboratory operations. The relatively rapid rotation of Majors through this position inherently limits the Majors' capacity, notwithstanding their professional competency. There is little if any motivation to find long term solutions to Laboratory problems, develop sufficient understanding of issues to actively participate or provide effective guidance to the Laboratory Director, or develop any working relationships with other Laboratory employees. The short term of the position is less than a Laboratory accreditation cycle.

We strongly recommend that the Department of Public Safety and Security and the Massachusetts State Police make management changes to stabilize the command structure directly above the Laboratory Director such that the Deputy Division Commander's tenure covers, at a minimum, a five-year accreditation cycle. The management above the Laboratory Director would thus have greater motivation to take an active and informed role in the successful re-accreditation of the Laboratory as well as active representation in matters of capital funding, employee compensation and space allocation. Optimally, the position would be filled by an individual with a forensic science background.

In looking at the organizational position of the Laboratory the question arises: Why is the Laboratory that provides forensic services for almost all of Massachusetts within the command structure of the Massachusetts State Police while the Office of the State Medical Examiner is independent of the Massachusetts State Police reporting directly to the Undersecretary of Public Safety? The question of "best fit" position of the Laboratory within the larger structure of the Executive Office of Public Safety cannot be directly answered by this report. However, there are several observations we made and information we learned in interviews which are worth considering.

Positioning the Laboratory within the Massachusetts State Police creates greater vulnerability to ethical issues arising between law enforcement officers investigating cases and Laboratory analysts processing forensic evidence. Simplistically, officers may have a strong opinion related to the guilt of a suspect and may relay information that could result in bias of the analyst toward a particular interpretation of data obtained from an evidence sample. While some data is straight forward, other data can be ambiguous enough to create the potential that analyst bias could affect data interpretation. Independent interpretation is critical to avoid bias. Bias can be purposeful or unintentional. By virtue of their current lines of administrative authority, the analysts at the Laboratory are today not well insulated from the theories of an investigator or district attorney in comparison to analysts in a more independent laboratory framework.

Quality assurance personnel and Laboratory supervisors must be alert to the possibility of bias as they review casework. While the recent crisis revolved around CODIS, a major area of vulnerability of any Laboratory occurs every time reports are signed and court trial testimony is provided by a Laboratory chemist or other employee. In each instance, the individual testifying chemist is the sole representative of the Laboratory, the Massachusetts State Police and the Department of Public Safety and Security. The reputation and perception of these agencies can be adversely or positively affected by the analyst's work and testimony. We recommend that the Laboratory develop policies and procedures for avoiding access to information that can result in bias. These policies should include a procedure for independent review of complicated inclusions, exclusions and certain inconclusive results.

In interviews, certain employees indicated that the Laboratory benefits from its current organizational placement under the umbrella of the Massachusetts State Police because this affiliation has helped to stabilize the Laboratory and improve funding. It is critically important that adequate funding be provided for salaries, capital equipment, space and information technology in order to keep up with the level of current and future demand for analytical services regardless of how the Laboratory is situated organizationally. Appropriate transition to automated laboratory procedures, while

expensive in the short term, offers the potential of saving money in the long term by allowing chemists to work more efficiently. However, the value to the public is realized only when such automated procedures are subjected to safeguards including competent oversight and quality assurance.

Given that both the Forensic Services Group and the Office of the State Medical Examiner provide services to the same client group, including the Massachusetts State Police, the Massachusetts District Attorneys, defense attorneys, defendants, and the courts, and given further that both agencies fall under the authority the Executive Office of Public Safety and Security, it would seem to make sense for the two agencies to be established as parallel organizations for administrative purposes.

Given that there are considerable reasons to reposition the Laboratory, including efficiency and consistency of administration, we recommend that the Executive Branch consider reforming the Forensic Services Group into an organizational structure with a direct report to the Undersecretary Forensic Science and Technology. There are several successful crime laboratory systems in the United States that exist independently of the State Police and can provide alternative structural models. However, if the Executive Branch decides not to reposition the Laboratory within the Department of Public Safety and Security then there are also successful laboratory systems within state police organizations in other states that can provide alternate organizational models. Among these are laboratory systems in the State of Florida and the State of New York. Regardless of the model chosen, the aforementioned changes intended to stabilize the command structure above the Laboratory Director are imperative. We recommend that a study group be formed that would create procedures to protect the independence of analysts and to minimize any potential adverse pressure from any of the agencies served by the Forensic Services Group. The study group should consist of experienced analysts, supervisors, law enforcement officials and representatives of the defense bar.

**Acting Laboratory Director and the Management Team**

The Acting Laboratory Directory was appointed in September 2007. The Acting Laboratory Director began her tenure at a difficult time and her leadership has resulted in both positive and negative outcomes. She manages all sections of the Laboratory and therefore directs both civilian and State Police employees. Thus, all forensic disciplines are currently managed under "one roof" as recommended by the Vance Report. However, employee union affiliations, salary inequities and other factors continue to make Laboratory management problematical.

Substantial differences exist in compensation levels of law enforcement and civilian employees. The Acting Laboratory Director indicated that adjustments in compensation for civilian staff have been initiated but have not received final approval. Discrepancies between salary levels of civilian and law enforcement personnel for individuals performing similar duties with similar responsibilities are a continuing source of conflict and inequity. An adverse effect of the low-salary levels of civilian analysts is that the Laboratory incurs substantial educational expenses for newly hired analysts. Often times, once trained, these analysts are lured away by better paying out-of-state laboratories.

Additionally, there are some specific educational requirements for analysts reporting and testifying on DNA case results. General specifications for educational requirements for all disciplines are found in the ASCLD/LAB Manuals and specific requirements for DNA analysts are found in the Quality Assurance Standards for Forensic DNA Testing Laboratories (FBI Standards). We strongly recommend that inequities in compensation be eliminated. Salary parity would improve employee retention and employee morale. The increase in salary costs would be offset to some degree by reduced training costs.

Under the Acting Laboratory Director's direction casework production has increased and tracking has improved for incoming cases, cases in backlog, and cases in long term storage. Information about the backlog has been disseminated to District Attorneys. This information is critical to making accurate predictions for staffing and budgetary purposes. Cases are also tracked by case type and submitting agency. The number of

cases analyzed and the number of technical reviews done by the staff has increased. (The FBI Standards require a technical review for each DNA case report regardless of the type of result obtained.) ASCLD/LAB requires that case file documentation contain sufficient detail that a technical reviewer can determine that the conclusions are sound and all data needed to support the conclusions are present. The Acting Laboratory Director also reorganized the flow and delegation of CODIS related work into two units with defined responsibilities. These two units will be discussed later in the report. Her emphasis on increased production and improved organization of the Laboratory has been beneficial.

On the less positive side, the Acting Laboratory Director does not have two characteristics that the Vance Report identified as essential. Specifically, before being appointed as the acting Laboratory Director she neither had significant laboratory management experience nor proven leadership skills. Her management style tends to be heavy-handed and intimidating. Since the start of her tenure, she has not been able to create an atmosphere of trust among Laboratory employees in the Forensic Biology Group. The Vance Report states:

> To oversee and properly manage a consolidated laboratory with a robust quality assurance system…the next Director of the Massachusetts State Police Crime Laboratory should have the following qualifications:
>
> - PhD. or minimum of a Master's Degree in Natural or Physical Science,
> - Five years or more forensic laboratory experience,
> - Significant laboratory management experience, and
> - Proven leadership skills.

Employees in the Forensic Biology Group have been given the clear message that the organization operates in a "paramilitary" manner and thusly information flows from the top down. The Acting Laboratory Director's demeanor and interactive style at monthly meetings are oftentimes negative, with comments expressed in a pejorative manner, or meant to embarrass the recipient in front of peers. Not all staff in attendance at the

meeting are welcome to participate. The resulting interactions inherently inhibit the obtaining of information from those staff who are working at the bench. These are the people who are most likely to be aware of technical and supervisory problems and of possible solutions to those problems. When information only moves from the top down, information from other levels of the Laboratory will only surface when a "crisis" is already in progress.

Upper management does not place emphasis on trust. Building trust among managers, between managers and supervisors, and between supervisors and staff is critical for the effective flow of information and the development of new ideas. While not all Laboratory supervisors and staff were interviewed by Dr. Cotton and I.G. staff during the conduct of this review, individuals from all levels were included in interviews. Poor overall morale and low levels of trust were mentioned consistently, regardless of position in the Laboratory. Most employees expressed that they are committed to their work and the Laboratory. They impressed us with their devotion to their tasks and commitment to high standards. However, many of these employees felt helpless to effect improvement and, while they had ideas, felt that their input would be or had been dismissed.

According to Laboratory staff, upper management does not employ cooperative problem solving methods. One instance we learned about wherein cooperative problem solving would have been the only effective approach concerned a communication problem between the CODIS unit and the CCIU unit, but in that example such an approach was not used. In a second example, the Management demand for a rapid increase in casework production required accelerated training of additional analysts to do technical reviews. Staff reported little or no productive discussion of how to avoid problems related to the use of inexperienced analysts as technical reviewers. The purpose of the independent technical review is to ensure that procedures are correctly followed and that there is agreement between analysts and reviewers on results and conclusions. Staff interviewed repeatedly stated their concerns about management's lack of willingness to institute a sensible policy permitting inexperienced technical reviewers to gradually gain experience. As it stands, inexperienced technical reviewers could bear full responsibility to review even the most technically sophisticated cases. Another

example of the Laboratory's need for strong leadership pertains to its lack of a current database of DNA profiles of Forensic Biology and DNA employees. DNA profiles from all Forensic Biology and DNA staff handling evidence should be kept on file and be made available for identifying potential contamination of case evidence samples by staff. Use of this vital quality assurance tool would allow the Laboratory to determine whether case samples have been contaminated inadvertently by staff, and if so, to solve the source issue and determine effective remedial action expeditiously. Some individual employees however, are opposed to having this critical resource. There is a trust issue embedded in their reluctance to participate. This appears to be preventing discussion and problem solving. If contamination occurs, and it will, the Laboratory will spend unnecessary time troubleshooting the event without benefit of Laboratory staff profiles. The Laboratory should develop a solution to this problem.

We strongly recommend that the Massachusetts State Police and the Executive Office of Public Safety and Security invest in extensive and relevant consultation services or extensive and relevant management training to facilitate the development of management styles that promote communication and trust.

**Quality Assurance**

The individual whose job encompasses the quality assurance management function for Biology and DNA has well-established qualifications for this position, but in his interview with this office he presented as being relatively uninvolved and removed from the task of insuring scientific quality within the Forensic Services System.

My office's review has identified a very serious deficiency in the Laboratory's quality assurance system concerning the inherently problematical and conflictual dual role currently being played by the Quality Assurance Manager. Specifically, the dual role he is now playing as both the Quality Assurance Manager and as one of two union stewards is untenable. In interviews, we were told that a union representative is not allowed to discipline another union member. The Quality Assurance Manager has an obligation to determine the corrective action(s) needed when a problem occurs that compromises the quality and accuracy of test of results. Union stewards assist in representing the union employee if the employee is having a disagreement with

management. There is an inherent conflict of interest in having these two conflicting roles performed by a single person. When asked about this issue the Quality Assurance Manager stated that if a quality issue arose in the sections for which he had oversight duties, he would determine the corrective action(s) necessary and refer the person to the second union steward for any union-related discussions. It is in the Laboratory's best interest to ensure that the resolution of quality issues is not compromised by union allegiance. It is our strong recommendation that individual's acting as Quality Assurance Managers not be member's of the same collective bargaining unit as the employees that they manage.

A similar conflict can occur when supervisors become aware that a disciplinary action should be taken but are reluctant to take such action due to the fact that similar action had previously been the cause of a union grievance. A deleterious conflict-of-interest is unnecessarily created by making the supervisor responsible for disciplining employees for performance shortcomings while the supervisor is simultaneously responsible for defending the employee against such disciplinary actions as a fellow union member. We recommend that the Laboratory explore this issue and any other situations where an individual's management responsibilities and their union affiliation will result in a conflict of interest.

We also learned that the quality reports go to both the Acting Laboratory Director and to the Quality Assurance Manager with the name of the chemist(s) involved attached. This process appears punitive and may be very threatening to some staff. We recommend that this procedure be replaced with a procedure whereby the Quality Assurance Manager would update the Acting Laboratory Director in a summary way at some agreed upon regular interval. This of course would not preclude either the Quality Assurance Manager or a supervisor from notifying the Acting Laboratory Director immediately should a significant quality issue arise.

**CODIS**

The Combined DNA Index System (CODIS) consists of multiple databases that can be searched in a variety of ways. There are two dimensions of the combined databases. The first consists of the three levels of databases, which are Local, State and National.

These databases are respectively LDIS (Local DNA Index System), SDIS (State DNA Index System), and NDIS (National DNA Index System). The second dimension consists of the two separate and distinct databases, one of DNA profiles of convicted offenders (defined by state legislation) and the second of DNA profiles from evidence from solved and unsolved cases. The operation and maintenance of the convicted offender database and the casework database involve coordinated roles and functions at the local, state and national levels. Federal legislation defines the groups of samples that can be included in the National database. Procedures for the National DNA Index System are controlled by the FBI through the NDIS Operational Procedures manual. Procedures at the state and local level must comply with NDIS Operational Procedures. State legislation provides guidance for samples which can be added to SDIS. Each state has a State CODIS Administrator (In Massachusetts the position is designated as the "DNA Supervisor-CODIS") whose job includes ensuring that FBI NDIS procedures are followed.

In 2006, the Laboratory's poor handling of its CODIS responsibilities undermined the public's confidence in the functioning of the Laboratory. The Laboratory and the Department of Public Safety and Security moved quickly to assess and resolve the problems related to mismanagement of the CODIS database and failure to notify district attorney's in a timely manner about CODIS hits.

We interviewed numerous staff involved in the reorganization, reform and rebuilding of CODIS-related procedures. We also interviewed and received assistance from personnel at the FBI charged with ensuring the integrity of CODIS databases. All parties involved in addressing the original CODIS related issues acted in a timely and appropriate manner. According to the officials responsible and based on our review of documents, we believe all questionable CODIS entries have been reviewed and corrected.

We have reviewed the current CODIS operations and improved procedures to assess whether they are likely to carry the Laboratory forward successfully. The following observations based on interviews with individuals inside and outside of the Laboratory and on documents provided during this assessment describe the former situation:

1) In the year 2000, the size of the CODIS databases was much smaller then it is today. The number of offender samples, casework samples and subsequent hits were small. This meant that laboratories could "get by" with relatively inefficient and non-comprehensive policies and procedures. But as the databases grew, fed by all of the participating states and the changes in legislation mandating the collection of more samples from offenders convicted of less egregious offenses, many small problems associated with the early years of managing the database became much larger problems. Massachusetts is not the only state that has experienced database-related issues that caught responsible officials by surprise. Other laboratory systems with more effective risk-recognition stayed at least a few steps ahead of the constantly-increasing CODIS demands. Many state laboratories, including Massachusetts, increasingly utilized the capabilities of private DNA testing laboratories to assist in processing the number of database samples to produce DNA profiles;

2) Laboratory officials are subject to the demands placed on CODIS-participating laboratories by the FBI. Laboratories may not always agree with FBI decisions or procedures, but they are required to follow the FBI rules. However, some aspects of each state's database are controlled individually by the states;

3) The FBI became increasingly aware that the Laboratory was having problems keeping up with the demands of CODIS. So too did other state CODIS Administrators. It was not unusual for the Laboratory to be unresponsive for extreme lengths of time in providing information related to interstate hits. According to information gathered for this review, the Laboratory's CODIS Administrator showed little apparent interest during regular national meetings of all CODIS Administrators held by the FBI;

4) Laboratory management as well as union representatives recognized that the CODIS Administrator was having substantial performance problems and that a burgeoning Laboratory workload was exacerbating those problems. They also realized that improved organization and additional staff would be required to

meet the growing workload. When Management attempted to add additional staff, the CODIS Administrator filed a union grievance. Ultimately, no additional administrative personnel were hired.

5) Notwithstanding the above-described circumstance, the CODIS Administrator remained in charged until he was overtaken by highly-publicized events that revealed managerial shortcomings and administrative deficiencies.

During interviews, Laboratory management and FBI representatives indicated that they felt positive about their interactions during the formulation of the resolution of the various CODIS issues. The organizations worked together successfully to correct serious deficiencies and implement effective solutions.

There are, however, some remaining issues that should be addressed. The responsibility for CODIS operations at the Laboratory is now divided between two groups. The first group is part of the DNA Unit and is headed by the CODIS Administrator, a Chemist III position. Within the Laboratory this position is called the "DNA Supervisor-CODIS." The DNA Supervisor-CODIS and the analysts in this group are responsible for all functions of the CODIS system as regards data entry, CODIS searches, responses to out-of-state CODIS hits and CODIS data security. They are also responsible for in-house processing of CODIS samples and/or monitoring contracted sample processing (which is being phased out or reduced). The second group is the CODIS Collection and Investigative Unit (CCIU). The CCIU unit is managed by a state police sergeant and is responsible for determining which samples should be collected for analysis and input into CODIS, appropriate related notifications, collection of the samples, and verification of offense and fingerprint records. In order for the system to work effectively, these two independently managed groups must work closely together.

After the prior CODIS Administrator was removed from his position, an acting CODIS Administrator with substantial DNA analytical experience was appointed. This person attended the CODIS training at the request of the Acting Laboratory Director, worked closely with the FBI and Laboratory management and was successful in expeditiously

stabilizing the situation. Although she was very qualified to do so, she did not apply to be appointed as the permanent CODIS Administrator due to concerns about upper management's leadership style. Subsequently, a DNA analyst with approximately three years experience was promoted to the position of DNA Supervisor-CODIS. This individual served in this position for less than nine months, and subsequently resigned to take a CODIS Administrator position in a Laboratory in another state. In an interview after her departure, she explained that she had been frustrated by poor communication between herself, upper management and CCIU. Interviews revealed that, just as had been found by the Vance Report one year earlier, mounting frustration due to poor communication with upper management has negatively affected the work environment. In our interview, the out-going DNA Supervisor-CODIS indicated that she enjoyed the work she was doing but felt she had had little support from Laboratory management above her immediate supervisor. She stated that she felt that she had not been able to perform effectively in her position and had no option other than to leave.

The Acting Laboratory Director has recently appointed an individual who had previously held a Chemist II position in the CCIU Unit to be the new DNA Supervisor-CODIS. He is relatively new to the Laboratory and received DNA training in January 2006. He had never been actively engaged in DNA casework prior to taking this position. His familiarity with the protocols and procedures of the CCIU Unit will be an advantage in the new position. His lack of casework experience including lack of experience in analyzing mixtures, however, is directly contrary to the Vance Report's recommendation that states: "A CODIS Administrator with Significant Forensic DNA Casework Analysis Experience Should Be Appointed." We recommend that the reporting structure for this position be changed. Instead of reporting to the Technical Leader, the DNA Supervisor-CODIS should report directly to the Lead Supervisor of the Laboratory. This would promote more direct supervision of his activities and a more direct flow of CODIS information to the Laboratory Director. We also recommend that an Assistant DNA Supervisor-CODIS position be created and filled with an individual who has significant casework analysis experience.

Another critical issue is the Laboratory's policy and practice of retaining and storing DNA profile records and personal identifiers that have been properly removed from the CODIS database and maintaining them in a separate, searchable database. All laboratories have a procedure for "administrative removal" of data that has been mistakenly included in or otherwise warrant removal from the National DNA Database (NDIS) and the state DNA database (SDIS). When the CCIU Unit is made aware that a sample or group of samples have been collected and the profiles are inappropriately in the database, it notifies the DNA Supervisor-CODIS, who completes the procedure for administrative removal of the samples from NDIS and SDIS. Procedures for administrative removal of samples are found both in the CCIU Unit Manual and in the CODIS/DNA Unit Manual.

At the Laboratory, when an individual's DNA profile is removed because it does not meet the legal criteria for inclusion in NDIS or SDIS, the Laboratory stores the DNA profile records in a separate, searchable database. The CCIU'S Unit's Operating and Procedures Manual states that the Laboratory Director may authorize a search of this database. The policy does not include a procedure for notifying the person whose DNA profile had been improperly included in the database and subsequently removed. Nor does it include a procedure to notify a person that his or her DNA profile is being maintained in a separate database that may be searched with the Laboratory Director's approval. The existence of this database was confirmed in several interviews. However, this office found no legal authority for maintaining these DNA profiles in a searchable database.

It is not clear whether Laboratory management has ever requested legal guidance regarding the existence and/or use of this database. When asked, no one interviewed produced any written legal opinion from legal counsel. We recommend that this issue be vetted in a manner conducive to input from prosecutors and the defense bar and other interested parties to the debate.

Other issues related to CODIS are management issues. The DNA Supervisor-CODIS needs to have access to and continuous communication with the Supervisor of CCIU and the DNA casework supervisors. Regularly scheduled meetings should be

conducted separate from the monthly management meetings. The DNA Supervisor-CODIS should have excellent organizational and management skills since this unit is constantly being fed data and information from casework and CCIU as well as from the other CODIS participating states. Upper management should ensure that the DNA Unit and CCIU function as a team since they are entirely interdependent. Problems that have previously existed such as squabbles over signing hit reports (a DNA Supervisor – CODIS task) without the ability to directly verify CCIU information contained in the report need cooperative solutions. The rapid growth of the CODIS databases and the number of CODIS hits is unlikely to slow anytime soon. The size of the database will continue to grow as will the number of hits between convicted offender samples and unsolved case samples or hits connecting several unsolved cases. The Laboratory will continue to have CODIS related stresses until a steady state of incoming samples and ability to create and manage outgoing data is reached. This will require cooperation between mid-level supervisors which cannot be mandated from above but will need to be built on increased trust.

**Casework**

The Office of the Inspector General did not conduct a review of the scientific procedures used in DNA casework and did not review case files. However, this material was reviewed during the recent ASCLD/LAB inspection and to some degree by the Vance Report team. Casework files are also reviewed bi-ennially during the required external DNA audit.

The DNA Unit consists of approximately eight supervisory positions with a total of approximately 48 analysts under the respective supervisors. In addition to the the CODIS unit (consisting of the Supervisor DNA-CODIS analysts and technicians) there are approximately 42 Chemist I and II level DNA analysts, along with their supervisors, that handle the scientific analysis for all DNA cases received by the Laboratory from jurisdictions across the State. The State, except for the City of Boston, is entirely dependent on this group for DNA analysis. The DNA supervisors report to the Forensic Biology Technical Leader who reports to the “Acting Lead Supervisor”. The Acting Lead Supervisor reports directly to the Acting Laboratory Director. Prosecutors and defense

attorneys rely on timely case turnaround and the quality of the scientific work done in the Laboratory. The position of Lead Supervisor has recently been vacated. We recommend that someone with excellent communication skills and proven management skills be hired.

**DNA Training**

At times in the recent history of the Laboratory there has been a problem with rapid loss of newly hired employees in the Forensic Biology and DNA Section. Hiring and training well qualified individuals who can, with training, develop all the required laboratory and testimony skills is critical for the future of the Laboratory. It is costly to train new DNA analysts. For the six months minimum training time require by the FBI Standards for DNA Analysis Laboratories, the new analysts are not making any contribution toward the completion of casework or case review. In addition, experienced analysts may need to assist in this training thus taking time away from other duties. Each forensic discipline within the Laboratory has educational needs which are specific to the discipline. We recommend that the Laboratory include these specifications in the relevant job descriptions for "Chemists I, II or III." Additionally, while we are aware that a comprehensive background check is conducted, candidates should also be required to provide references who have direct knowledge of the candidate's laboratory and communication skills. Furthermore, the Laboratory should check the references to ensure that the candidate's knowledge and skills are satisfactory.

The FBI Standards mandate specific academic and experiential requirements for DNA analysts. Published training guidelines are promulgated by the FBI sponsored Scientific Working Group for DNA Analysis Methods. The Laboratory has used various approaches to training in the last several years. These approaches have incorporated training from the Northeast Regional Forensic Institute (NERFI) and training done in-house. The salary differential between the Massachusetts State Police Forensic Services Group and other DNA laboratories across the country and the high cost of living in the surrounding area negatively impacts the Laboratory's ability to easily attract and retain experienced DNA analysts.

Too often the Laboratory is hiring and training analysts with no previous forensic experience. These new analysts are required to train for a minimum of six months prior to beginning casework. If the training is done "in-house" training costs include staff time and cost of training materials in addition to approximately one-half of the yearly salary of each analyst in training. As a rough estimate a training group of six would cost about $29,000 per person in salary and benefits alone. At the end of the training the new analyst, after passing a competency test, can begin casework and testify to results in court. Information provided in interviews indicates that the analysts are generally promoted to Chemist II positions within six months of beginning casework. The Laboratory organizational chart provides information about the number and position of Chemists at each level. We reviewed the costs for outside training for groups of analysts trained in the last several years provided by the Acting Laboratory Director. We agree with her decision that as long as space permits, in-house training is preferred.

All training is expensive and provides only a starting point from which experience, skill and judgment are developed. In most laboratory situations there is a need for new analysts to be as productive as possible. Balancing this need is the new analysts' lack of experience in handling difficult sample types and analyzing more complex DNA profile data. These challenges will be exacerbated if technical review duties are added too soon to the analysts' responsibilities. While the analogy is not perfect, one could consider the differences in skill level and assignments given to a recent graduate of the Police Academy and to officers with four or five years of experience. While the skill sets are different for the state police officers and Laboratory scientific staff, the need to benefit gradually from experience is the same. We recommend that the Laboratory develop procedures that specify how newly trained analysts will gain gradual exposure to more complex cases.

Several Laboratory staff members expressed concerns regarding mandates from management that forced rapid incorporation of newly trained analysts into casework without regard for difficulty of the cases assigned. While this approach may be successful with some combination of sufficient training and vigilance of supervisors, the downside is that it puts cases and possibly the Laboratory at risk. New staff can be

used to significantly increase casework production. Design of an effective approach is possible when supervisors and staff have flexibility in planning and when supervisors and management work together to configure output objectives that do not present excessive risk. We recommend that the Laboratory develop procedures that specify training and gradual introduction of new analysts into the role of technical reviewer after having attained some predetermined level of experience.

**Technical Direction**

Equal in importance to training is the technical leadership of the Laboratory. The Laboratory is fortunate for the time being to have several individuals with excellent technical expertise. (Please note that not all analysts and supervisors were interviewed. Therefore, comments highlighting individuals do not imply that other experienced supervisors who are not mentioned have less knowledge or skill.) Those individual's are the former Forensic Biology Technical Leader, the current Forensic Biology Technical Leader and Ph.d level Chemist III.

The current Technical Leader has less forensic DNA experience than the former Technical Leader and less research experience than the Ph.d Chemist III. While the Ph.d Chemist III has no prior case experience, she has a wealth of practical research experience, and while the former Technical Leader has the least academic background, she has extensive forensic DNA experience covering three institutions together with demonstrated scientific ability. It is unclear whether the technical expertise of the former Technical Leader is being utilized. However, between these three people the compilation of the necessary technical skill exists.

Equally important to the technical expertise is the ability to blend high technical standards with practical demands of casework output. This is difficult in any laboratory, and likely very difficult in the current highly charged atmosphere. It is difficult in a laboratory with younger inexperienced staff, and it is difficult when there are high case output demands on the unit. In the current structure cooperative decision making among the Acting Laboratory Director, the Acting Laboratory Supervisor and the Forensic Biology Technical leader is needed to simultaneously address technical issues and case production demands. There is no evidence based on staff interviews that this

cooperation exists or is being encouraged. Currently upper management advocates a "top down only" approach. This forces the Technical Leader and DNA supervisors to manage such that the required numbers of cases are completed and quality is maintained under the radar of case production. Only the number of cases completed is monitored. The number of samples per case is not considered in the production numbers even though tracking of samples per case is a more accurate measure of production. We recommend that samples per case be considered in the production numbers and, if possible, tracked.

As in all laboratory settings, mistakes are made. However, the nature and consequence of mistakes varies considerably and not all quality issues need to be brought to the attention the Laboratory Director. Currently, records of the Laboratory's quality incidents and Contamination Investigation Logs with names of each analyst involved are copied to the Laboratory Director and the Quality Assurance Manager. We recommend that the Laboratory adopt a practice of forwarding a monthly summary of quality assurance issues from the Quality Assurance Manager to the Acting Laboratory Director. This method of reporting is a more efficient and less intimidating method to keep upper management aware of quality issues. The quality assurance process should foster disclosure of quality issues. The existing process may foster lack of disclosure.

Additionally, a review of sample Quality Assurance (QA) records of contamination logs from DNA casework illustrates problems with technical direction and quality assurance processes. Observations from QA reports reference comparisons of contaminant profiles to DNA profiles contained in an "in-house database." This indicates that the Laboratory is, in some instances, using a database of employee DNA profiles and that there is an understanding that records of analyst's profiles need to be available for comparison. However, information provided in interviews indicates that the union has blocked the Laboratory from requiring participation of employees in an "in-house database." The ability of the Laboratory staff to have the tools available to determine the human source and procedural cause of the contamination can be critical. Without the ability to identify when contamination is from an "in house source," two "worst case"

scenarios exist: 1) an inappropriate exclusion of a suspect; or, 2) an analyst's profile could be uploaded to the evidence portion of the CODIS database. We recommend that the Laboratory establish a complete in-house database of DNA profiles from all staff handling all evidence.

In most cases the level of contamination is too low to allow any determination of the source of the contamination. This is not unusual and similar data would be observed in many competent laboratories. In contrast to a low level of contamination, one Contamination Investigation Log report describes an instance of a full male profile being obtained from an evidence sample. After comparison to in-house DNA profiles the "evidence sample" profile was consistent with the profile from a male employee. However, there is no mention in the Contamination Investigation documentation, which was provided, of any effort to determine how the contamination event occurred and if any corrective action to prevent another similar occurrence was warranted or taken. This information should be contained in the record. The Technical Leader signs these documents to acknowledge review. The documentation provided indicates that proper acknowledgement of the contamination is contained in the case report. We did not request follow-up documentation to verify that the technical leader or the quality assurance manager investigated the underlying cause of the contamination or put into place relevant corrective action. We recommend that the Laboratory ensure that this issue received proper follow-up.

**Post - Conviction Testing**

Currently Massachusetts does not have legislation providing processes and procedures for post-conviction testing. As mentioned in a July 2007 report provided by the Acting Laboratory Director, the Laboratory has complied a comprehensive listing of the retained evidence samples. The Laboratory provided this list to the District Attorneys to assist the District Attorneys in prioritizing cases that needed DNA analysis. The same list may be useful to attorneys whose clients are seeking post-conviction testing. A group of cooperating defense and prosecuting attorneys and/or judges could potentially serve as a "clearing house" for requests for accessing evidence for post-conviction testing, and could facilitate consistent, unbiased responses to these requests. Models

for this type of system exist in Los Angeles County and are based on existing California State Statues (CA Penal Code 1405 and 1417.9). Other states may have similarly effective procedures that could also serve as models. Without statewide procedures that can be used to identify and access evidence, defense efforts to obtain post-conviction testing for arguable reasons will not be evaluated in a consistent manner. We recommend that a fully representative committee including the Executive Office of Public Safety and Security, the Massachusetts State Police, district attorneys and the defense bar develop a procedure to evaluate requests for obtaining evidence for purposes of post-conviction testing.

As mentioned elsewhere in the report the DNA case backlog at the Laboratory is carefully tracked and has been reported in July 2007 and August 2008. These two reports contain a thorough analysis of samples retained by the Laboratory. The reports make several critical points, the first being that the Laboratory does not have information automatically available to it that gives the status of a case. According to the July 2007 report, the Laboratory does undertake initiatives to identify unsolved cases but "these initiatives are not comprehensive . . . . ."

These reports, which contain accurate information on the Laboratory's caseload and backlogs, should be made available to all interested stakeholders and the public. Transparency would likely result in increased public confidence. This transparency may benefit the Laboratory.

**Conclusion**

The Laboratory is at a crossroads. The CODIS crisis that jolted the Laboratory into extreme action has ended and after a full vetting and verification process, the Laboratory's CODIS operations are fully operational. Overall, it is the opinion of Dr. Cotton and this office that current CODIS procedures will successfully carry the Laboratory forward.

However, many of Vance's most important recommendations have not yet been fully implemented. Vance opined that the key to a successful laboratory requires consolidation of laboratory functions run by a strong laboratory director under a single,

proactive and robust quality assurance system and manager. Vance made this a key recommendation of its report. The Laboratory, however, has been operating with an "Acting" Laboratory Director who has, while implementing some positive changes, been unable to make progress mending the fractious relationship between upper management and the Forensic Biology and DNA staff. In the opinion of Dr. Cotton and this Office she has not created a sense of teamwork. Vance indicated that regular internal communication via regular staff meetings would be helpful to promoting a sense of internal identity. The management style adopted by the Acting Laboratory Director is not conducive to building an effective, cohesive, respectful environment. It is a strict, paramilitary-style under which information only flows down from the top. Moreover, this report highlights that certain areas of the Laboratory's quality assurance system, including the Quality Assurance Manager's position in the same collective bargaining unit as employees he supervises, is not robust.

This report also raises the issue of the Laboratory's independence from the Massachusetts State Police. The State Medical Examiner's Office serves the same clientele as the Laboratory. However, it has a direct report to the Undersecretary Forensic Science and Technology unlike the Laboratory that has an elaborate command structure through the Massachusetts State Police and the Undersecretary Forensic Science and Technology.

It is certainly possible that the Laboratory can move forward, continuing to produce high numbers of cases per month with its current structure and management team. However, the pressure to meet case output expectations combined with management approaches that indicate (correctly or not) lack of appreciation and respect for employees, sets up a dangerous dynamic. When employees cannot meet management's expectations or when scientific issues arise, will the staff inform management and expect to participate in a solution or will there be temptation to take a short cut or to otherwise compromise procedures or data?

The challenge of the Executive Branch and management at the Laboratory is to prevent this second approach for the Forensic Services Group from being an attractive

alternative. The leadership must strive to create an atmosphere which builds morale, promotes scientific excellence and enhances employee retention.

# *Appendix A:*

**Curriculum Vitae**

Robin W. Cotton, Ph.D.

## Education

Ph.D. Molecular Biology and Biochemistry, University of California at Irvine, Irvine, California, 1980, Dissertation Title: Studies in Chromatin Structure

M.S. Biology, Southern Methodist University, Dallas, Texas, 1974

B.S. Biology, Southern Methodist University, Dallas, Texas, 1971

## Professional Experience

Program Director: Biomedical Forensic Sciences and Associate Professor, Department of Anatomy and Neurobiology, Boston University School of Medicine, October 2006 to Present

Senior Director, Technical Forensic Science, Orchid Cellmark - November 2005 to August 2006

Laboratory Director and DNA Technical Leader, Orchid Cellmark, Germantown, Maryland, 2001 – October 2005

Laboratory Director and DNA Technical Leader, Forensic Laboratory, Cellmark Diagnostics, Germantown, Maryland, 1992 - 2001

Deputy Director, Cellmark Diagnostics, Germantown, Maryland, 1990 - 1992
Manager, Research and Development, Cellmark Diagnostics, Germantown, Maryland, 1988 - 1990

Guest Researcher, National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Bethesda, Maryland, 1988 - 1990

Senior Staff Fellow, Section of Genetic Studies, National Institute on Alcohol Abuse and Alcoholism, National Institutes of Health, Bethesda, Maryland, 1983 - 1987

Postdoctoral Fellow, Laboratory of Dr. Roger Chalkley, Department of Biochemistry, College of Medicine, University of Iowa, Iowa City, Iowa, 1980 - 1983

## Professional Associations and Committees

American Society of Human Genetics

American Academy of Forensic Sciences – Fellow

ASCLD/LAB Board of Directors, Elected Position – November 2002- November 2006

ASCLD/LAB Volunteer Inspector, Legacy Program, 1995 –Present

Editorial Board, Journal of Forensic Sciences – May 2002-Present

American Association of Blood Banks Parentage Testing Standards Committee 1997-1999

American Society of Crime Laboratory Directors

## Testimony Experience

Approximately 200 cases in approximately 35 States

## Publications

Cotton, R.W., Manes, C. and Hamkalo, B.A. (1980) Electron Microscopic Analysis of RNA Transcription in Preimplantation Rabbit Embryos. Chromosoma. 79: 166-178.

Cotton, R.W. and Hamkalo, B.A. (1980) Nucleosome Dissociation at Physiological Ionic Strength. Nuc. Acids Res. 9: 455-457.

Tonelli, L.A., Rubenstein, K.R., Anderson, M.B., Green, D.J., Herrin, G.L., Cotton, R.W., Dykes, D.D. and Garner, D.D. (1989) Use of DNA "Fingerprints" for Identity Determination: Comparison to Traditional Paternity Testing Methods - I. J. Forensic Sci. Vol. 35: 1265-1269.

Rubenstein, K.R., Tonelli, L.A., Anderson, M.B., Green, D.J. Herrin, G.L., Cotton, R.W., Gottschall, J.L. and Garner, D.D. (1989) Use of DNA "Fingerprints" for

Identity Determination: Comparison to Traditional Paternity Testing Methods - II. J. Forensic Sci. Vol. 35: 1270-1276.

Lundgren, B., Cotton, R.W., Lundgren, J.D., Edman, J.C., Kovacs, J.A., (1990) Identification of Pneumocystis carinii Chromosomes and Mapping of Five Genes. Infection and Immunity, June 1990, p.1705-1710.

Kriss, J., Herrin, G., Jr., Forman, L. and Cotton, R.W. (1990) Digestion Conditions Resulting in Altered Cut Site Specificity for Hinf1. Nucleic Acids Research, Vol. 18, No. 12 p. 3665.

Walsh, D.J., Corey, A.C., Cotton, R.W., Forman, L., Herrin, G.L., Jr., Word, C.J. and Garner, D.D. (1992) Isolation of DNA from Saliva and Forensic Samples Containing Saliva. J. For. Sci., Vol. 37, No. 2, p.387-395.

Horsman, K.M., Hickey, J.A., Cotton, R.W. Landers, J.P., and Maddox, L.O. (2006) Development of a Human-Specific Real Time PCR Assay for the Simultaneous Quantitation of Total Genomic and Male DNA. J. For. Sci., Vol. 51 No. 4, p.758-765.

## Reviews

Cotton, R.W. and Goldman, D. (1988) Review of the Molecular Bbiology of the Human Alcohol Dehydrogenase Genes and Gene Products. Advances in Alcohol and Substance Abuse. Vol. 7 p.171-182.

Cotton, R.W., Anderson, M.B., Herrin, G.L., Jr., Corey, A.C., Sheridan, K.T., Tonelli, L.A., Waskowski, C.A. and Garner, D.D. (1989) Current Case Experience With Single-locus Hypervariable Probes. Banbury Conference on DNA Technology and Forensic Science. DNA Technology and Forensic Sci. Banbury Report 32. 191-206.

Cotton, R.W., Forman, L. and Word, C.J. (1992) MiniSatellite Variant Repeats (MVR's): Another Layer of Polymorphism in Repeated DNA Sequences. Proceeding from the Third International Symposium on Human Identification, Scottsdale, AZ.

Cotton, R.W. (1995) DNA Analysis and Maintaining Focus in an Extraordinary Case. Proceedings from the Sixth International Symposium on Human Identification, Scottsdale, AZ.

This page intentionally left blank.

# *Appendix B: Office of the Inspector General's Comments on the Vance Report*

**Unanswered Issues in the Vance Report**

**Issue 1:**

The Vance Report references "best practices" and "national standards" in the Executive Summary and elsewhere in the report. However, it is not clear and also not referenced in the report, where the information on "best practices" comes from and to what "national standards" they are referring.

Documents that the Vance Report should have referenced are as follows.

1) The Accreditation Manual of the American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) details the Standards and Criteria against which the Laboratory would be assessed during an inspection which include all phases of Laboratory operations including management.

2) The FBI Quality Assurance Standards and Audit Document for Forensic DNA and Convicted Offender DNA Databasing Laboratories pertain to the casework and CODIS sections of the DNA section of the Laboratory.

3) The NDIS Operational Procedures Manual published by the FBI provides additional specifications that relate to CODIS.

4) There are published guidelines which exist for other forensic disciplines, which provide guidance and guidelines for scientific practices. These guidelines all have the acronym SWG (Scientific Working Group) at the beginning of the full name of each group. These groups are funded by the FBI and meet regularly. Laboratory employees in the various disciplines will be aware of the various Scientific Working Groups' guidelines on discipline specific "best practices".

The ASCLD/LAB Manual includes some general criteria related to management, which may be considered to be best practices. However, the Vance Report uses the phrase "best practices" numerous times without specific guidance as to what the "best practice" is or what document one would refer to find a description of the "best practice". This leaves little guidance for the Laboratory or other officials as to what was intended by the report authors. It follows that there is no way to assess the distance between the Laboratory's current practice and the "best practice."

The Vance Report would have been more useful if it referenced these documents that officials of the State Police and the Executive Office of Public Safety should expect the Laboratory personnel to be knowledgeable about and generally follow. These documents assist in defining the scientific “best practices.”

**Issue 2:**

In the Executive Summary and in Appendix B, the Vance Report states that the Laboratory procedures are good and the analysts are technically competent. The assessment team did not find errors in casework documentation or problems with contamination in the DNA casework. However, while Vance conducted technical reviews of certain cases, Vance did not maintain records of the number of cases it reviewed or how many cases worked by each analyst were reviewed. The extent of the technical review of each case was not specified. The report does not mention whether the review of cases included a review of data interpretation for consistency and objectivity.

The report does not address whether the DNA casework and CODIS units have enough staff members with sufficient educational and technical background to support the large number of inexperienced analysts.

**Issue 3:**

The report mentions practices which exceed national standards as being detrimental to productivity. They do not specify which practices they are referring to; leaving no guidance to the DNA technical staff regarding what practices they should consider eliminating.

**Issue 4:**

The report does not mention whether there are interviewing and hiring practices that could be improved. For DNA analysts there are academic requirements that could be included as requirements for submission of an application. Hiring candidates who arrived with the needed requirements could have a positive impact on training time.

**Issue 5:**

In general the report fails to recommend staff involvement in the process of making recommendations for change.

**Issue 6:**

On page 11, under "Scope of Work/Methodology," the authors list "Financial analysis of system and unit costs compared to other forensic systems" as part of their scope. That topic is not mentioned in the report.

## Comments On the Vance Report's Recommendations

**Recommendations 1 and 2:**

1. **All Forensic Science Disciplines and Services Must Be Consolidated and the Unified Laboratory Placed Under the Control of One Laboratory Director**
2. **Expansion and Accreditation of All Forensic Science Disciplines Must Become a High Priority**

The recommendation for consolidation of all crime laboratory services under a strong Laboratory director is clear and compelling. The Laboratory has completed accreditation of all disciplines and all are united under the Acting Laboratory Director.

**Recommendation 3:**

3. **A National Search for a Laboratory Director Should Be Conducted**

The Vance Report specifically states that they are not commenting on the political placement of the Laboratory with regard to being within or being independent of the State Police. However, all recommendations in the report and especially 3, 4, and 5, place all responsibility for success in the hands of the Laboratory Director supported by the Quality Assurance Manager. However, the Unions to which employees belong are external to the Laboratory and can have a significant impact on the ability of the Laboratory Director to make needed changes and manage the Laboratory effectively.

The report does not assess the management skill of existing staff. The skill of managers at all levels will have substantial impact on the success of any implemented changes and on the process of integration. Hiring a new Laboratory Director, no matter how skilled, may not be sufficient to over-ride lack of management skill at other levels of

the organization without using additional training or other methods to generally increase management skills.

**Recommendations 4, 5, 6, 7:**

4. **All Quality Assurance Functions Should Be Consolidated Under a Single, Proactive, and Robust Quality Assurance System and Manager for the Entire Laboratory**
5. **The Quality Assurance Manager Should Report Directly to the Laboratory Director**
6. **Corrective Actions Should Be Part of a Strong Quality Management System and Addressed in a Timely Manner**
7. **Quality Assurance Representatives Should Be Appointed within Each Discipline**

All recommendations relating to improving the Quality Assurance system are good. Since the Laboratory is accredited by ASCLD/LAB there are criteria in that program related to Quality Assurance. ASCLD/LAB standards require the Laboratory to have a comprehensive Quality Manual (with specific components) and an individual designated as the Quality Manager. However, being compliant with these standards does not guarantee that the Quality Assurance program is effective.

The report does not address where there are discrepancies between the ASCLD/LAB criteria and the workings of the Quality Assurance program.

In Recommendation 6, the report states that “quality assurance and corrective action functions were fully and completely placed under the Technical Manager within Forensic Biology”. The report also provides a detailed discussion of the situation in the DNA unit. The report does not provide a comprehensive picture of how Quality Assurance functions are addressed in the other working units of the Laboratory.

The Vance Report could also have made recommendations regarding encouragement by the Laboratory management in the reporting of quality issues. Success of a Quality System will partially reside with the new QA manager, but it takes employee understanding and cooperation at all levels for the system to work properly. For any Quality System to work well the employees must trust that reporting a quality related issue will be taken seriously and that reporting on an issue that they have personally

been involved in will result in support for them to correct and improve the issue and their work. Fostering this type of employee openness is challenging. The Vance Report discusses corrective actions and the importance they play. The report does not touch on teaching the ethical issues and attitudes which need to be present to complete the building of a successful Quality System.

**Recommendation 8:**

**8. Audits and Reviews Should Be Objective and Avoid All Appearances of a Conflict of Interest**

The Vance Report could have included a recommendation for ethics training for Laboratory management and staff. Undergoing this training does not imply that people are or have been acting un-ethically. It helps people to frame questions in a manner that is likely to lead them to an appropriate answer or solution. Because the Laboratory has a very young staff and, at the same time, is undergoing other organizational and management changes this is an ideal time for discussion of ethical issues to be to be initiated.

**Recommendations 9 and 10:**

**9. A CODIS State Administrator with Significant Forensic DNA Casework Analysis Experience Should Be Appointed**

**10. The MSP Crime Laboratory Should Appoint Two Assistant CODIS Administrators with Significant Forensic DNA Casework Analysis Experience**

The recommendations related to the CODIS operation provide detailed and useful suggestions related to improving the CODIS operation. The discussion in this section also provides some background information related to how the situation in the CODIS unit arose over time.

At this time the Laboratory had not followed Recommendation 9. The current DNA Supervisor-CODIS, does not have significant DNA casework analysis experience.

The Vance Report mentions in Recommendation 9 a recent “CODIS review” conducted by the FBI. However, the report does not relate the results of that review to the observations made by the Vance team or as the backdrop for their specific

recommendations. The Vance Report does not mention that Vance conducted any specific investigation of the CODIS issues which prompted the Office of Public Safety to conduct a review of the Laboratory. There is no discussion of the specific technical errors made by the former CODIS Administrator and the impact that these errors would have had if they had remained uncorrected.

Federal legislation mandates that the FBI is responsible for the National Database (NDIS). There is an NDIS Board which oversees the database operations and management of the system by the FBI. There are many rules and procedures related to this system and the database exists at several levels, i.e. national, state and local. Understanding of both the federal and state procedures and laws is a requirement for a CODIS State Administrator since there may be limitations to acceptable procedures at the national level that do not exist at the state level. Since control of many aspects of CODIS is external to the Laboratory, planning must account for these external requirements.

**Recommendations 11 and 12:**

**11. Utilization of Partnerships, Process Mapping, Technology, Outsourcing, and Governmental Leadership Should Be Considered to Resolve the Current DNA Processing Backlog**

**12. The MSP Crime Laboratory Should Explore, Fund and Validate an Expert System for DNA Analysis Reviews**

Both of these recommendations are good. However, the report does not provide sufficient detail regarding the large case backlog which they discuss. The report does not recommend that the Laboratory and management above the Laboratory carefully define the nature of the backlog including types and numbers of samples and/or cases, prior to constructing a plan. It is critical that all parties define and understand the problem in the same language prior to attempting to craft a solution.

Statistics regarding case production need to be well defined. For example, cases per analyst per month are not equal to samples per analyst per month. A laboratory that limits the number of samples per case will have different production statistics than a laboratory that does not limit the number of samples analyzed per case. The report does not provide a national resource for this information. Leadership of the American

Society of Crime Laboratory Directors (ASCLD) may have access to information which would be helpful in this area.

Process mapping is a useful approach. The report does not estimate the amount of time and money that would be needed. It is not the planning part of process mapping that is difficult. It is the implementation of the plan that takes patience and management skill. Success with this type of process requires that everyone from young Laboratory staff to management above the Laboratory have a clear understanding of the process and the investment it will require.

As a general comment, when a laboratory undertakes significant changes, turnaround time often decreases before it increases. Staff cannot process casework and re-invent their process all at the same time. That is, there is often no fast fix and therefore expectations need to be in line with reality.

With regard to expert systems and process mapping the authors of the report provide only a few names of other professionals around the country who could serve as resources to the Laboratory.

The report does not discuss whether there are significant backlogs in the other forensic disciplines. This is a significant question. Since resources are not limitless, the needs of other sections in the Laboratory should be balanced against resources needed to address a DNA backlog. Dr. Cotton is able to provide names of individuals who may provide assistance if necessary.

The list below gives the names of other people or organizations that Dr. Cotton views as familiar with some of the challenges facing the Massachusetts State Police Crime Laboratory. These individuals have not been contacted prior to making this list:

**Recommendation 13: No Comments**

**13. The MSP Crime Laboratory should Ensure Resources are Available to Continue in its Efforts to Reduce the DNA Backlog**

**Recommendation 14:**

**14. Key MSP CODIS and DNA Personnel Should Visit another Laboratory System for Best Practices Review**

DNA personnel should visit several laboratories so they can see a variety of approaches, maximizing their exposure to different solutions.

**Recommendation 15:**

**15. DNA Staffing and Compensation Should Be Improved**

The need for increases in compensation is accurately stated. However, more salary comparisons are needed. New York, Connecticut, the Armed Forces Institute of Pathology in Rockville, MD, and others should be added for a more robust comparison.

**Recommendation 16:**

**16. The Need for NERFI Training Should Be Evaluated**

How training is provided and the quality of the training is critical to work quality and employee retention. The report does not make a recommendation for a position such as a training coordinator or dedicated training staff. The report does not evaluate the existing training program. The training needs are a long term problem and need a long term solution.

**Recommendation 17:**

**17. DNA Analysts' Duties for Casework and Convicted Offender Samples Should Be Delineated**

The report's comparison of DNA case output is too simplistic and therefore uninformative without further detail. At the top of page 36, Vance states that the number of days to complete a DNA case have become progressively worse and changed from 77 days to 145 days followed by 350 days for serology and DNA analysis. While the direction of lengthening turnaround may be correct, there are not good enough numbers in the report to allow understanding of the problem. If the Laboratory does not have accurate numbers, this should be included as a recommendation. If the Laboratory has accurate numbers they should be assessed in detail to understand the factors influencing the undesired changes in turnaround time. A larger number of comparison statistics may be available from ASCLD or NIJ.

**Recommendation 18:**

**18. Communication between Laboratory Management and Staff Should Be Standardized and Improved**

The report does not answer the following questions regarding communication issues:

Where has communication broken down?

Are some sections of the Laboratory more functional than others, and if so, why?

What do they mean when they refer to a “caste system” elsewhere in the report?

What content of communications are missing? Are they technical, organizational, financial?

What improvements in communications do the bench level employees need?

What improvements in communications do the middle and upper managers need?

What type of training could be used to facilitate better communications?

Are there regular meetings at the section level and Laboratory level?

**Recommendation 19:**

**19. Management of the DNA Units Must Be Flexible and Responsive to Effective Case Management. Criminalistics and DNA Cross-Training May Become an Effective Case Management Approach**

Recommendation 17 says that duties for casework and CODIS need to be clearly defined. Recommendation 19 suggests cross training between DNA and criminalistics staff. The third paragraph under Recommendation 19, on page 39 of the report, is far too vague and lacking in structure. The staff of both of these units should be involved in crafting changes of this type. The report makes these recommendations without also recommending a process which will involve bench level staff and supervisors in putting together details.

**Recommendation 20:**

**20. Creation of a Scientific Subcommittee to Assist the Forensic Science Advisory Board**

As noted in the Vance Report, M.G.L. c. 6, §184A authorizes an advisory board to advise the Secretary of Public Safety on all aspects of the administration and delivery of criminal forensic sciences. However, the configuration of the scientific expertise of that advisory board is too minimal to make it an effective forum for discussing internal

Laboratory issues, such as the Laboratory's scientific and financial needs. But, the advisory board could operate as a mechanism to generate momentum on behalf of assessing the Laboratory's needs as formulated by a scientific subcommittee.

For example, a scientific subcommittee that consisted mainly of scientists could further consider and refine proposals which the Laboratory has initially generated. The scientific subcommittee could vet the Laboratory's proposals before apprising the advisory board. A role of the advisory board would be to promote the priorities originally identified by the Laboratory and vetted by the scientific subcommittee.

The Laboratory must retain final control over its processes and procedures. While input from a well formulated Scientific Advisory Board may provide assistance to the Laboratory and scientific staff, it is important that ultimate control rest within the Laboratory.

**Recommendation 21:**

**21. A Policy on Familial Searches Must Be Developed**

There are currently no national guidelines as to how familial searches should be conducted. This recommendation is important in maximizing the usefulness of the DNA database. It is a scientific question requiring statistical expertise. While this question is important to the use of the database, it is not related to the broader issues addressed in the Vance Report.

**Recommendation 22:**

**22. Promulgation of Laboratory Policies Should Receive Adequate Review before Implementation**

What types of policies is the report referring to?

Did Vance find policies that are inappropriate?

What level of policy making would require outside review?

**Recommendations 23 and 24:**

**23. Encourage DNA Personnel to Become DNA Auditors and Reward their Professional Development**

**24. Encourage Forensic Science Personnel to Actively Participate in the ASCLD/LAB Assessment Process by Becoming an Assessor and Reward their Professional Development**

These are great ideas and will increase understanding of the accreditation process and appreciation of why a good quality assurance program is so valuable.

**Recommendation 25: No Comments**

**25. The MSP Crime Laboratory Should Consider Forming a Statewide Computer Forensic Group under the Consolidated Laboratory Similar to the FBI-sponsored Regional Computer Forensic Laboratories**

**Recommendations 26 and 27:**

**26. The MSP Crime Laboratory Must Create a Priority System for Casework Analysis**

**27. The Case Management Unit (CMU) Must Be Fully Integrated into the Streamlining of Cases through the Criminalistics, DNA and CODIS Units**

A method for prioritizing casework is very important. In practice, the process of controlling these priorities is easily subverted by staff, managers and customers at all levels. Communication and organization is critical in this area. The report does not make specific suggestions as to how to accomplish this. The District Attorneys would like to be speaking to the analysts doing their case, but a Case Management Unit may function as an intermediary. The suggestion in the report that the CMU would ensure that appropriate personnel and priorities are placed on case samples could become at odds with the managers of the DNA staff. Knowing who is in charge of what would be important for success of this concept.

# The Commonwealth of Massachusetts
## Executive Office of Public Safety and Security
One Ashburton Place, Room 2133
Boston, Massachusetts 02108
Tel: (617) 727-7775
TTY Tel: (617) 727-6618
Fax: (617) 727-4764
www.mass.gov/eops

**Deval L. Patrick**
Governor

**Timothy P. Murray**
Lieutenant Governor

**Kevin M. Burke**
Secretary


January 28, 2009

BY HAND

Inspector General Gregory Sullivan
One Ashburton Place, 13th Floor
Boston, MA 02108

Re: Draft Report on State Police Crime Lab

Dear Inspector General Sullivan:

Thank you for the opportunity to review and comment on your report, *DNA Testing Operations and the Associated Management Structure of the Massachusetts State Police Forensic Service Group* ("the Report"), prior to its release. The Report provides many valuable recommendations that the Executive Office of Public Safety and Security ("EOPSS")[1] looks forward to carefully evaluating and, where feasible, implementing. We do have several broad-based concerns about the Report as whole, as well as some more specific comments.

First, we are dismayed that what we consider the crucial finding of the Report – that "current CODIS procedures will successfully carry the Laboratory forward" – does not appear until the second to last page. Similarly, the statement that "based on our review of documents, we believe that all questionable CODIS entries have been reviewed and corrected" does not appear until page 12. The changes that we have made to CODIS are paramount to the integrity of the Lab – it was the status of CODIS that prompted your office initiate its review in the first place[2] – yet the Report seems to goes out of its way to identify and highlight the negative. We believe that the Report does a disservice to the

[1] The Report makes the common mistake of conflating EOPSS with the Department of Public Safety, an agency within EOPSS.

[2] Footnote 1 to the Report points out that in applying for Coverdell grants, the Lab now designates the State Auditor, rather than the Inspector General, as the external and independent entity that can investigate allegations of wrongdoing. In late May 2007, we asked for your office's permission to name the Inspector General as this entity for FY 2008; however, John (Jack) McCarthy of your office responded with a letter stating that permission would be contingent on EOPSS entering into an agreement to reimburse your office for any expenses incurred in connection with such an investigation.

Commonwealth by failing to vindicate the quality of the Lab's scientific work and the administrative progress that has been made in as clear a fashion as it recommends that changes still should be made.

As you know, less than two years ago, shortly after Governor Patrick took office, EOPSS determined that the Massachusetts State Police Crime Lab ("the Lab") was in a state of crisis. While the science was sound, management structures had broken down, particularly in the areas of CODIS administration and in the control of DNA cases in long-term storage. In the months since, we have made substantial progress at the Lab.

Perhaps the clearest sign of progress is that on December 3, 2008, all of our forensic functions received accreditation by the American Society of Crime Lab Directors' Laboratory Accreditation Board ("ASCLD/LAB"). This was a substantial accomplishment many years in the making that assures our stakeholders that all of the Lab's work is performed with a high level of scientific competence and reliability.

Our accomplishments are not limited to ASCLD/LAB accreditation, however. Among the Lab's additional achievements are the following:

We commissioned an outside review by Vance Associates and made many of the changes recommended by the resulting report;

We have unified all scientific functions under a single scientist, the Acting Lab Director;

We have resolved the crisis in CODIS, earning recognition from the FBI as a national model;

We have maintained and even increased operational budgets while largely holding the Lab harmless from dramatic budget cuts elsewhere in EOPSS and the Executive Departments;

We have integrated automated laboratory procedures involving the use of advanced robotics (as recommended by Vance and the Report);

We have transitioned to more cost-efficient and effective training of DNA analysts by using in-house resources instead of an outside entity;

We have modified the way we handle DNA cases in long-tem storage and dramatically upgraded our communication with the District Attorneys' offices while developing a method of automated case management that will further enhance communications; and

We have increased production and reduced the backlog across disciplines – the DNA unit, for example, completed 1047 cases in 2008 with an average turn-around time of 80 days, compared to 575 cases in 2007 with an average turn-around time of 126 days.

We recognize that there are improvements yet to be made at the Lab, and the Report provides many sound recommendations for our consideration as we plan our course going forward. We regret that the Report does not give the Lab the credit that it is due.

Furthermore, the Report focuses excessively on the management style and personality of the Acting Lab Director, an attack that we find profoundly disturbing. The Acting Lab Director took the position in a time of crisis for the institution and, as described above, has made substantial improvements in the Lab's performance. The Report fails to recognize the significant restraints placed on her by budget demands and the Commonwealth's collective bargaining laws. In addition, it is simply not true that the Acting Lab Director did not have significant management experience nor proven leadership skills when she took on the position. When she assumed the role of Acting Director in March 2007, she had over 12 years of combined supervisory and management experience at the Lab, with 6 years as a supervisor in DNA Unit at the Crime Lab; 3 years as Assistant Technical Manager for Forensic Biology, helping to oversee the DNA Unit and other scientific sections with over 30 scientists at 3 facilities; and 3 years as Quality Manager, leading nearly 100 sworn law enforcement forensic examiners at 9 facilities to understand and achieve the necessary quality assurance standards, while fostering collaboration with the civilian forensic sections within the Lab. Her experience and leadership skills have only been enhanced since she took on the acting position in March 2007. Despite our objections to the personal attacks, EOPSS, State Police management, and the Acting Lab Director take the concerns that underlie your criticisms seriously and will work to address them.

I turn now to our more specific comments.

Placement of the Lab within the State Police. The Lab's placement within the State Police appears, at least superficially, to be in tension with its mission to perform independent scientific work in the interest of the criminal justice system, and the optimal placement of the Lab within state government is something that we have evaluated and will evaluate on an ongoing basis. There are, however, substantial management and budgetary benefits to having the Lab as part of the State Police. And we do not believe that the structure inherently compromises the integrity of the Lab. Rather, it places a premium on creating a culture of independence and scientific integrity, which we have fostered by, among other things, giving the Lab Director a dotted-line reporting relationship directly to the EOPSS Undersecretary for Forensics.

That the Lab's placement does not automatically compromise its integrity is consistent with the findings of Vance Associates, who concluded that "[w]here a forensics lab is organizationally placed, and what agency or organization (if any) has ultimate oversight of the lab, is . . . purely a political decision." Furthermore, it is consistent with the practice across the country. The state crime lab is part of a statewide investigative agency in the majority of other states and is likewise part of a sworn law enforcement organization at the FBI, the Secret Service, the New York City Police, and elsewhere.

Experience of the Forensic Services Group Commanding Officer. Our system relies on the Lab Director and his or her management team for scientific leadership. The State Police Major in charge of the Forensic Services Group is selected for his management skills and training and his expertise in investigating crimes that draw on the work of the Lab. Indeed, all three majors that have held that position were previously commanders of large homicide units with decades of experience managing teams investigating murders and other complex crimes.

Management Employees Are Part of the Same Collective Bargaining Unit as Non-Management Employees. We agree that this may not the ideal structure and will investigate whether it would be consistent with our obligations under the law for supervisors, particularly those charged with quality assurance as a primary duty, to be in a separate bargaining unit from the line scientists. At the same time, the Report does not recognize the reasonable and appropriate restrictions placed on unfettered management discretion by the Commonwealth's labor laws and collective bargaining agreements. It should be noted that it is typical throughout state government, as well as in the private sector, for supervisors to be in the same collective bargaining unit as their subordinates. We reject any suggestion that mid-level managers should not have the ability to be represented by a union. Further, while we agree that the Quality Assurance Manager should ideally not be a union steward, as a matter of law, management cannot control that decision. In any case, the Quality Assurance Manager is no longer a union steward and has not been so for a number of months.

Discrepancies in Salaries Between Civilian and Law Enforcement Personnel. We agree that our civilian personnel deserve an increase in salary to allow the Lab to better compete with its peers around the country. The Governor's fiscal 2009 budget proposal would have funded such a raise, and negotiations to re-classify the scientists at the Lab were in very early stages when it became clear that the Commonwealth was on the verge of a fiscal crisis. At that point discussions of a raise were put on hold. The Report's recommendation that civilians and law enforcement personnel be given salary parity is impossible given the current state of the economy, the fact that achieving such parity would cost millions of dollars per year and bring the civilian pay-scale well above that in other states, and the fact that sworn police officers, even those assigned to the Lab, have responsibilities that go beyond those of the Lab's civilian staff.

The Need for DNA Profiles from all Forensic Biology and DNA Staff. We concur that the creation of a database that would allow the Lab to assure that DNA samples are not accidentally contaminated by staff is critical. As we have explained, when this issue was raised with the union representing lab employees, they sought financial compensation in exchange for providing their DNA. This is not, as the Report suggests, an issue of "trust," but of funding and of the appropriateness of expending scarce resources to provide additional compensation for a core job function.

The Possibility of Bias Affecting Scientific Conclusions. The Report appears to suggest that no effort is made to protect against bias in favor of law enforcement from affecting the Lab's work. In fact, nothing could be further from the truth. Many of the Lab's protocols are designed to prevent bias from infecting the work of our scientists, which is the core principle behind the requirements of ASCLD/LAB accreditation. Every report that is issued by the Lab undergoes a careful ASCLD/LAB-mandated "technical review" that assures that the report is scientifically accurate and free of bias. We will, however, carefully evaluate the Report's specific suggestions in this area and incorporate those that are consistent with our underlying mission of completing cases using the best available science within the budget allocated to us by the legislature.

The Sharing of Quality Reports with the Acting Laboratory Director. We do not agree that this is an inappropriate procedure. To the contrary, we believe that the Lab Director needs to be able to monitor the specific performance of her employees and their supervisors and be involved in appropriate and collaborative corrective actions. It is worth noting in this context that during the tenure of the

Acting Lab Director, no one has been disciplined as the result of a quality assurance issue. It should also be noted that the failings of the Lab and other labs around the country in the past have often been the result of upper management being too detached from the performance of line scientists.

The Structure of the CODIS Unit. The CODIS unit was re-structured by the Acting Lab Director to avoid problems such as those that led to the crisis in 2007 and to reduce the likelihood of cognitive bias on the part of those responsible for examining possible DNA matches. Ironically, that re-structuring is now the subject of criticism in the Report. That said, we agree that in the immediate aftermath of the re-structuring, there were some communication problems in the Unit. We believe that those communication problems have been resolved with a change in leadership and, as is consistent with the Report's recommendations, the initiation of a meeting among mid-level managers every other week that serves to reinforce regular less formal communications. The Report recommends that the Lab create the position of Assistant Supervisor-DNA CODIS in order to provide the current supervisor with certain scientific expertise. The expertise is present in the unit, and the current supervisor does draw on that expertise, but we will determine whether the budget can support the creation of a second-tier supervisor in that unit. The Report also suggests that the DNA Supervisor-CODIS not report to the Technical Leader of the DNA Unit. This, however, is a product of the structure of the Lab and the FBI's requirement that the CODIS supervisor report to a technical leader.

Treatment of DNQs. The Report states that DNA profiles that have been administratively removed from CODIS are transferred to a "separate, searchable database," which can be searched upon authorization by the Director. However, this section of the Report creates the misleading impression that the Lab may be comparing crime scene samples with the contents of this file to look for "hits" against non-qualifying individuals. This is not the case, for two reasons. First, this data file does not permit the Lab to conduct an electronic search to compare an unknown sample to the offender DNA profiles. To conduct such a search, the Lab would have to upload the offender profiles stored in this file back to CODIS. The file is "searchable" only to the extent that it can be sorted by the profiles' identifying numbers to determine if a particular sample is in the file. Second, the Director has never authorized a search of this file. Nonetheless, we agree with the Report's recommendation to review the storage of these profiles with the relevant stakeholders.

DNA Training. Contrary to the Report's finding, the Lab does extensive reference checks on all of its employees and does have procedures that specify how newly trained analysts will gain gradual exposure to more complex cases. Sometimes, however, turnover of personnel requires the Lab to accelerate the pace of this exposure.

In conclusion, we are gratified that the Report validates the core integrity of the science at the Lab and the current administration of CODIS, and we will continue our current efforts to maintain and improve the Lab's performance, taking into account the Report's structural recommendations.

Sincerely,

Gregory I. Massing
General Counsel

Cc: Secretary Kevin M. Burke
Undersecretary John A. Grossman
Colonel Mark Delaney
Barbara J. Hansberry, Esq.