

**California Crime Laboratory
Review Task Force**

**An Examination of
Forensic Science in California**

November 2009



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The findings and recommendations expressed in this report are solely those of the California Crime Laboratory Review Task Force, and should not be considered as representing those of any department or agency of the California State Government. The opinions and recommendations expressed in this report reflect the consensus of the Task Force members.

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Executive Summary



An Examination of Forensic Science in California

Over the years, a network of forensic laboratories was created throughout California to serve the state's criminal justice system. The California Department of Justice established several state-level labs while counties or cities developed their own entities. Since the criminal justice system depends on high-quality forensic science services, California enacted legislation in October 2007 to review the state's crime laboratory system (Assembly Bill 1079, Richardson) with a mandate to the Department of Justice to create and chair the California Crime Laboratory Review Task Force. The legislation added section 11062 to the California Penal Code,¹ which directed the Task Force to "make recommendations as to how best to configure, fund, and improve the delivery of state and local crime laboratory services in the future."

The mandate considered a variety of issues for the Task Force to review, including the following:

- Organization and management of crime laboratory services;
- Staff and training;
- Funding;
- Performance standards and equipment; and
- Statewide forensic science oversight.

The Task Force held monthly meetings from December 2007 through September 2009, with several hosted by crime lab directors. All meetings were open to the public. The members heard presentations from various organizations and individuals with expertise in crime laboratory oversight, ethics, and management; accreditation and certification; and forensic education and training. Interested members of the public in attendance also provided valuable input.²

To compile an inventory, which was mandated, and to gather other information necessary to complete its report, the Task Force drafted a comprehensive 19-page survey that was sent to each of the major crime labs operated by state, county, or local agencies.³ The labs proved to

¹ See Penal Code section 11062, set forth in Appendix B.

² A list of the presentations is set forth at Appendix G.

³ A list of the crime labs is included in Chapter 2. A copy of the survey is attached as Appendix C.

be tremendously cooperative and all returned the surveys. In addition, separate surveys were sent to all California district attorneys and county sheriffs, to a representative sample of local police departments, and to county public defenders and other defense organizations.⁴ A large number of surveys were returned, providing a wealth of useful data.⁵

Based on the results of these efforts, the Task Force prepared this report, *An Examination of Forensic Science in California*. This report has two goals: first, to provide an accurate snapshot of the current condition of government-funded forensic science in California, including descriptions and explanations of both successful and failed delivery of timely, reliable, scientific testing; and second, to recommend steps that state and local policymakers can take to identify and address deficiencies in the field while continuing to support its achievements.

A complete listing of the Task Force's recommendations follows. The full report includes background information and discussions of the recommendations; each of these recommendations reflects the consensus of the Task Force.

Staff and Training

Recruitment and Retention

Recruitment of new personnel and the retention of skilled, proficient forensic professionals are serious concerns among California crime laboratories. The Task Force identified a number of problems and potential solutions relating to recruitment and retention. The labs' primary concern is low pay at the entry level, resulting in difficulties in recruiting staff. This issue was consistently noted as a major problem by the Department of Justice's Bureau of Forensic Services (BFS) labs, whose staff have the lowest pay rates within the state, and by county and city labs. Another common problem is the excessive length of time to hire new staff: government hiring procedures and thorough background investigations result in a hiring process that ranges from several months to a year. Many qualified job applicants accept other offers, sometimes more lucrative, within that waiting period. The Task Force identified the most critical recruitment solutions: (1) offer better compensation for state and some local agencies; (2) have human resources staff find ways to expedite the testing and selection process; and (3) give lab managers more direction and authority over hiring and selection.

Survey responses from the county labs shared several common themes with state labs: they suffer from a lack of qualified candidates and they face stiff competition from other labs for desirable candidates. Specifically, several labs stated they have difficulty finding applicants who have thorough background knowledge of the discipline they wish to practice. Other issues: many applicants cannot pass a background check; others do not accept offers because the lab's starting salary is too low (even in some of the labs with the highest pay). Many county labs lose experienced staff because of burnout, high demands, monotony of casework, and excessive crime scene investigation responsibilities. In addition, many criminalists leave because of the high cost of living in their specific areas.

⁴ Copies of the surveys are included as Appendices D and E.

⁵ Responses were received from district attorney's offices, county sheriff's offices, police departments, and defender organizations. All stakeholder survey responses are included on a DVD that accompanies this report.



Orange County Sheriff-Coroner Department's OC Crime Lab

Recommendations

- Public crime labs should consider the appropriate employee classification of their forensic science professionals, and they should determine whether their salaries should be based on a model that compares salaries offered by similar-sized public agencies in relevant jurisdictions. For example, the California Highway Patrol (CHP) sets pay rates according to averages of several of the largest local agencies. The CHP currently uses the officer pay of the Oakland Police Department, the San Francisco Police Department, the Los Angeles Police Department and Sheriff's Department, and the San Diego Police Department as a baseline for their salary rates. The lower-paying municipal labs could also use the average of the competing agencies' salaries because several of them fell below the geographically adjusted average.
- Labs should consider the use of laboratory merit systems that offer higher pay to those who have advanced degrees and who demonstrate a willingness to participate in research projects that advance forensic science. Such incentives would be particularly appropriate for individuals who desire to promote to supervisory or management positions within the lab.
- Labs that currently do not offer pay incentives for individual analysts to achieve certification or assume technical lead duties should consider adopting incentives. Several municipal labs offer these incentives to retain their most qualified staff members.
- All public crime labs in California should consider adopting a common formula for calculating retirement benefits applicable to their forensic science professionals.

- Labs should give forensic scientists more opportunities to cross-train on different disciplines and to attend and participate in professional meetings.
- The controlling agencies' human resources units should work more closely with the laboratory managers to find ways to expedite the testing process. In addition, a greater involvement and understanding by human resources staff regarding lab processes would benefit both the lab and human resources. For example, one lab manager appropriately suggested that human resources staff take a more active role in understanding the mission and procedures that occur in a lab to develop a rationale for a more rapid hiring cycle.
- Labs and parent agencies should investigate establishing uniform background standards for forensic scientists. Each agency should publish the particular background standards a candidate is required to satisfy, allowing candidates to avoid time spent submitting—and allow labs to avoid time spent evaluating—an ineligible application.
- Labs should streamline the background check process for criminalist position applicants and coordinate with parent agencies to allocate additional resources to the background investigation unit.
- Labs should join an interagency effort to coordinate background investigations of common applicants, share information, and reduce redundancy. This cooperative effort would be facilitated by adoption of a set of industry-wide background standards. The Task Force suggests that the California Association of Crime Laboratory Directors (CACLD) draft these standards and issue recommendations to public laboratories statewide.

Education

In this key area, it is widely agreed that forensic scientists need college or university-level training in scientific principles and practices and the scientific method. It is clear, however, that college training is often not enough. California's lab directors have identified several deficiencies in the preparation of entry-level employees, most of whom are recent college graduates. According to lab directors, entry-level employees often lack:

- An adequate appreciation of what crime lab work entails;
- Basic "real-world" skills such as critical thinking, problem solving, and conflict resolution;
- Sufficient training in instrument analysis;
- Adequate training in particular disciplines, such as latent print analysis and crime scene investigation;
- Training in quantitative analysis and forensic statistics;
- Sufficient training in written and oral communication skills and report writing;
- Appreciation of the role of forensic science in the legal system and the courtroom; and
- Knowledge of ethical principles and legal standards and rules, including how to testify in court.

Recommendations

- The University of California and California State University should incorporate graduate level forensic science programs into mainstream course offerings.
- Continuing education for criminalists is essential, and the state should fund it accordingly. Crime laboratories should develop mandatory requirements for continuing education as part of their quality manuals.
- The state should provide sufficient funding to ensure proper staffing, maintenance, and future expansion of the California Criminalistics Institute (CCI) program, as well as the resources to hire outside contractors with specialized expertise to teach as necessary. Policymakers should consider a stable and permanent funding source for CCI, perhaps built along the model presented by the Commission on Peace Officer Standards and Training (POST).
- CCI should develop a lab management training program.
- CCI or alternative training opportunities should be available in a greater variety of locations throughout the state.
- California law schools should incorporate scientific evidence training into their coursework offerings.
- The state should establish (or reestablish) a doctoral program in forensic science at one of its state university campuses.
- University programs focusing on forensic science should take a more active role in informing students about the scrutiny of background checks and what types of personal issues could preclude students from employment in a forensic lab.

Certification

Professional certification is a designation earned by a person to assure that he or she has the minimum qualifications necessary to perform a job or task. Currently, the certification of forensic scientists is available to qualified forensic practitioners but is not required by California or federal law.

The essential components of a professional forensic science certification program include minimum education, experience, and professional involvement necessary to apply for certification. (See Table 2, Chapter 3, which provides an overview of the minimum requirements of five principle forensic science certificate programs.)

Recommendations

- All persons who practice in a forensic science discipline or testify as a forensic science analyst/examiner⁶ should become certified by a reputable certifying body.

⁶ An analyst/examiner performs casework-related duties on evidence items within the laboratory and issues reports containing opinions or interpretations on the findings and observations resulting from the work.

- All laboratories and their parent agencies are strongly encouraged to provide support and incentives to promote individual staff certification. Fiscal-based incentives may include funding application and sitting fees, as well as offering pay bonuses for certificate holders. Non-fiscal incentives may include on-duty study and test-taking time and the use of certificate status as a promotion factor.
- All forensic science professionals should have access to a certification process.
- The state should mandate that the only acceptable certificates are those granted by certification bodies accredited by the Forensic Specialties Accreditation Board, or certification bodies that adhere to requirements equivalent to those set forth by the Forensic Specialties Accreditation Board.

Funding

All California crime laboratories surveyed reported that they lack predictable and stable funding. California is not alone in this financial resource shortage. Testimony provided in 2008 to the National Academy of Sciences by the American Society of Crime Laboratory Directors also addressed the need for adequate and sustainable funding sources in order for the nation's crime laboratories to meet current and future demands.



The Task Force concluded that crime laboratory funding in California is inadequate, unpredictable, and too unstable to meet current demands or expectations of future growth. Changes to the existing funding to crime laboratories are needed to restore and enhance the effective delivery of forensic science services in California.

Recommendation

- Each agency that houses a crime laboratory in California must identify or create a consistent and reliable funding stream. It may be beneficial to link funding mechanisms to performance objectives as an incentive-based process that would enhance public confidence in government operations.

Performance Standards and Equipment

Workload Demands

The majority of lab directors reported that their laboratories experience some problems in meeting the demands of an ever-increasing workload. DNA, fingerprints, and firearms were most often identified as disciplines where requests exceeded staffing capabilities. While DNA is generally only available in a small percentage of cases, the demand and attention given to DNA appears to exceed that of many other forensic disciplines.

In addition, it is in non-DNA disciplines that labs expect demands to increase. In many cases, more staff cannot be hired because of the space limitations imposed by the size of the current laboratory facility. (In some cases, the space exists but the funds to hire criminalists do not.)

Recommendations

- Public crime laboratories should organize and participate in continuing education for attorneys and law enforcement in their service areas regarding effective use of forensic science and crime laboratory resources.
- Each crime laboratory should implement procedures to achieve better communication between stakeholders and laboratory personnel.
- Each crime laboratory should provide training to judges regarding the costs associated with lab personnel being away from the laboratory waiting to testify.
- Policymakers, laboratories, and laboratories' parent agencies should consider novel approaches to increasing efficiency and mitigating workload demands. Regional consolidation of services, contract services, fee-for-service programs, and evidence item testing limits should be explored and evaluated.
- Laboratories should explore cross-training analysts in multiple disciplines based on the size and needs of the laboratory.
- Laboratories and the district attorney's offices in their service areas should collaborate on standardizing routine discovery in criminal cases. In addition, labs should explore means of making items of discovery such as policy and procedure manuals available electronically.
- All crime laboratories should conduct studies to assess ways to improve efficiency and enhance productivity.
- All crime laboratories should explore whether flexible workweeks or alternative work shifts would facilitate efficiency.
- All crime laboratories should conduct a study to set standards for the number of crime lab analysts, supervisors, and support staff required to serve a particular population with a specified crime rate.

Staffing

Staffing levels are one of the key indicators of a laboratory's ability to meet service demands. Staff in the crime laboratory typically includes analyst/examiners, technical support personnel, managers, and clerical and other support personnel.

The Task Force has identified factors that have a significant effect on the ability of technical staff to meet their workload demands. These factors include staff shortages; difficulty in attracting experienced analysts; training time; staffing fluctuations due to extended leave or family leave, vacation, sick leave, and scheduled days off; analyst retention; and staff turnover. Further, laboratory staff must frequently confront and resolve non-scientific issues such as agencies requesting that everything in the case be examined, the CSI effect, time spent in court, discovery and public records requests, increased demands for DNA analyses, and providing training to law enforcement and district attorneys. There is also lack of support staff, insufficient supervisory personnel, and paperwork and administrative duties that add significantly to the time it takes to analyze a case. Finally, quality assurance demands, grant management requirements, instrument maintenance duties, lack of space, and budget constraints are additional factors preventing existing staff from meeting casework demands.

Recommendations

- Jurisdictions and laboratory parent agencies should develop comprehensive plans for adding staff to their crime laboratories and detail all the anticipated benefits, both short- and long-term.
- The crime laboratory, parent agency, and all crime laboratory service stakeholders within the laboratory's jurisdiction should collaborate to set acceptable standards for turnaround time service goals and the "not to exceed" number of backlogged cases.
- Crime laboratories, parent agencies, and other stakeholders should coordinate efforts to obtain authorization and funding for necessary additional staff.
- The state should conduct a study to establish a laboratory staffing formula that addresses the following areas:
 - o The acceptable number of cases per analyst in each forensic discipline;
 - o The acceptable analyst-to-manager ratio within laboratories;
 - o The acceptable number of laboratory support staff; and
 - o The feasibility of statewide guidelines that establish the ideal number of analysts to serve a particular size population with a specified crime rate.

In addition, the study should consider the feasibility of contract-based crime laboratory services or payment for forensic services (i.e., fee-for-service).

Equipment and Facilities

Many California crime laboratories lack necessary equipment or facilities. Laboratories, however, can and should consider outsourcing some requests to laboratories that possess additional or different capabilities. In addition to having the appropriate equipment for each discipline in forensic science, it is important to ensure the equipment is maintained and replaced as necessary.

Recommendations

- Laboratories should ensure that they possess all equipment and facilities necessary to provide the highest quality forensic science services and to meet all client demands in a timely manner.
- Laboratories should investigate and identify underutilized forensic science services for potential regional consolidation.
- Each laboratory should maintain an equipment replacement budget to ensure that its equipment is modern and functional.

Accreditation

The Task Force reviewed the status of crime laboratory accreditation. The term “accreditation” is defined in the forensic science profession as the formal assessment and recognition by an impartial authority that a forensic laboratory is capable of meeting and maintaining defined standards of performance, competence, and professionalism.⁷ It is a status awarded to forensic laboratories, while certification is earned by individual forensic scientists. The accreditation of laboratories is a voluntary process and involves independent third-party scrutiny.



Recommendations

- All California public crime laboratories should be accredited through one of the available crime laboratory accreditation programs. The Task Force does not see a need to establish a parallel or unique forensic laboratory accreditation program in California. Conformance to existing accreditation programs is a rigorous and time-consuming endeavor for even the smallest forensic laboratories, and it is unlikely that any of California’s public crime laboratories would allow their accreditation status to lapse because the cost would be too great, especially the cost to the reputation of the forensic laboratory and its ability to acquire grant funding. Direct applications to the National Institute of Justice for DNA and forensic science improvement grants require proof of accreditation status to be considered for grant funding.
- The state should further study whether or how forensic science activities that occur outside of accredited crime laboratories could be brought within an accredited organization.

⁷ *Encyclopedia of Forensic Sciences*, edited by Siegel, Saukko and Knupfer, 2000 Academic Press, Volume 1, Glossary, at p. Aii.

Statewide Oversight

The call for a unified statewide perspective on forensic science issues is a product of the various concerns expressed elsewhere in this report. While some laboratory shortcomings identified by the Task Force can be addressed locally by individual laboratories, others would be most effectively studied, and corrected, by means of inter-jurisdiction coordination and advocacy at a state government level. Thus, the creation of a statewide entity concerned with the timely delivery of reliable forensic science should be considered.

Recommendation

- California should establish a statewide body to consider issues related to forensic science. The specifics of this proposal, including the composition and functions of this body, will be described in a supplemental report published within one year of this report.



Chapter 1

Introduction

Over the last two years, the California Crime Laboratory Review Task Force (Task Force) has studied the state of forensic science services in California. The Task Force collected and analyzed extensive data from California’s public crime laboratories, their user agencies, and other stakeholders. The Task Force conducted interviews, heard presentations from experts, visited laboratories, and engaged in constructive discussion and debate. This report is the product of those efforts, and its goals are twofold. First, the report seeks to provide an accurate snapshot of the current condition of government-funded forensic science in this state, including descriptions of both the successful and failed delivery of timely, reliable scientific testing. Second, the report will recommend steps that state and local policymakers can take to identify and address deficiencies in the field while continuing to support forensic science achievements.

The History of Crime Laboratory Review in California

Scientific evidence has long been recognized as a valuable tool to not only identify and convict the guilty, but to exclude or exonerate the innocent.⁸ Although such procedures as fingerprints, firearm comparison, and various forms of serology testing have been used for many years, the development of DNA testing dramatically increased interest in the application of scientific procedures to the criminal justice system. That in turn focused attention on forensic science in general, including government crime laboratories and the criminalists and technicians they employ. In California, the capacity of labs to handle increased workload, the adequacy of facilities and equipment, the accuracy of testing, and questions about lab accreditation and certification of criminalists all came under increased scrutiny. California has explored these issues on at least three occasions in the past 10 years: the 1998 State Auditor’s study, the 2003 Attorney General’s study, and the 2004 study by the California Commission on the Fair Administration of Justice.

The 1998 State Auditor’s Study

Pursuant to former Penal Code section 13892,⁹ in fiscal year 1997–1998 the California State Auditor conducted an “assessment of the needs of existing forensic science laboratories” to determine the “changes, improvements, and augmentations” needed for the labs to obtain or maintain American Society of Crime Laboratory Directors/Laboratory Accreditation Board (ASCLD/LAB) accreditation by January 1, 2004.¹⁰ The State Auditor used contract experts, site

⁸ For a short history of forensics and the use of scientific evidence in court, see *Examining Forensics*, 19 CQ Researcher 597, 606–610 (July 17, 2009).

⁹ Repealed by Stats. 2001, c. 745, section 164.

¹⁰ ASCLD/LAB accreditation procedures are discussed later in this report in Chapter 5.

inspections, interviews with lab directors, and an advisory board containing representatives from forensic labs, law enforcement, prosecutors' offices, local and county government, the Department of Justice Bureau of Forensic Services (BFS), and the Judicial Council. Although the State Auditor assessed 19 government forensic laboratories operated by local and county agencies, the Auditor did not examine the labs operated by BFS.¹¹



Only six of the laboratories in the study were accredited.¹² The Auditor found that several labs lacked a number of the features required by ASCLD/LAB standards, noting the absence of comprehensive quality control systems and proficiency testing or court monitoring programs. Many of the labs operated in cramped facilities and relied on outmoded equipment. And several labs lacked an effective case management information system; nine did not have documented staff training programs.

The Auditor recommended that the laboratories consolidate or regionalize some services and consolidate laboratories within a specific region. Further, the report acknowledged that correcting the identified deficiencies would be costly, concluding that the Legislature would have to determine whether the goal of universal accreditation warranted state funding, and if so, what constraints and priorities such funding would require.

The 2003 Attorney General's Study

Less than five years after the State Auditor's report was issued, former Attorney General Bill Lockyer created the California Task Force on Forensic Services "to assess the current status of California's crime laboratories and to identify the changes necessary to ensure the system has the capacity and expertise to deliver timely and accurate forensic services into the future."¹³ The Lockyer Task Force examined all the county and local labs surveyed by the State Auditor, but also reviewed the 13 laboratories operated by BFS. Members of the Lockyer Task Force included representatives from the Attorney General's Office and BFS, the Governor's Office of Criminal Justice Planning, the League of California Cities, prosecutors' offices, law enforcement, and crime labs. The Lockyer Task Force gathered information by sending surveys to crime lab directors, law enforcement officials, and district attorneys.¹⁴ Surveys were also sent to state-level forensic laboratories in the 10 largest states, five of which responded.

The Lockyer Task Force found that as of June 2003, all but seven of California's government crime labs had been accredited by ASCLD/LAB, a result attributed in part to a requirement of accreditation or a certified intent to seek accreditation to qualify for federal improvement

¹¹ California State Auditor, Bureau of State Audits, *Forensic Laboratories: Many Face Challenges Beyond Accreditation to Assure the Highest Quality Services* (Dec. 1998) <<http://www.bsa.ca.gov/pdfs/reports/97025.pdf> >.

¹² The report did not identify the accredited laboratories nor did it specify which labs were found deficient in various areas.

¹³ California Task Force on Forensic Services, *Under the Microscope* (Aug. 2003) <http://www.ag.ca.gov/publications/bfs_bookmarks.pdf >.

¹⁴ Responses were obtained from 150 law enforcement agencies and 19 district attorney's offices; the data requested was for fiscal year 2000–2001. Public defenders were not surveyed because they rarely request forensic services from public crime labs (*Under the Microscope*, at fn. 1.).

grants.¹⁵ Although the Lockyer Task Force concluded that the system of providing forensic services through local jurisdictions and the state “appears to function effectively,” it nonetheless recognized that the state’s crime labs “have significant needs that must be met in order for forensic services to continue to improve and meet the demands of the criminal justice system.” The Lockyer Task Force urged the development of a “unified strategy for future improvements” in order to “ensure that the most effective possible use is made of public resources.”¹⁶

Among the report’s specific recommendations was the creation of an ongoing representative body to develop a shared vision for California’s forensic services delivery system and a master plan for implementing that vision. In addition, the Lockyer Task Force report recommended the following:

- All public laboratories should be accredited and that quality assurance and appropriate training standards be developed for disciplines practiced outside forensic laboratories, including crime scene and latent fingerprint units.
- The state should support training by the California Criminalistics Institute (CCI).
- In-service training programs should be augmented and public universities should be encouraged to support research and professional education in the forensic sciences.
- State and local agencies should consider working toward regionalization of some services where appropriate.¹⁷

The California Commission on the Fair Administration of Justice

In 2004, one year after issuance of the Lockyer Task Force report, the Legislature passed Senate Resolution 44, which created the California Commission on the Fair Administration of Justice (CCFAJ). Former California Attorney General John Van de Kamp chaired the privately funded commission, and it included representatives from law enforcement, prosecutors’ offices, defense counsel, the private bar, universities, the judiciary, and the public. The Commission was tasked with reviewing the administration of criminal justice in California to determine the extent to which the system had failed, resulting in wrongful convictions of innocent persons. The Commission also examined ways of improving the criminal justice system and made recommendations designed to ensure the fair, just, and accurate administration of the criminal justice system.

As part of its review, the Commission heard testimony and issued a report and recommendations on forensic scientific evidence.¹⁸ Specifically, the CCFAJ report recommended the following:

- Crime lab directors should encourage the certification of all forensic experts.
- District attorneys or other prosecutorial agencies should investigate and report on allegations of professional negligence or misconduct that would affect the integrity of a public crime lab.

¹⁵ See 42 U.S.C. section 3797j–3797o; *Under the Microscope*, at p. 19.

¹⁶ *Under the Microscope*, at pp. 66, 69.

¹⁷ *Under the Microscope*, at pp. 72–77.

¹⁸ California Commission on the Fair Administration of Justice, *Official Report and Recommendations on Forensic Science Evidence* (May 2007) <<http://www.ccfaj.org/documents/reports/problems/official/OFFICIAL%20REPORT%20ON%20FORENSIC%20SCIENCE%20EVIDENCE.pdf>>.

- A governmental agency or commission should be created with the authority to formulate and apply statewide standards for criminalists.
- Training programs on the use of forensic scientific evidence should be provided for prosecutors, defense counsel, judges, and police investigators.¹⁹

The California Crime Laboratory Review Task Force

Creation and Mandate

In October 2007, before issuance of the CCFAJ report on scientific evidence, the Legislature passed and the Governor signed AB 1079, which added section 11062 to the California Penal Code.²⁰ The legislation created the California Crime Laboratory Review Task Force, which was directed to “review and make recommendations as to how best to configure, fund, and improve the delivery of state and local crime laboratory services in the future.” The Task Force mandate identified various issues involving the organization and management of crime laboratory services, staff and training, funding, and performance standards and equipment. In addition, the Task Force was ordered to include in its final report “a complete inventory of existing California crime laboratories” with details on staffing, workload, budget, major instrumentation, and organizational placement within the controlling agency.²¹

The statute required the Department of Justice to establish and chair the Task Force. In addition, the statute provided that the Governor, specified legislators, various state agencies, and other organizations would appoint members. The membership represents a broad range of stakeholders involved in crime lab issues, including lab directors, criminalists, law enforcement officials, prosecutors, defense counsel, educators, and the judiciary. All staff assistance for the Task Force was provided by the Department of Justice.

Methodology

To compile the mandated inventory and gather information necessary to complete its report, the Task Force drafted a comprehensive 19-page survey that was sent to each major crime lab operated by state, county, or local agencies.²² The labs proved to be tremendously cooperative and all returned the surveys. Task Force members then scheduled on-site meetings with the laboratory directors, conducted interviews and toured the facilities, and prepared summaries of the interviews.²³ In addition, separate surveys were sent to all California district attorneys and county sheriffs, to a representative sample of local police departments, and to county public defenders and other defense organizations.²⁴ A large number of surveys were returned, providing a wealth of useful data.²⁵

¹⁹ California Commission on the Fair Administration of Justice, *Official Report*, at pp. 65–66.

²⁰ The CCFAJ endorsed AB 1079.

²¹ See Penal Code section 11062, set forth in Appendix B.

²² A list of the crime labs is included in Chapter 2 of this report. A copy of the survey is included as Appendix C. The State Auditor and Lockyer Task Force reports included the Huntington Beach Police Department Crime Lab in their review, although the Lockyer report noted that the lab had reduced its services and transferred much of its workload to the Orange County Sheriff’s lab. This Task Force determined that the size and caseload did not warrant inclusion of Huntington Beach in the survey.

²³ All survey responses and interview summaries are included on a DVD that accompanies this report.

²⁴ Copies of the surveys are included as Appendices D and E.

²⁵ Responses were received from district attorney’s offices, county sheriff’s offices, police departments, and defender organizations. All the stakeholder survey responses are included on a DVD that accompanies this report.

The Task Force held monthly meetings from December 2007 through September 2009, with several meetings hosted by crime lab directors. All meetings were open to the public. The members heard presentations from various organizations and individuals with expertise in the areas of crime lab oversight, ethics, and management; accreditation and certification; and forensic education and training. Interested members of the public in attendance also provided valuable input.²⁶ Task Force subcommittees drafted report sections on specific topics, and drafts were revised following public discussions. The entire report draft was discussed in three public sessions and reflects the consensus of the Task Force members.

Other Considerations

Clearly, many of the shortcomings and needs identified by the surveys require additional funding for new or expanded facilities, equipment upgrades, additional staffing, and continued education and training. Given current fiscal constraints and the vagaries of public funding, however, the Task Force focused on improving the delivery of forensic services within existing budgetary constraints. As discussed later in this report, potential immediate and beneficial actions could include consolidation of some services, better education of stakeholders on the uses and limits of forensic evidence, and firm limits on case evidence items to be tested. Nonetheless, a commitment to effective crime lab services will inevitably require adequate funding at both the state and local level. The Task Force has identified areas where enhanced funding efforts are most critical.

Although not explicitly included in the mandate of AB 1079, it became clear during the Task Force review that California must consider the need for, and role of, a statewide forensic science commission or advisory board. To that end, the Task Force heard presentations from



Sacramento County District Attorney's Forensic Services Laboratory

²⁶ A list of the presentations is set forth in Appendix G.

representatives of several state commissions and reviewed documents pertaining to the responsibilities and operation of all currently existing commissions. Their roles ranged from merely advisory to statewide control of all forensic services to oversight for complaints and operating standards. While not all Task Force members agreed on the scope of a commission, the members unanimously recognized the need for some ongoing statewide effort to coordinate and facilitate the timely delivery of reliable forensic science services in California. The complexity and significance of this issue warrants further study, as set forth in Chapter 6 of this report.

Finally, two other studies shaped the direction of the Task Force's investigation and final report. First, in January 2008, the United States Department of Justice's Office of the Inspector General issued a report on state and local oversight of crime labs receiving funding from the Paul Coverdell Forensic Science Improvement Grants Program.²⁷ The Inspector General concluded that the congressional requirement for a process of external investigation into allegations of serious negligence or misconduct by a lab receiving Coverdell funds was not being adequately enforced in many jurisdictions. The report recommended changes to ensure labs comply with the investigation requirements. (The Inspector General's findings were examined in more detail by the Innocence Project in a report issued in 2009.²⁸) Without finding that any state or local oversight procedures identified by California crime labs were out of compliance with the Coverdell requirements, the Task Force still concluded that statewide investigatory procedures merit further consideration.

Second, in February 2009, the National Academy of Sciences' National Research Council released *Strengthening Forensic Science in the United States: A Path Forward*, a long-awaited study on forensic science (referred to as the NAS report).²⁹ The report, which covers a broad range of issues related to the operation of crime labs and the role of forensic evidence, continues to spark widespread discussion and debate throughout the forensic science community and has been a valuable resource for the Task Force.

²⁷ United States Department of Justice, Office of the Inspector General, *Review of the Office of Justice Programs' Paul Coverdell Forensic Science Improvement Grants Program, Evaluation and Inspections Report* (Jan. 2008) <<http://www.usdoj.gov/oig/reports/OJP/e0801/>>.

²⁸ The Innocence Project, *Investigating Forensic Problems in the United States: How the Federal Government Can Strengthen Oversight Through the Coverdell Grant Program* (Mar. 11, 2009) <<http://www.innocenceproject.org/docs/CoverdellReport.pdf>>.

²⁹ National Academy of Sciences, *Strengthening Forensic Science in the United States: A Path Forward* (Feb. 2009) <http://www.nap.edu/catalog.php?record_id=12589#toc>. The recommendations made in the NAS report are set forth in Appendix H.



Chapter 2

Organization and Management

The Task Force was created by the Legislature to study and report on the delivery of forensic services by the state, county, and local crime labs. Therefore, the Task Force did not explore the numerous private laboratories, both in and outside of California, that provide such services to law enforcement, prosecutors, and defense counsel.³⁰

In addition, the Task Force decided not to survey the numerous crime scene, fingerprint, firearm, and other specialized units operated by many police and sheriff's departments. Although issues pertaining to these disciplines, such as training and certification, are discussed in the context of the larger crime labs, the Task Force did not have sufficient resources to fully examine smaller stand-alone units.

Finally, the Task Force received survey responses from the Los Angeles County Coroner's Office, the San Diego and San Francisco Medical Examiners, and the Wildlife Forensic Laboratory of the California Department of Fish and Game.³¹ The Task Force greatly appreciated their assistance and found the information they provided useful for research. However, the Task Force determined that their operations were not covered by the scope of the mandate and have not specifically discussed those laboratories in the report. Nonetheless, many of the findings and recommendations will apply to their operations.

The crime laboratories addressed by this report are managed by their respective controlling governmental agencies at the state, county, or local level. The labs' parent agencies are responsible for supervision and funding. The organizational details for each of the laboratories are set forth in their survey responses and are summarized as follows.

State of California

The Bureau of Forensic Services (BFS) is part of the Division of Law Enforcement (DLE) within the California Department of Justice. The chief of BFS reports to the director of DLE. The BFS

³⁰ Many of the surveys, from both labs and the various stakeholders, identified instances in which private laboratories have been used for forensic services, most often for DNA analysis. Other government agencies, such as the FBI or the Bureau of Alcohol, Tobacco, Firearms and Explosives, maintain forensic laboratories that may also be used for special investigations.

³¹ The director of the Wildlife Forensic Laboratory served as a member of the Task Force.

regional lab system was established in 1972 to provide service to those counties and clients that could not reasonably afford, or lacked the workload to support, their own forensic scientists or laboratories.

BFS operates 10 regional laboratories, the Jan Bashinski DNA laboratory in Richmond, a latent print and questioned document laboratory in Sacramento, a toxicology laboratory in Sacramento, and a training center, the California Criminalistics Institute. The regional laboratories provide a broad range of forensic services to various county and local agencies that do not have access to other labs. The Jan Bashinski DNA laboratory is responsible for DNA casework, as well as administration of the state's DNA Data Bank Program and Missing Persons Data Bank Program. DNA casework analysis is also performed in five regional laboratories: Central Valley, Fresno, Sacramento, Redding, and Riverside.

Counties

The 11 laboratories run by counties are organized under one of two models.³² Eight county labs are operated by the county sheriff's office and provide services throughout the county except for cities that maintain their own labs. Three other county labs are operated by their district attorney's office and provide a similar level of support. In some instances, county labs provide forensic services to other counties on a contract basis.

Cities

Six of the labs studied by the Task Force are operated by municipal police departments and primarily serve the needs of the cities in which they are located. They may share some responsibility for certain disciplines with county or state BFS labs.

³² An exception is Orange County, whose crime lab is governed by a board consisting of the sheriff, the district attorney, and the county chief executive officer.

Crime Laboratory Survey Respondents

Alameda County Sheriff's Office Criminalistics Laboratory
BFS Central Valley Laboratory (Ripon)
BFS Chico Crime Laboratory
BFS Freedom Crime Laboratory (Watsonville)
BFS Fresno Regional Laboratory
BFS Jan Bashinski DNA Laboratory (Richmond)
BFS Latent Print & Questioned Document Laboratory (Sacramento)
BFS Northstate Laboratory (Eureka)
BFS Redding Crime Laboratory
BFS Riverside Crime Laboratory
BFS Sacramento Crime Laboratory
BFS Santa Barbara Crime Laboratory (Goleta)
BFS Santa Rosa Crime Laboratory
BFS Toxicology Laboratory (Sacramento)
California Department of Fish and Game Wildlife Forensic Laboratory
Contra Costa County Sheriff's Department Forensic Services Division
El Cajon Police Department Forensic Laboratory
Fresno County Sheriff's Office Forensic Laboratory
Kern County District Attorney's Regional Criminalistics Laboratory
Los Angeles County Coroner Forensic Science Services
Los Angeles County Sheriff's Department Scientific Services Bureau
Los Angeles Police Department Criminalistics Laboratory
Los Angeles Police Department Technical Laboratory (Latent Print)
Los Angeles Police Department Technical Laboratory (Photo)
Long Beach Police Department Crime Laboratory
Oakland Police Department Criminalistics Laboratory
Orange County Sheriff-Coroner
Sacramento County District Attorney's Forensic Sciences Laboratory
San Bernardino County Sheriff-Coroner
San Diego County Medical Examiner
San Diego Police Department Crime Laboratory
San Diego County Sheriff's Department Regional Crime Laboratory
San Francisco Medical Examiner
San Francisco Police Department Criminalistics Laboratory
San Mateo County Sheriff's Office Forensic Laboratory
Santa Clara County District Attorney's Crime Laboratory
Ventura County Sheriff's Department Forensic Sciences Laboratory



Chapter 3

Staff and Training

Recruitment and Retention³³

The surveys indicated that the recruitment of new staff and the retention of valuable trained staff is a growing concern among California crime laboratories. Therefore, the Task Force sought to examine the problems and potential solutions relating to recruitment and retention that were identified in the course of this study. To address recruitment, the Task Force focused on the problem of low pay at the entry level, which was a primary concern expressed by both state and local labs experiencing recruitment difficulties. The Task Force also addressed another common problem: the excessive length of time to hire new staff, which causes many qualified applicants to accept other, or more lucrative, job offers.

The Task Force also examined the factors affecting retention. By studying the laboratories with the best retention rates, the Task Force determined several factors that increase retention of trained forensic scientists, such as higher salaries, support for professional development, and increased opportunities for training and career advancement.

Methodology

Surveys sent to California's state, county, and city crime laboratories requested a list of the technical position titles, their salaries, and the number of allocated and filled full-time employees for each technical position. The lab directors were also asked to provide comments on what they perceived as problems relating to both recruitment of new technical staff and their retention. This section of the report summarizes their responses and provides recommendations for addressing recruitment and retention.

The table of comparative salaries set forth in Appendix I was compiled for the Task Force by the California Association of Criminalists (CAC) from its 2008–2009 salary survey. This table includes the salary ranges, retirement formulas, and other benefits that personnel in each classification receive.

Discussion

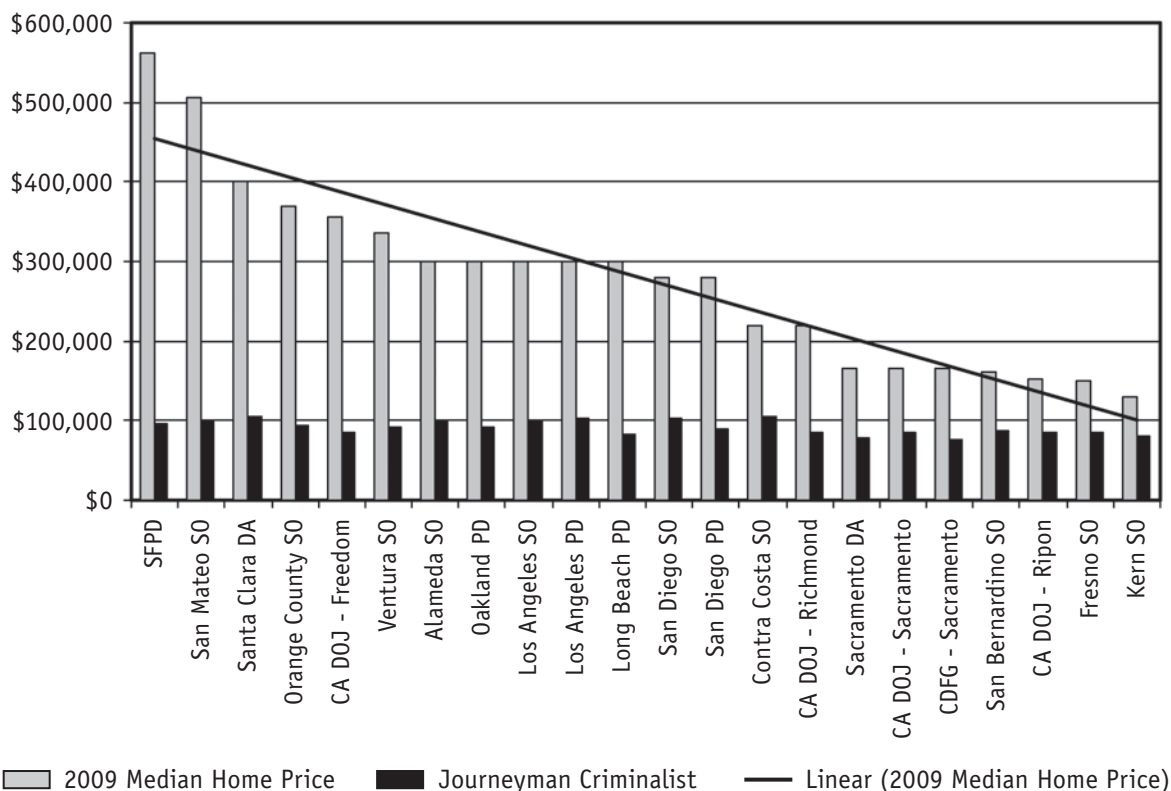
Salaries

Many laboratory directors stated that the salaries are too low to attract and retain qualified staff. This problem is evident in high-cost regions, most notably the Bay Area (see Figure 1).

³³ Information provided by Task Force member Jeff Rodzen.

The Richmond BFS lab is a good case study for this problem. The lab reported that low salary is a serious issue because a large proportion of its staff cannot afford to live in the high-cost Bay Area. Many live in the Central Valley and commute. Moreover, criminalists use that particular lab for DNA training and then leave for other higher paying labs in the Bay Area, or they transfer to other BFS labs in areas with a lower cost of living (i.e., Sacramento or Riverside).

Figure 1
January 2009 County Median Home Price and “Journeyman Criminalist” Salaries by Agency³⁴



Sources:

2009 January median home prices – California Association of Realtors

2008 criminalist income – California Association of Criminalists

Note: The 2009 January home price data was not available for Shasta and Humboldt counties; therefore, the Department of Justice labs in Redding and Eureka are not presented.

To attract and retain more criminalists at the Richmond lab, BFS must offer competitive salaries. The Fresno BFS lab expressed concern about low retention due to the lack of competitive salaries and suggested “pay differentials” for certain labs, such as Richmond. Further, both the BFS Sacramento toxicology lab and the California Department of Fish and Game forensics lab stated that low entry pay is a major barrier to recruitment, thus their applicant pool has been very shallow and they have had to start new hires at the top of the pay range.

³⁴ Figure 1 displays the top annual salary of a “full journeyman” criminalist or forensic scientist versus the January 2009 median home price of each lab’s county location. The California Department of Justice BFS labs appear multiple times because that agency has many labs across the state.

In contrast to Richmond, some BFS labs do not believe low salary is a major issue. The Redding and Riverside BFS labs both stated that salaries are not the major issue in retention, but that criminalists left for various other reasons.

Most of the local (county and city) labs did not report salary being a major issue, though they did state that employees have occasionally left for other higher paying labs. The main exceptions were the Alameda County, Sacramento County District Attorney, Santa Clara County District Attorney, San Mateo County, and Long Beach Police Department labs, all of which stated that their entry-level salaries are too low to attract qualified staff. Lower salaries crippled competitiveness with other labs, and salaries were too low in light of the cost of living in their geographic areas. Even the San Francisco Police Department lab, which has the highest paid forensic scientists in California, reported that their entry-level salaries present recruiting problems because San Francisco is one of the most expensive areas to reside in the state.

The disparity of salaries across the state can be analyzed quantitatively. A possible model to assist labs in justifying salary increases for their criminalists is presented below. Figure 1, above, shows the 2008 journeyman level salaries for each lab regressed against median home prices. A significant relationship exists when comparing salaries to median home prices.

Further analysis, set forth in Table 1, indicates that the following labs would have to adjust their pay upward by the following amounts to meet the statewide average pay when the lab’s county of residence is considered.

Table 1
Actual Salary Compared to Predicted Salary

Agency	Journeyman Salary (Actual)	Predicted Salary	Salary Disparity
Orange County SO	\$94,992	\$95,012	-\$20
Fresno County SO	\$85,332	\$85,620	-\$288
BFS Ripon (Central Valley)	\$85,128	\$85,705	-\$577
San Diego PD	\$90,552	\$91,195	-\$643
BFS Sacramento	\$85,128	\$86,263	-\$1,135
Ventura County SO	\$92,112	\$93,554	-\$1,442
San Mateo County SO	\$99,228	\$100,931	-\$1,703
Kern County SO	\$81,480	\$84,762	-\$3,282
BFS Richmond	\$85,128	\$88,622	-\$3,494
San Francisco PD	\$95,652	\$103,247	-\$7,595
Sacramento County DA	\$78,012	\$86,263	-\$8,251
BFS Freedom (Watsonville)	\$85,128	\$94,412	-\$9,284
Long Beach PD	\$82,128	\$92,053	-\$9,925
CA Fish and Game	\$75,252	\$86,263	-\$11,011

While the actual dollar amounts will vary somewhat from year to year, this analysis provides a workable model to use for adjusting salaries upward to make underpaid labs more competitive.

Retirement Rates

Retirement rates for the various classifications in different jurisdictions are presented in Appendix I. There is a substantial variation, ranging from the standard peace officer retirement rate of 3 percent per year at age 50, to 2 percent per year at age 55. While new hires just beginning their careers may not pay much attention to their agency's retirement formula, it may be an issue for forensic scientists who have several years vested in their careers and may want to transfer to another agency that has a more lucrative retirement formula. Not all agencies use the same retirement system, however, and therefore service credit may not be directly transferable. Thus, this may be more a retention issue than a recruitment issue.

Length of Time Before Hiring

Nearly all the surveyed labs stated that their respective agencies take too much time to hire new staff. The lead time varies from several months to a year or more. Following application and a successful examination process for the job series, an applicant waits for results, may have to wait for an actual vacancy to occur, then be interviewed, and finally be subject to a background check that may take months to complete. The long delay in hiring is a major contributor to recruitment problems because many applicants may have found other employment in the interim. A continuous open examination process could alleviate some of these issues.

In addition, the California Department of Justice noted that a major delay is incurred while the medical reviews of each applicant are conducted. The state apparently has only one individual available to review all the medical backgrounds for BFS criminalist applicants and is backlogged several months.

Lack of Qualified Applicants

Many lab representatives noted that criminalist candidates lack appropriate scientific knowledge. While most lab directors felt that the University of California (UC) and California State University (CSU) systems sufficiently prepare candidates, they also felt that the candidates needed a better understanding of their respective scientific fields. Nearly all the labs surveyed indicated that they prefer candidates with a bachelor of science degree in a hard science as a minimum credential, as opposed to a degree in "forensic science." And many job applicants apply for positions they know very little about but find attractive because of the "CSI effect," which causes some jurors to expect more forensic evidence in court. Oftentimes the lack of specific subject matter knowledge is not apparent until the time of interview, which is well into the hiring process.

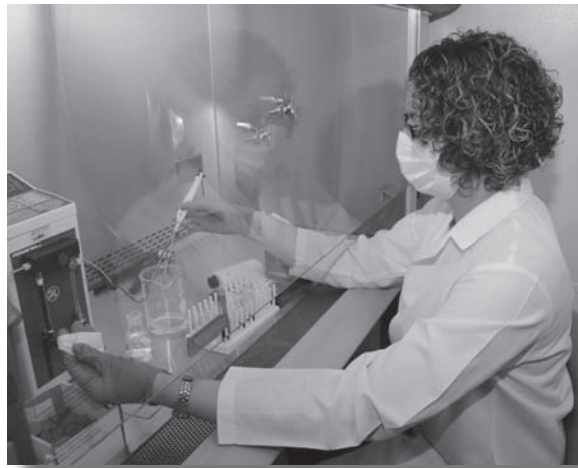
Other labs report that those with a criminalistics background tend to interview better than someone from a chemistry or biology background; however, it is uncertain whether universities are the best vehicle to provide subject-matter-specific instruction. In general, universities may be better suited to provide broad education in science, critical thinking, and analytical skills, leaving the more pragmatic professional training to laboratories. Also, because of the lack of a steady stream of qualified applicants, agencies often fill technician positions from the criminalist applicants list.

Another common complaint is that individuals who have worked in other labs or who may have valuable skills too often are not reachable on hiring lists, resulting from misinterpretation of resumes by human resources personnel or changes in class specifications that were made without the lab management's approval. There appears to be a substantial disconnect between the labs and their agencies' human resources divisions, and several labs reported that this was a serious problem.

The lack of qualified applicants is a complicated problem and not easily remedied. The Education section of this report addresses related concerns in more detail.

Elimination of Applicants by Background Checks

Many crime lab applicants fail to pass a background check and are eliminated from the candidate pool. One Southern California public lab expressed dissatisfaction in the strict hiring standards of its agency, noting that candidates were disqualified for drug use that occurred 10 to 15 years before, despite present employment at another public crime lab. Nevertheless, the Task Force recognizes that background checks are necessary because of the sensitive and critical role criminalists play in the criminal justice system. Mistakes or lack of professional standards by forensics professionals can lead, in a worst-case scenario, to wrongful convictions. The Task Force suggests that candidates, as well as those still in college who wish to become forensic scientists, be better informed that any association with criminal activity or lack of personal responsibility could preclude them from future employment in a crime lab.



One problem is that different labs and agencies have varying standards for disqualifying applicants. One lab director stated that his agency would not permit his lab to hire an experienced, highly qualified candidate because the candidate had used drugs more than a decade before, even if the candidate was already employed by another crime lab. It was his experience that this rigid standard may cause applicants to provide false or misleading information, while disqualifying those individuals who provide honest information.

In addition, students often complete the education required to become analysts only to later learn that they are disqualified from employment in a lab, usually due to past misconduct. Informing students about the most common disqualifiers at the outset would eliminate the unnecessary training of students who may never be eligible to work in a crime lab.

Need for Additional Support Staff

Many labs reported that their agencies need additional support and clerical staff to handle administrative issues so that the forensics staff can devote more time to actually performing casework. Some labs stated that this is one of the factors contributing to "burnout" of their forensics staff, as mentioned below.

Burnout from Heavy Workload

Forensics professionals tend to leave the field because of the heavy workload and high level of responsibilities placed on them. Many forensic scientists are also required to process crime scenes, prepare documents for the courts, and perform managerial and other tasks, in addition to the demand of casework, much of which is time-sensitive in light of trial schedules. Heavy workload was reported as a major retention issue by many labs, and adding more managerial and secretarial staff to assist with non-technical functions would allow forensic scientists to focus on actual casework.

Lack of Scientific or Professional Advancement

Many survey respondents cited the absence of opportunities for scientific or professional advancement within laboratories as a major retention issue. Because there is a tendency to train an analyst in only one forensic discipline, many analysts eventually become dissatisfied with the monotony of their professional routine. This monotony is often coupled with a lack of opportunity for advancement. Some reporting labs stated, and the Task Force agrees, that forensic scientists should receive more training opportunities and time to attend professional meetings. Continuing education, addressed in the Education section of this report, may be a key component in handling institutional stagnation.

Requirement of “Quantitative Analysis” Coursework

“Quantitative analysis” is an upper-division analytical chemistry course that is a minimum requirement for state criminalists and many local crime lab technical positions. Dating to the 1960s, the course was originally required under the California Code of Regulations³⁵ for analysts who perform blood alcohol analysis. Over time, the curriculum of most universities has evolved, and this course is no longer available at most UC campuses. However, it is listed in the course catalogs of some CSU campuses and local junior colleges.

Enforcement of this requirement varies between agencies. Some agencies will hire a new analyst if the analyst can produce a statement from his or her university certifying that the course material of “quantitative analysis” was included in other chemistry coursework. Other agencies are more rigid. In addition, some lab directors believe this course is a barrier to recruitment while others feel that it teaches analytical skills necessary for anyone performing forensic analyses. This issue is most prevalent for the constantly increasing staff of “DNA only” analysts, most of whom are trained in the universities as molecular biologists, as opposed to the toxicologists who were traditionally trained as chemists.

Some labs indicated that this course requirement is a barrier to recruitment because graduates of the UC system and some CSU campuses have not had the opportunity to take this course. An applicant conceivably could read a job announcement that requires a course titled “quantitative analysis” and not apply because the applicant had attended a college where it was no longer offered. However, if the announcement contained “quantitative analysis or equivalent coursework,” more applicants could apply if they had taken other analytical or upper-division chemistry courses.

³⁵ California Code of Regulations, Title 17, Division 1, Chapter 2, Subchapter 1, Group 8, Forensic Alcohol Analysis and Breath Alcohol Analysis, articles 1–8, sections 1215–1222.

The opinions of the various lab directors varied on the course requirement, so the Task Force concluded that enforcement of this requirement should be left to the lab directors' discretion. Further, the formation of the Forensic Alcohol Review Task Force created under section 6 of Senate Bill (SB) 1623 (Johnson 2004) will address this requirement in more detail in the future.

Recommendations

- Public crime labs should consider the appropriate employee classification of their forensic science professionals, and they should determine whether their salaries should be based on a model that compares salaries offered by similar-sized public agencies in relevant jurisdictions. For example, the California Highway Patrol (CHP) sets pay rates according to averages of several of the largest local agencies. The CHP currently uses the officer pay of the Oakland Police Department, the San Francisco Police Department, the Los Angeles Police Department and Sheriff's Department, and the San Diego Police Department as a baseline for their salary rates. The lower-paying municipal labs could also use the average of the competing agencies' salaries because several of them fell below the geographically adjusted average.
- Labs should consider the use of laboratory merit systems that offer higher pay to those who have advanced degrees and who demonstrate a willingness to participate in research projects that advance forensic science. Such incentives would be particularly appropriate for individuals who desire to promote to supervisory or management positions within the lab.
- Labs that currently do not offer pay incentives for individual analysts to achieve certification or assume technical lead duties should consider adopting incentives. Several municipal labs offer these incentives to retain their most qualified staff members.
- All public crime labs in California should consider adopting a common formula for calculating retirement benefits applicable to their forensic science professionals.
- Labs should give forensic scientists more opportunities to cross-train on different disciplines and to attend and participate in professional meetings.
- The controlling agencies' human resources units should work more closely with the laboratory managers to find ways to expedite the testing process. In addition, a greater involvement and understanding by human resources staff regarding lab processes would benefit both the lab and human resources. For example, one lab manager appropriately suggested that human resources staff take a more active role in understanding the mission and procedures that occur in a lab to develop a rationale for a more rapid hiring cycle.
- Various labs and parent agencies should investigate establishing uniform background standards for forensic scientists. Each agency should publish the particular background standards a candidate is required to satisfy, allowing candidates to avoid time spent submitting—and allow labs to avoid time spent evaluating—an ineligible application.
- Labs should streamline the background check process for criminalist position applicants and coordinate with parent agencies to allocate additional resources to the background investigation unit.

- Labs should join an interagency effort to coordinate background investigations of common applicants, share information, and reduce redundancy. This cooperative effort would be facilitated by adoption of a set of industry-wide background standards. The Task Force suggests that the California Association of Crime Laboratory Directors (CACLD) draft these standards and issue recommendations to public laboratories statewide.

Education³⁶

The Task Force’s enabling legislation, Penal Code section 11062, requires consideration of several subjects related to the education and training of California’s forensic science professionals. Specifically, this section of the report will consider:

- Whether educational and training opportunities are adequate to supply the needs of fully trained forensic criminalists in the future;
- Whether continuing education is available to ensure that forensic science personnel are up to date in their fields of expertise; and
- The future educational role, if any, for the University of California or California State University systems.

Methodology

The Task Force collected information on education and training in its written surveys of crime laboratory directors, as well as through interviews with laboratory directors and section heads. The Task Force also solicited information from directors of forensic science training programs at several California State University campuses and the University of California, Davis. At the February 5, 2009, Task Force meeting, a number of prominent California forensic science educators made presentations regarding their educational programs and their views of forensic science education. In addition, members of the Task Force reviewed and considered several reports that address the issue of forensic science education and training including, importantly, the 2009 NAS report.

Discussion

It is widely agreed that forensic scientists of the 21st century need college- or university-level training in scientific principles and practices and the scientific method. However, that college and university training is often not enough.

California’s lab directors have identified several key deficiencies in the preparation of entry-level staff, most of whom are recent college graduates. According to lab directors, entry-level staff often lack:

- An adequate appreciation of what crime lab work entails;
- Basic “real-world” skills such as critical thinking, problem solving, and conflict resolution;
- Sufficient training in instrument analysis;

³⁶ Information provided by Task Force members Arturo Castro and William Thompson.

- Adequate training in particular disciplines, such as latent print analysis and crime scene investigation;
- Training in quantitative analysis and forensic statistics;
- Sufficient training in written and oral communication skills and report writing;
- Appreciation of the role of forensic science in the legal system as a whole and inside the courtroom; and
- Knowledge of ethical principles, legal standards and rules, and how to testify in court.

Current University Programs in Forensic Science

California State University, Los Angeles

<http://www.calstatela.edu/exed/profdevel/forensicscience.htm>

California State University, Fresno

<http://www.csufresno.edu/forensicscience/>

California State University, East Bay

<http://www.csueastbay.edu/ecat/current/u-chem.html#section2>

California State University, Fullerton

<http://www.csufextension.org/Classes/certificate/CertDetail.aspx?GN=3120&GV=4>

California State University, San Jose

http://www.sjsu.edu/justicestudies/Programs/forensic_science_undergrad/index.htm

University of California, Davis

<http://forensicscience.ucdavis.edu/>

Undergraduate Training

Although applicants with undergraduate degrees in forensic science tend to interview well and have a better background in the practical aspects of lab work, most lab directors prefer candidates who have a degree in a traditional science discipline such as biology or chemistry.³⁷ Traditional science majors are more likely to understand the scientific principles behind the methods being used and are better able to troubleshoot technical issues and develop new methods when needed. And, while specific laboratory methods and practices can be taught on the job, remedial training in basic scientific principles is an impracticably large task.

Conversely, traditional science majors may lack adequate training in specific areas that are important to their professional development, such as quantitative analysis, instrument analysis, or forensic statistics, and often they have had less bench experience than desired. Often their

³⁷ Several lab directors were critical of unaccredited programs in “forensic science” operated by private, for-profit universities. In their view, these programs offer inadequate, watered-down coursework in science that does not prepare students adequately to enter the field. They suggested that these programs are little more than “diploma mills” and may be misleading students seeking careers in the field.

training was with instrumentation and techniques that are different from those implemented in forensic labs. Moreover, they know less than forensic science majors about forensic science disciplines and the role of forensic science in the legal system. Consequently, additional training is necessary to prepare any entry-level employee for casework responsibilities, regardless of educational focus.

Lab directors offered a number of suggestions to improve education and training at the undergraduate level. These suggestions include the following:

- Develop forensic science minors to complement traditional science majors;
- Increase the quality and rigor of the basic science courses in forensic science majors;
- Improve training in quantitative analysis and forensic statistics;³⁸
- Hire more instructors with practical experience in forensic science;
- Discourage students who would be unqualified for work in public forensic laboratories (e.g., due to criminal convictions) from pursuing degrees in forensic science;
- Provide more training in basic principles of evidence, law and legal rules (e.g., admissibility standards), expert testimony, and ethics; and
- Enhance communications with the forensic science community about its needs.

In 2004, the American Academy of Forensic Sciences established a standing committee known as the Forensic Science Education Program Accreditation Commission (FEPAC), which established a process for accrediting undergraduate and graduate forensic science programs. The FEPAC standards for undergraduate education are designed to ensure that students (1) obtain a thorough grounding in the natural sciences; (2) build on this background by taking a series of more advanced science classes; and (3) develop an appreciation of issues specific to forensic science through coursework and laboratory-based instruction. The Task Force has concluded that the FEPAC standards provide helpful and appropriate guidance to forensic science educators and university officials on how to design undergraduate and graduate programs in forensic science. Therefore, California colleges and universities that offer degrees (or even minors) in forensic science should be encouraged to seek FEPAC accreditation. To date, however, no institutions in California have sought this accreditation.

Training Casework-Ready Analysts

California's lab directors widely agree that, regardless of the type of degree earned, much of the training essential to successful lab work is provided after hiring. In other words, typical entry-level employees require extensive additional on-the-job training before they are ready to engage in casework.

The additional training has several purposes. In disciplines that require comparison of a known item to a questioned sample, such as latent fingerprints, toolmarks, and other pattern or impression evidence, new analysts typically go through a lengthy apprenticeship with an experienced examiner. By observing the judgments of an experienced colleague over a period of time, new analysts gradually develop their own sense of when to identify the source

³⁸ It was suggested that the courses many college students take in descriptive and inferential statistics do not provide adequate background for the statistical and quantitative problems criminalists face in the laboratory. The criminalist of the future will need training in probability and inductive logic, uncertainty principles, error analysis, and Bayesian analysis.

of an unknown fingerprint or to declare that marks or impressions were made by a particular object.³⁹ In disciplines that rely more heavily on instrumentation, new analysts require time and training to become familiar with the operating characteristics of the specific instruments available in the laboratory and with the laboratory's procedures for drawing conclusions from those instruments. For all new employees, training is needed to become familiar with laboratory systems for documentation, chain of custody, reporting, sample handling and retention, and safety procedures. Training is also needed on how to maintain appropriate professional relationships with lawyers, how to meet legal obligations with regard to disclosure and transparency of laboratory work, and how to testify in court.

The time and effort required for on-the-job training of new employees places a serious burden on forensic laboratories, particularly those that experience high rates of employee turnover. There often is a lengthy period before the new employee becomes productive. During this period, other employees become less productive as well because they must devote time to training, usually in inefficient one-on-one sessions. Moreover, the quality of this training varies with the teaching skills and experience of the existing employees who are available for the task.

Finishing Schools

It has become apparent that part of the necessary pre-casework training could take place more efficiently and less expensively in educational institutions or specialized training programs. One approach to expedite individual analyst training would be to create a "finishing school" for new laboratory employees to help bridge the gap between a college graduate and a fully trained forensic scientist. Such programs could be used to train analysts before or after a lab has hired them.

One educational model for pre-hire training is the Hertzberg-Davis Forensic Science Center, which is currently being developed by the California State University, Los Angeles (CSULA). Under this model, pre-hires with certain science degrees could attend a forensic science institute to prepare them for work in a lab. Situated adjacent to actual crime labs, the Forensic Science Institute could combine local crime lab staff with CSULA faculty to provide advanced training. Pre-hire training, however, may not be as effective as on-the-job training because some of the training would go "stale" while the trainee awaits employment with a lab, assuming the trainee is ever hired. Further, in the absence of an employer, the considerable cost of pre-hire training would be borne by the individual trainee. With no guarantee of future employment, unemployed recent graduates are not likely to invest in potentially unnecessary training programs.

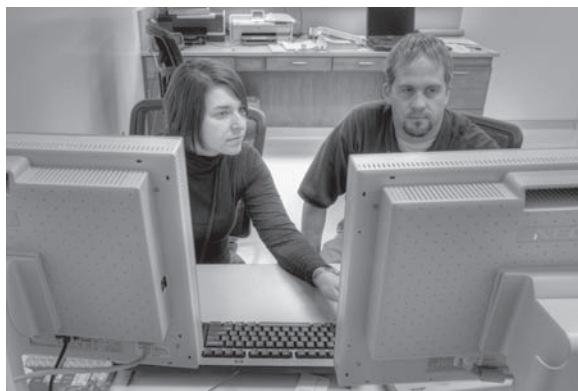
Post-hire educational programs could be operated by California's universities or by the California Criminalistics Institute (CCI). An educational program in conjunction with CCI could focus on preparing new employees for lab work, thereby reducing the amount of time and

³⁹ The 2009 NAS report observed that all impression evidence, including fingerprints, necessarily relies at least in part on the subjective judgments of the examiner based on his or her education, training, and experience (see NAS report, at pp. 137–142, 146, and 147–150). The NAS report also noted the importance of research designed to validate and standardize these disciplines. As discussed in this chapter, such research at California universities could be a valuable contribution to forensic science and further improve the state's crime labs.

resources labs spend on this task. An intensive training program could expose entry-level employees to the practical and legal aspects of lab work and foster an environment where actual lab scientists and practitioners could research, develop, and validate new methods, and instruct fellow practitioners.

Graduate Schools

Yet another approach would be to expand university graduate programs in forensic science so more students with masters-level training or higher become available for employment in forensic laboratories. At present, UC Davis and CSULA offer masters programs in forensic science. Graduates of these programs are in great demand and generally can be integrated into forensic laboratories more quickly and efficiently than other new employees can. Students in these programs often do internships and perform thesis research in forensic laboratories, which allows them to become familiar with laboratory equipment and procedures. And the research performed by these students is helpful to the forensic laboratories. However, these programs are currently small and underfunded. They do not come close to meeting the demand for trained entry-level employees, nor are they subsidized by their parent universities.



The 2009 NAS report strongly endorsed expansion of graduate education in forensic science, concluding that “[t]raining should move away from reliance on the apprentice-like transmittal of practices to education at the college level and beyond that is based on scientifically valid principles”⁴⁰ According to the NAS report, it is vital to the future of forensic science that stronger connections be forged between forensic laboratories and the academic community, and the best way to forge those connections is to expand

university-level graduate programs in forensic science. Expansion of graduate programs will not only improve the supply of trained laboratory employees; the research performed in such programs will improve the scientific foundation for the entire field of forensic science.

Continuing Education and Training

Continuing education for criminalists is essential, and the law enforcement Peace Officer Standards and Training (POST)⁴¹ requirements may be a useful reference point. Some laboratories maintain mandatory continuing education protocols for technical staff by discipline, usually in specified numbers of hours annually. All labs should adopt this practice, and funding should be allocated accordingly. Most lab directors recognize, however, that current mandatory continuing education is inadequate.

⁴⁰ NAS report, at p. 217.

⁴¹ For additional information, see <<http://www.post.ca.gov>>.

In general, California's crime lab employees need:

- Enhanced technical training in certain fields, including DNA, biology, firearms, trace, and blood-alcohol interpretation;
- More training and experience regarding courtroom testimony;
- Additional training on up-to-date legal standards regarding the admissibility of forensic evidence;
- Training for supervisors and administrative staff regarding lab management;
- Evening and weekend classes; and
- Access to crime scene investigation training.

California Criminalistics Institute

In 1986, California Penal Code section 11060 authorized the formation of the California Criminalistics Institute (CCI). CCI is a unit of BFS, and its main facility in Sacramento contains actual laboratories and a library of reference materials. CCI also has facilities in Richmond and the CSULA campus. Although it mostly provides specialized forensic science training to state and local law enforcement personnel, CCI provides some training to private and out-of-state lab personnel. CCI generally provides literature and analytical reference information to California's crime labs, allows casework analysis in instances where sophisticated instrumentation or special knowledge is not otherwise available, and develops and evaluates new methodologies and equipment. California crime lab personnel are usually not required to pay tuition, but CCI occasionally charges materials fees. Students from private and out-of-state labs are charged a daily tuition of \$120.

CCI programs are typically one week long. Currently, CCI offers programs in biology, DNA, chemistry and toxicology, crime scene investigation, firearms and toolmarks, microscopy and trace evidence, impression evidence, health and safety, and quality assurance. CCI employs instructors from various agencies, including the Department of Justice's Criminal Division, BFS, the Los Angeles County Sheriff's Department, and the Los Angeles Police Department forensic laboratory. Instructors usually teach at no additional cost to CCI. Occasionally, CCI employs outside experts or consultants, particularly for specialized DNA training, mostly to avoid diverting lab analysts away from casework. In the future, CCI hopes to develop a training curriculum for new hires, additional continuing education courses, and an expanded client base that includes judges and attorneys.

CCI plays a major role in continuing education in the forensic science field. Lab directors noted, however, that CCI lacks sufficient resources to meet all of California's continuing education needs, and it does not offer adequate training in "basic" or "core" subjects such as controlled substance analysis and alcohol interpretation. Lab directors also felt that CCI should conduct more research and firearms training and should offer courses more frequently and consistently. Further, lab directors noted that CCI requires labs to wait too long before being allowed to send an employee for training.

CCI was originally envisioned to have approximately 20 active program managers. Because of funding limitations, however, CCI currently operates with only two program managers and two support staff. Therefore, it is clear that demand for CCI training far exceeds what CCI is presently able to provide. Many courses are in constant demand, and student waiting lists are the norm. The cost of maintaining CCI is incorporated into the overall BFS budget, which



Hertzberg-Davis Forensic Science Center, CSU Los Angeles

fluctuates from year to year. To complement its unpredictable state funding, CCI actively seeks independent grant funding, and it was recently awarded a National Institute of Justice grant for \$440,000 to fund its DNA Academy and Firearms and Toolmarks Academy.

Despite inadequate funding, CCI works to distribute training opportunities by region and now offers several “webinars,” which save on travel costs for students and trainers alike. With the exception of programs that require hands-on training, a good number of CCI courses are suitable for webinar instruction. In fact, webinars have greatly increased the overall number of students that CCI has been able to train in spite of considerable class-size and equipment limitations.

A possible approach to enhancing CCI training services and availability would be for CCI to collaborate with California’s state universities. As noted above, this could potentially increase continuing education resources and funding, and meld the academic expertise of universities with the practical knowledge of CCI. In conjunction with state universities, CCI may be able to offer university credits for classes such as DNA, microscopy, and firearms examination. This collaboration would also solve some regionalization problems, essentially bringing CCI to the various university campuses across the state, including UC Davis, CSULA, and CSU Fresno. For example, if CCI were to collaborate with UC Davis, CCI and its students would have access to the university’s instrumentation, no-cost research projects by graduate students, low-cost student support, and an electronic library. This would also foster the free flow of technical information between the university and forensic science communities and improve competitiveness for federal funding.

Ideally, CCI would be fully funded, but if not, another solution could involve enhancing CCI’s role by developing three regional CCI centers across the state, with instruction supplemented

by webinars for distance learning. Each public lab in the state would sign a memorandum of understanding agreeing to transfer a significant percentage of its in-house training budget to fund CCI and agreeing to provide experienced criminalists as faculty on a rotating basis and as a regular part of their responsibilities. This model would essentially make CCI a statewide crime lab cooperative administered by California's Department of Justice. In return, CCI would provide a significant portion of each lab's entry-level, continuing education, and special topic training at its three regional centers. The centers would replace most, but not all, of the in-house training currently provided by individual labs.

Under this model, labs would benefit from not having to use their own staff to prepare and deliver in-house training at the expense of casework, and students would benefit from instruction from top criminalists statewide and would not be limited to instruction by in-house colleagues. The statewide curriculum would be created and vetted by a CCI Board of Directors to ensure quality instruction and agreed-upon best practices. In addition, students would receive specialized courses in ethics and courtroom testimony. Laboratory directors on the Task Force, however, pointed out that this approach might not be feasible in light of small or nonexistent laboratory training budgets.

The Task Force also noted that CCI could develop a lab management training program. Lab directors and supervisors are typically promoted from within the lab, yet there are no training programs available to prepare lab analysts to become directors and supervisors. Such programs would aid lab "succession" planning and prepare future lab management staff.

Continuing Education in Universities

Most of California's lab directors agree that there is a shortage of quality continuing education programs in the California university system. A well-trained analyst requires hands-on research and practical explanations of the underlying principles. Because specific disciplines are so specialized, research and continuing education programs are best taught by experts practicing in the field. University-based instructors may have adequate theoretical training, but they often lack sufficient practical experience and are generally unfamiliar with the basic lab needs.

In-House Training

Some BFS labs reported that continuing education and training conducted in-house by senior staff and through cross-training with other BFS personnel can be effective but inefficient, time-consuming, and costly. Also, because of budget constraints, labs have had to cut back on in-house training opportunities. For some, cross-training by discipline is an ideal source of continuing education; it greatly benefits technical staff to share information and experiences through occasional but regular meetings with peers at other laboratories. A nighttime lecture series on advanced topics (e.g., biology, trace, and firearms) would be a valuable continuing education resource.

Regionalization

Currently, the availability of undergraduate and continuing education opportunities is very limited. Labs in certain areas of California, such as the Central Valley, do not have ready access to educational programs in forensic science and cannot afford to send staff to training that is not nearby or that would require considerable time away from home. This problem is best addressed by providing training opportunities in more locations throughout the state.

Law Schools

Scientific evidence coursework could be incorporated into California law school offerings, and law schools could cooperate with local forensic science institutes to provide forensic science training to law students. In addition, the State Bar Association could offer forensic science instruction for practicing attorneys and award participating attorneys with Mandatory Continuing Legal Education (MCLE) credit.⁴² Law schools could also explore developing programs in conjunction with graduate-level forensic science programs.

Forensic Science Research

Opinions vary regarding the role that California's universities should play in forensic science research. Some believe that California's universities are not equipped to conduct research and validation, and generally lack the quality assurance, quality control, and security necessary to make a validation study worthwhile. Similarly, because the validation process provides valuable experience to staff, labs should continue to follow the FBI Quality Assurance Standards for DNA testing and perform in-house validation studies. Having research, validation, and development of new methods done in labs produces staff members who fully understand the information and can testify to each step in the process.

On the other hand, some believe that the demand of maintaining casework productivity in laboratories leaves too few resources to pursue forensic science research. The National Academy of Sciences declared recently that certain areas of forensic science need further study and validation of new techniques and instrumentation. University students, particularly graduate students, could aid in the validation of existing methods and the development of new methods. Universities could also be more involved in the study of disciplines in need of additional research and validation, such as firearms, toolmarks, and latent prints. For example, labs could go to universities with specific requests that could be assigned to actual graduate students.

Generally, universities need more government funding for research in forensic science, especially in the development of new methods. In many areas, basic scientific research has been conducted that establishes the feasibility of new methods, but no one has developed and validated a practical test kit that forensic scientists could apply to the new method. For example, basic research has been done on methods to develop a rapid assay for identification of urine stains, but no one has developed a test kit for use by criminalists. Commercial development of such kits is unlikely given the limited market, but a university/commercial partnership might work if seeded with state funds.

To address these problems, the NAS report contended that "it is crucially important to improve undergraduate and graduate forensic science programs."⁴³ At present, there is no formal Ph.D. program anywhere in the United States in forensic science. A few programs in other fields (mostly in chemistry) offer a "concentration" in forensic science, but these programs do not meet the needs of the field as a whole.

⁴² The State Bar's Criminal Law Section has begun offering forensic science training for attorneys and judges, both in-person and as video-based MCLE seminars. (See <<http://www.calbar.ca.gov/criminal>>.)

⁴³ NAS report, at p. 27.

The NAS report noted that “[t]he advantages of a Ph.D. program lie in its positive effect on basic research in the field. Doctoral programs offer more research depth and capacity, have ties to other fields, have high expectations for quality, supply graduate student personnel to question and check past work and challenge conventional wisdom, and inspire more mentoring, which has two-way benefits.”⁴⁴



The University of California, Berkeley, at one time operated a doctoral program in forensic science, but this program was discontinued. While it was in operation, UC Berkeley’s program trained a number of forensic scientists who became prominent intellectual leaders of the field. The primary factor leading to the program’s termination was lack of funding for research in forensic science. Federal funding agencies such as the National Institute of Justice and the National Science Foundation provided little or no funding for basic research in forensic science, making it difficult for UC Berkeley’s doctoral program to compete for survival with doctoral programs in better-funded disciplines.

There is no question that lack of research funding has been detrimental to forensic science: “The lack of research funding has discouraged universities in the United States from developing research-based forensic degree programs, which leads to limited opportunities to attract graduate students into such programs. . . . In addition, the lack of research funds means that universities are unlikely to develop research programs in forensic science.”⁴⁵ It is possible, however, that the situation will improve. The NAS report recommended that the federal government create a new administrative agency called the National Institute of Forensic Science (NIFS), which would, among other activities, provide funding for research in forensic science. The Task Force as a whole takes no position on the feasibility or necessity of this proposal.

Establishing a doctoral program would be a direct, positive response to the National Academy of Sciences’ call for improving the scientific foundations of forensic science. This program would serve an important need by supplying well-trained scientists who will become intellectual leaders of the field. A California doctoral program would be well-positioned to compete for research funding and would help assure that California forensic laboratories stay at the forefront of scientific developments.

Recommendations

- Continuing education for criminalists is essential, and the state should fund it accordingly. Crime laboratories should develop mandatory requirements for continuing education as part of their quality manuals.

⁴⁴ NAS report, at p. 223.

⁴⁵ NAS report, at p. 230.

- The state should provide sufficient funding to ensure proper staffing, maintenance, and future expansion of the CCI program, as well as the resources to hire outside contractors with specialized expertise to teach as necessary. Policymakers should consider a stable and permanent funding source for CCI, perhaps built along the model presented by the Commission on Peace Officer Standards and Training (POST).
- CCI should develop a lab management training program.
- CCI or alternative training opportunities should be available in a greater variety of locations throughout the state.
- California law schools should incorporate scientific evidence training into their course-work offerings.
- The state should establish (or reestablish) a doctoral program in forensic science at one of its state university campuses.
- University programs focusing on forensic science should take a more active role in informing students about the scrutiny of background checks and what types of personal issues could preclude students from employment in a forensic lab.

Certification⁴⁶

California has a long history of supporting professional attributes such as certification and accreditation, and the Task Force was charged with providing recommendations regarding the certification of individuals employed by the state's crime laboratories. As stated in the Penal Code mandate, the Task Force also explored recommendations on the appropriate agency or agencies to assume the responsibility of overseeing a statewide certification program.

Methodology

The Task Force analyzed certification issues in the written surveys of crime laboratory directors and in interviews with laboratory directors and section heads. The Task Force also researched the programs of existing certification bodies and reviewed recommendations made in the 2009 NAS report and other public and private reports on forensic science. The presentation included as Appendix J contains additional source material on certification.

Discussion

Professional certification is a designation earned by a person to assure that he or she has the minimum qualifications necessary to perform a job or task. At present, the certification of forensic scientists is available to qualified forensic practitioners but is not required by California or federal law.

The American Board of Criminalistics (ABC) defines certification as a voluntary process of peer review by which a practitioner is recognized for attaining the professional qualifications

⁴⁶ Information provided by Task Force members Greg Matheson and Jennifer Mihalovich.

necessary to practice in one or more disciplines of criminalistics. The ABC offers certificates in criminalistics, molecular biology, drug chemistry, fire debris analysis, and trace evidence.

Certification of forensic practitioners must not be confused with forensic certificates offered by some educational institutions. Certificates issued by educational institutions are specific to the program and do not meet the full complement of components necessary for a professional certification program, as outlined below.

Certification vs. Accreditation

Certification and accreditation are distinct components of the proper operation of a forensic science laboratory. Certification is associated with an individual; accreditation is associated with a laboratory. Certification of an individual demonstrates the minimum qualifications necessary to perform analytical work; accreditation demonstrates that the laboratory adheres to an established set of quality standards and acceptable practices.

Certification and accreditation are two sides of the forensic science quality triangle, the third side being standardization. Adherence to the requirements of certification, accreditation, and standardization is essential to establishing and maintaining the credibility of a forensic science laboratory.

Components of a Certification Program

Professional forensic science certifying bodies must include the following essential components in their program:

- Minimum educational requirements;
- Minimum experience requirements;
- Sufficient knowledge base as determined by written or practical competency tests;
- Participation in proficiency testing;
- Participation in continuing education;
- Active participation in the profession through publication, presentation, and membership in professional organizations;
- Regular recertification;
- Adherence to a code of ethics or rules of professional conduct; and
- Enforcement procedure for compliance with the code of ethics or rules of professional conduct.

Certification by bodies that do not require all of these components cannot be considered appropriate for establishing the credentials of a forensic scientist. The Forensic Specialties Accreditation Board, described below, assists the criminal justice system in evaluating the legitimacy of forensic science certifying bodies.

Developing a Certification Examination

Forensic science certification bodies must have a means to assess the candidate's knowledge, skills, and abilities. If properly developed and maintained, written tests provide such a tool.

Forensic Science Certification Organizations

Several independent organizations have been established to certify professional forensic scientists. These are just a few of the numerous certifying bodies:

American Board of Criminalistics

<http://www.criminalistics.com>

American Board of Forensic Document Examiners

<http://www.abfde.org>

American Board of Forensic Toxicology

<http://www.abft.org>

American Board of Medicolegal Death Investigators

<http://www.slu.edu/organizations/labmdi>

Board of Forensic Document Examiners

<http://www.bfde.org>

International Institute of Forensic Engineering Sciences

<http://www.iifes.org>

International Association for Identification

<http://www.theiai.org>

Association of Firearms and Toolmark Examiners

<http://www.afte.org>

American Board of Pathology

<http://www.abpath.org>

Digital Forensics Certification Board

<http://www.ncfs.org/dfcb>

The development and maintenance of ABC certification examinations adheres to the following process:

- Create development body from existing professionals;
- Create administration group and examination group;
- Develop documents identifying the necessary knowledge, skills, and abilities to perform the tasks being assessed;
- Develop questions;
- Subject questions to professional review for content, internal consistency, and question performance;
- Pilot test the questions; and
- Continuously review and update.

Certification Application Requirements

The essential components of a professional forensic science certification program include minimum education, experience, and professional involvement necessary to apply for certification. Table 2 provides an overview of the minimum requirements of five principle forensic science certificate programs.

Table 2
Certification Application Requirements by Certifying Body

Certificate	Education	Experience	Professional Involvement
ABC – Diplomate	Bachelor’s degree or equivalent in a natural science or an appropriately related field from an accredited institution	Two years full time	Actively working in criminalistics
ABC – Fellow	Same as ABC Diplomate	Two years full time in specialty	Actively working in criminalistics and proficiency tested
ABC – Affiliate	Same as Diplomate	None	None
AFTE	Bachelor’s degree and coursework in fields related to certificate	Three years as court-qualified firearm or toolmark examiner	None
IAI – multiple certificates	From 40 hours of training to Bachelor’s degree	From one to six years	Actively working in certificate discipline
ABFDE	Bachelor’s degree	Two years apprenticeship	Full time as a practicing document examiner
ABFT – Diplomate	Ph.D. in a natural science	Three years full time	Engaged in forensic toxicology
ABFT – Specialist	Bachelor’s degree in a natural science	Three years full time	Engaged in forensic toxicology

Accreditation of Forensic Certification Organizations

The Strategic Planning Committee of the American Academy of Forensic Sciences (AAFS) reported in 1995 that the quality and standards applied by different forensic science boards for granting certification varied widely. The Committee recommended that AAFS assume a role in establishing a formal system where different credentialing processes of the various certifying boards can be objectively assessed. AAFS recognized that an important aspect of professional oversight is the monitoring of the quality and consistency of forensic science credentialing by the various forensic science boards. Accrediting the certifiers provides this oversight.

Groundwork was laid to accomplish this oversight in 1996 by the AAFS Professional Oversight Committee and by the AAFS Mini-Task Force on Criteria for Specialist Certifying Boards. The Accreditation and Certification Task Force, now known as the Forensic Specialties Accreditation Board (FSAB), was formed to develop a voluntary program to objectively assess, recognize, and monitor the various forensic science specialty boards that seek accreditation. FSAB was incorporated as an independent organization on June 23, 2000.

FSAB allows the forensic science community to assess, recognize, and monitor organizations or professional boards that certify individual forensic scientists or other forensic specialists. The following certification programs are currently accredited by FSAB:

- American Board of Criminalists (effective March 1, 2004)
- American Board of Medicolegal Death Investigators (effective March 1, 2005)
- American Board of Forensic Toxicology (effective March 1, 2006)
- Board of Forensic Document Examiners (effective March 1, 2006)
- American Board of Forensic Document Examiners (effective March 1, 2007)
- International Institute of Forensic Engineering Sciences (effective March 1, 2007)
- American Board of Forensic Odontology (effective March 1, 2008)

The History of Certification in California

The AAFS, in conjunction with the Forensic Sciences Foundation, established the Criminalistics Certification Study Committee (CCSC) in 1976. In 1977, the California Association of Criminalists (CAC) formed its own Certification Committee. The CCSC, in 1980, announced its decision not to proceed with the development of a national certification program.

The CAC reactivated its certification committee in 1986. The CAC's certification committee and examination committee established policies and procedures for the certification process. In 1988, the CAC piloted its certification examination.

The national effort came out of dormancy in 1988. The ABC was incorporated in 1989, and five forensic organizations—the CAC, the Mid-Atlantic Association of Forensic Scientists, the Midwestern Association of Forensic Scientists, the Northeastern Association of Forensic Scientists, and the Southern Association of Forensic Scientists—were the charter members. The certification program offered by the ABC initially was based on the program created by the CAC. Following the implementation of the ABC certification program, the CAC discontinued offering certificates in favor of the national program.

Current Support for Certification

Certification of forensic scientists is not currently required in California. Therefore, support or encouragement to seek certification remains inconsistent among California's crime labs (see Table 3). For example, out of 30 labs surveyed,

- One lab (3 percent) offers four types of certification support.
- Eleven labs (37 percent) offer three types of certification support.
- Four labs (13 percent) offer two types of certification support.
- Ten labs (33 percent) offer one type of certification support.
- Four labs (13 percent) offer no certification support.

Table 3
Laboratory/Agency Support for Certification

Support Description	Total # of Labs Offering This Support*	# of BFS Labs Offering This Support	% of California Labs Offering This Support
Sitting fee funded by agency	19	11 [†]	63%
Certification fee funded by agency	17	11	57%
On-duty study time	24	11	80%
Pay bonus or promotion consideration	3	0	10%
Other	2 [‡]	0	7%
None	3	0	10%

* A total of 30 labs were surveyed, which includes 11 BFS labs.

[†] All BFS labs fund the sitting fee only if the person passes the examination.

[‡] These labs stated that on-duty time was provided to sit for the examinations.

Forensic Scientists Certified in California

Approximately 17 percent of California forensic scientists are certified. Laboratory surveys collected by the Task Force identified 189 certified staff members out of approximately 1,100 laboratory staff positions that qualified for some form of forensic science certification.

The exact number of forensic scientists certified and the number of certificates in each specialty is difficult to determine because of the voluntary nature of certification in California. Initial data on certification was received through the survey distributed to the directors of California forensic science laboratories. Most laboratories do not offer fiscal incentives for certification; therefore, there is no requirement for reporting certification status to laboratory management. The data reported in Tables 4 and 5 are estimates reflecting a combination of information received from the surveys and from the ABC. Based on the discrepancies between the information received from the surveys and the ABC, the number of individuals certified in California’s public crime labs is most likely underreported.

Table 4
Certification by Certifying Body

Certifying Body	# of Staff Members
American Board of Criminalistics	128
American Board of Forensic Document Examiners	7
American Board of Forensic Toxicology	1
Association of Firearms and Toolmark Examiners	13
American Society for Clinical Pathology	1
International Association for Identification	38
Law Enforcement & Emergency Services Video Association	1
Total	189

Table 5
Certification by Specialty

Specialty	# of Certificates Issued*
Biology/DNA	29
Controlled Substances	9
Criminalistics	114
Crime Scene Investigation	15
Fire Debris	6
Firearms	16
Hairs and Fibers	3
Latent Prints	20
Management	1
Paints and Polymers	3
Photography	1
Quality Assurance	2
Questioned Documents	7
Toolmarks	2
Toxicology	7
Trace	18
Video	1

*The information in this table reflects the number of certificates issued. Individuals may hold more than one certificate.

Qualifications for Forensic Alcohol Analysts

Forensic alcohol analysts are the only forensic specialists required by the state to meet certain qualifications, which are set by the California Department of Public Health (DPH). DPH’s oversight of the analysis of blood and breath samples to determine blood alcohol levels is currently being reviewed and may be changed by state legislation.

Certification in the NAS Report

The 2009 NAS report states that “the certification of individuals complements the accreditation of laboratories for a total quality assurance program.”⁴⁷ The report goes on to recommend that “certification of forensic science professionals should be mandatory, and all forensic science professionals should have access to a certification process.”⁴⁸

⁴⁷ NAS report, at p. 215.

⁴⁸ NAS report, at p. 215.

Recommendations

- All persons who practice in a forensic science discipline or testify as a forensic science analyst/examiner⁴⁹ should become certified by a reputable certifying body.
- All laboratories and their parent agencies are strongly encouraged to provide support and incentives to promote individual staff certification. Fiscal-based incentives may include funding application and sitting fees, as well as offering pay bonuses for certificate holders. Non-fiscal incentives may include on-duty study and test-taking time and the use of certificate status as a promotion factor.
- All forensic science professionals should have access to a certification process.
- The state should mandate that the only acceptable certificates are those granted by certification bodies accredited by the Forensic Specialties Accreditation Board, or certification bodies that adhere to requirements equivalent to those set forth by the Forensic Specialties Accreditation Board.

⁴⁹ An analyst/examiner performs casework-related duties on evidence items within the laboratory and issues reports containing opinions or interpretations on the findings and observations resulting from the work.



Chapter 4

Funding⁵⁰

As directed by Penal Code section 11062, the Task Force considered whether crime laboratory funding is (1) predictable, stable, and adequate to meet future growth demands; and (2) able to sustain accurate and timely results given the demands placed on California's crime laboratories to meet the needs of user agencies.

Methodology

The Task Force explored these issues with state and local crime labs through in-person interviews and surveys of California crime laboratory directors, law enforcement agencies, and district attorneys. To obtain supporting data, the Task Force also researched the historical issues involved in funding crime labs based on previous surveys done in California and on a national level.

Background

Funding sources for California's crime laboratories vary from jurisdiction to jurisdiction. Most receive funding from a parent government agency, such as a police or sheriff's department, district attorney's office, or the California Department of Justice. California crime laboratories do not receive revenue from private sources.

Some laboratories receive funding from specifically directed sources. Orange County, for example, receives most of its funding from county sales tax revenues designated for law enforcement. Other laboratories, such as Contra Costa County's, obtain revenue from fee-for-service programs where the crime laboratories are reimbursed for services provided. These fees may be a cost-per-case reimbursement or on an annual assessment.

Other laboratories, such as the Los Angeles County Sheriff's laboratory, enhance their revenue and service delivery by providing dedicated services to particular municipalities under contract. These services do not provide additional revenue to be used elsewhere by the lab, but simply provide revenue offset for extra or enhanced services provided to agencies in the laboratory's jurisdiction.

A few California crime laboratories, such as the lab run by the Sacramento District Attorney's Office, also receive revenue and cost-reimbursement for overflow services provided to other labs outside its jurisdiction that elect to pay for services in order to meet casework demands.

⁵⁰ Information provided by Task Force members Barry Fisher and Dean Gialamas.

To further supplement funding, almost all California crime laboratories participate in block grant funding opportunities. Both California and the federal government have or continue to offer grant opportunities for capacity enhancement, research, and DNA efficiency programs.

Discussion

All the California crime laboratories surveyed reported that they lack predictable and stable funding. Further, there is clear, overwhelming evidence that this lack of stable funding prevents laboratories from planning for future growth or technological advancement.



As covered elsewhere in this report, California crime laboratories are under-resourced in many respects. All laboratory needs identified by the surveys, such as personnel, equipment, or facilities, stem from the root problem of inadequate funding. It was apparent in the surveys that crime laboratories, law enforcement, and attorneys all feel that timeliness and capacity needs are critical to the success of crime lab operations and the public safety benefits that the labs provide. More than 80 percent of respondents from all three survey groups felt that more funding was needed. Moreover, almost 65 percent of respondents voluntarily wrote in the need for more funding resources to improve staffing, capacity, and turn-around time when asked, "What measures could be taken to improve the delivery of forensic science services for your agency?"

Coincidentally, laboratories that are viewed in the community as being well-resourced and well-funded tend to be placed at the highest levels in their parent organization. These crime laboratories, such as those in Sacramento, Santa Clara, and Orange counties, feature laboratory directors reporting to the upper executive management of the parent agency.

National Crime Lab Funding

The Task Force also found that California is not alone in this financial resource shortage. Testimony provided in 2008 to the National Academy of Sciences by the American Society of Crime Laboratory Directors addressed the need for adequate and sustainable funding sources in order for the nation's crime laboratories to meet current and future demands.

Basis for Funding

Crime lab funding must be determined and allocated based on formulas that examine capacity as a factor of time. Budgeting based on case input, staff, or population does not adequately address the real needs of crime laboratory users. The surveys showed that law enforcement agencies and attorneys, the clients to whom crime laboratories serve to meet public safety needs, are not submitting all the cases that actually need to be processed. Therefore, the backlogs waiting in California's crime laboratories are not a true indicator of the service level that those labs need to meet.

Recommendation

- Each agency that houses a crime laboratory in California must identify or create a consistent and reliable funding stream. It may be beneficial to link funding mechanisms to performance objectives as an incentive-based process that would enhance public confidence in government operations.



Chapter 5

Performance Standards and Equipment

Workload Demands⁵¹

The Task Force explored whether workload demands in crime laboratories are being prioritized properly and whether there are important workload issues not being addressed. This section discusses findings on these topics and makes recommendations as to how these demands may be better met.

Methodology

Information for this section of the report was obtained mainly from the survey sent to crime laboratory directors, which asked what factors have a significant effect on the ability of technical staff to meet their workload. The Task Force also obtained information from the surveys sent to law enforcement and district attorneys, which sought relevant information about laboratory workload.

In addition, lab directors, and in some cases managers of other laboratory sections, were interviewed in person and queried about workload issues. The Task Force also discussed many of these issues at its public meetings. At one meeting, the chief of the Department of Justice's Bureau of Forensic Services (BFS) gave a presentation to the Task Force on a program developed and implemented at the Department of Justice to address workload issues.⁵²

Discussion

Most lab directors reported that their laboratories experience some problems in meeting the demands of an ever-increasing workload. DNA, fingerprints, and firearms⁵³ were most often identified as disciplines where requests exceed staffing capabilities. While DNA is generally only available in a small percentage of cases, the demand and attention given to DNA appears to exceed that of many other forensic disciplines. In addition, it is in non-DNA disciplines that labs expect demands to increase rather than remain constant or decrease. In many cases,

⁵¹ Information provided by Task Force members Dolores Carr and Jennifer Friedman.

⁵² Specifically, agencies that submit requests for forensic DNA analysis to a Department of Justice lab select a maximum of three items for analysis. Additional items of evidence may be tested only upon a showing of "good cause" by the agency.

⁵³ A summary of all survey responses is included on the DVD that accompanies this report.

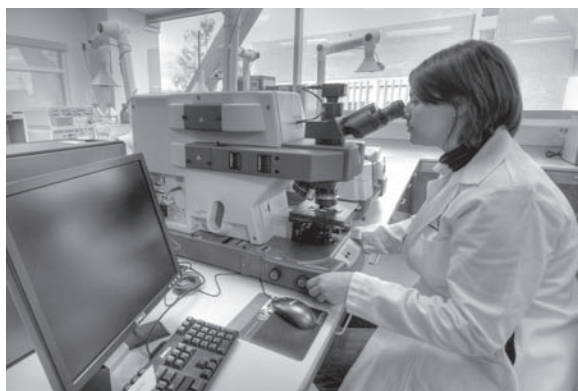
additional staff cannot be added because of the space limitations imposed by the size of the current laboratory facility.⁵⁴ In other cases, the space exists but the funds to hire additional criminalists do not.

The Task Force recognizes that virtually all the laboratories in the state could use additional funding to hire more analysts to meet the increasing demand for services. However, an increase in the number of available analysts alone will not solve all the problems associated with the increase in requests.⁵⁵ Moreover, as one supervisor noted, hiring additional analysts without hiring additional supervisors only leads to an increase in inefficiency. Consequently, this section of the report focuses on how labs may increase efficiency apart from obtaining funding to hire additional criminalists and supervisors. From interviews with lab directors, and in some cases laboratory supervisors, the Task Force identified a number of possible ways to achieve this goal.

In many cases, however, labs will be required to hire additional staff to meet the expectations of the stakeholders and the communities they serve. It does not appear that any standards exist regarding the number of crime lab analysts and supervisors necessary to meet the need of a particular community with a particular crime rate. To set such a standard in the future would require further study.

Education of Stakeholders

One of the most commonly identified causes of a lab's inability to handle all requests is failure of the stakeholders to understand the limitations of forensic science and, in particular, the limitations of certain disciplines. For example, one lab director noted that his lab had been asked to conduct DNA testing on the seat of a car to determine whether the defendant was the car's driver. In that situation, the individual who requested the testing failed to understand



the sensitivity of the testing and that DNA analysis could not answer the question asked. Agencies need to have a better understanding of basic forensic science, including how to recognize evidence that may be probative, the different types of analyses that may be conducted on an item of evidence, and a realistic view of what the results can and cannot show.

According to some crime lab directors, labs spend substantial time explaining to district attorneys and law enforcement why the analysis of certain types of evidence will not result in relevant or conclusive findings. District attorneys and investigators also need to learn what is involved in conducting a particular type of analysis and the time required to

⁵⁴ See the Equipment and Facilities section for details on facility limitations.

⁵⁵ The NAS report similarly notes that "increasing staff within existing crime laboratories and medical examiner offices is only part of the solution." (NAS report, at p. 15.)

perform it. Finally, one lab director remarked that we may have gotten to a point where there is too much reliance on forensic science and less emphasis on law enforcement conducting a thorough investigation.

Better Communication Between Stakeholders and Labs

Some of the workload issues identified by the crime laboratories stem from a lack of communication with investigating officers and district attorneys.⁵⁶ The majority of lab directors reported that labs are often not told when defendants have pleaded guilty or that prosecutors have decided not to prosecute a case. Thus, labs waste time analyzing evidence on cases that have been adjudicated. Laboratories are also not told that narcotics “stings” or task forces are being contemplated so that the lab can prepare for the increased workload. Further, labs are often asked to handle “rush requests.” These requests tend to disrupt the day-to-day operations of the laboratory.

The survey respondents provided several suggestions to remedy these problems. One solution suggested by a number of lab directors was for the lab to hire someone with experience in both forensic science and law enforcement to act as a liaison. This individual would work with the lab and the district attorney or law enforcement agency to prioritize work and identify cases that should be closed. Another solution was for the lab’s director or a supervisor to have monthly meetings with the district attorney and law enforcement agencies in order to prioritize cases. A few labs currently have such a program in place.

Yet another solution is an automated information sharing system, which the Santa Clara County District Attorney’s Crime Laboratory is in the process of establishing. This Laboratory Information Management System (LIMS) is a computerized, web-based model with the following features:

- Inventory of reference collections and chemical supplies.
- Supervisory review and case assignments, as well as a home page for each analyst that shows the analyst’s current backlog and case status.
- Electronic worksheets for note taking by the analysts.
- Customizable statistical reports for such things as case backlogs, turnaround times, number and types of evidence items, and exams or cases.
- Password-protected access to the laboratory’s website allowing user agencies to submit an evidence “request for analysis” to the laboratory via an electronic submission form. The system tracks the real-time status of case submissions, provides immediate contact information and enhanced communication between the laboratory and the agencies, and allows authorized access to lab reports.
- Real-time upload of test results for non-major case evidence (such as results of toxicology and controlled substance analyses) into the local criminal justice information database.

⁵⁶ This concern is echoed in the NAS report. The authors note that Barry Fisher, the former director of the Los Angeles County Sheriff’s Crime Lab and a member of this Task Force, wrote, “[o]ddly, the police and prosecutors are rarely consulted about how priorities are determined.” Furthermore, “[p]olice, prosecutors, and forensic laboratories use different tracking systems.” (NAS report, at pp. 61–62.)

- Bar-coded evidence tracking with documented chain of custody.
- Future link to the district attorney’s case management system for better case coordination and prioritization within the laboratory.

Automated case management systems with shared accessibility, although costly, would greatly improve communication between labs and stakeholders. For labs that do not have such systems or such capability, however, a prosecutor, investigator, or both could be assigned on a part-time basis to work within the lab to help prioritize casework and determine which cases may be closed without testing.

Furthermore, many of those interviewed reported that crime lab analysts often spend considerable time in the halls of courthouses waiting to testify. Judges must understand the cost to the community of this waiting time. Better communication may lead judges to be more willing to schedule and accommodate crime lab witnesses in a manner that maximizes efficiency.⁵⁷

Interviews with crime lab directors also revealed communication problems at a central level. In Los Angeles County, for example, inconsistencies among county agencies have increased inefficiencies and the potential for error. The Los Angeles Police Department uses a system for identifying incidents, cases, and samples that is different from the Los Angeles County Sheriff’s Department, and neither agency uses the same numbering system as the Coroner. The different systems make it difficult to cross-reference cases and, according to one laboratory director, may cause important leads to be missed. These problems highlight the need for oversight and coordination to assure effective communication among agencies and across various levels of the justice system.

Delivery of Services

As discussed at length in this report, laboratories need increased funding to keep up with the ever-growing demand for services. To this end, some laboratories have implemented programs that generate additional revenue and provide enhanced services for cities that can afford to pay the associated costs. In other cases, cities have obtained funding to open their own labs. And some labs have considered consolidating services.

Consolidation of Services. Many lab directors agreed that laboratory disciplines used infrequently could be performed at one regional lab, rather than have each crime lab maintain the staff and equipment to handle the occasional request. Consolidation should only be

⁵⁷ This problem may be exacerbated by the United States Supreme Court’s recent decision in *Melendez-Diaz v. Massachusetts* (2009) 129 S.Ct. 2527. *Melendez-Diaz* held by a five-to-four margin that admission of a sworn affidavit (certificate) from a state crime laboratory, identifying a controlled substance seized from the defendant, qualified as testimonial evidence that should have been subject to confrontation through the analysts. (129 S.Ct. at p. 2532.) The impact of this ruling on laboratory staff and scheduling remains unresolved and will depend on clarifying case law from the California Supreme Court or the United States Supreme Court.

considered, however, for disciplines that are rarely used and where analysts require a great deal of training to perform the required analysis. Moreover, this would only be feasible for smaller laboratories that do not receive a significant number of requests. Trace evidence analysis and document examination are possible disciplines that could be performed by regional labs. Regional labs could also house expensive databases that are not routinely used but are required in some cases.

Nevertheless, some lab directors noted that consolidation may actually cause inefficiencies when one item of evidence needs to be analyzed in multiple ways or if analysts are required to travel considerable distances to present evidence in court. These concerns should be considered in determining which, if any services could be regionalized. Finally, labs must also consider the costs associated with consolidating specified services, including equipment, staffing, and space.

De-Regionalization. De-regionalization occurs when cities that have an existing relationship with an established crime laboratory attempt to either change the nature of that relationship or establish their own crime laboratory.

In Los Angeles County, for example, the City of Torrance contracted with the Los Angeles County Sheriff's Department to receive a dedicated criminalist position for that city's needs. The criminalist hired is an experienced, trained Los Angeles County Scientific Services Bureau criminalist who works in the Los Angeles County Crime Lab. However, his salary and benefits are paid by the City of Torrance. In return, he works exclusively on that city's cases. The city's law enforcement decides which cases will be worked on, and in what order. Other cities have similarly "purchased" criminalists from the sheriff's crime lab.

Orange County has a program that permits cities to purchase services from its crime laboratory. Lab analysts may volunteer to perform services for these cities in return for overtime pay. The cities pay the costs associated with the analysis and the overtime pay. A number of cities participate in this program because the Orange County crime lab has the ability to turn the case around faster than their local crime labs.

Several cities and government agencies have obtained grants to establish their own crime labs. The City of Glendale recently obtained a one million dollar grant to start its own crime lab. The Los Angeles County Medical Examiner similarly obtained funding from the county to open its own DNA lab. It is not clear how these labs will be funded for ongoing operations.

The Task Force discussed the issue of de-regionalization at length. Some of these examples illustrate creative thinking for obtaining the funds needed to operate in a time of lean budgets. The Task Force is concerned, however, that this approach may not be an efficient and effective use of resources. Cities that cannot afford their own criminalist may not receive the same degree of service as those that can. This may lead to disparities in the level of services provided to cities within their respective counties.

In addition, there is a question as to whether de-regionalization is an efficient use of laboratory resources. Such a system may become difficult to manage because each analyst would be accountable to a different employer and potentially different managerial system. Further, unresolved questions exist concerning what becomes of analysts employed by individual cities if the city can no longer pay the cost of such a service. Significant resources

would be required for individual cities and agencies to open their own laboratories. The question remains whether the resources would be better spent enhancing the infrastructure of existing crime labs.

Fee-for-Service. Another model implemented by some laboratories is a “fee-for-service” approach. Fee-for-service may be on a yearly contract, or on a per-case or per-item basis. Some labs have instituted fee-for-service programs because the number of requests made by law enforcement and district attorneys often exceeds the capabilities of the lab. According to these lab directors, this model often results in better decision making by the laboratory users. Specifically, if an agency must pay for lab service, an incentive exists for the agency to request that only the most important and potentially probative evidence items be processed.

In labs where fee-for-service exists, lab directors report a significant drop in the number of client requests. On the other hand, labs also expressed concern that this model may cause agencies to make decisions based disproportionately on fiscal considerations. Consequently, the needs of the community they serve may not be met. There is also a danger that laboratories may prioritize work based on potential revenue at the expense of more traditional criteria.

An example of the fee-for-service model is the Santa Clara County Crime Laboratory, which annually bills the non-general-fund agencies within the county. The calculated cost for each agency is based on an average of the prior five years’ percentage of the major cases submitted by these non-general-fund agencies.⁵⁸ This percentage is then applied to the laboratory’s overall expenses for salaries and supplies that are attributed to evidence analysis in major cases. This fee structure allows agencies to plan and budget for a predictable cost for crime laboratory services each year. (This fee structure might be renegotiated over the next year). The lab also has a fee structure (hourly or flat rate, depending on the type of case) for occasional work done for agencies outside the county.

Limits on the Number of Items Tested. Some laboratories, such as the BFS labs administered by the California Department of Justice, impose limits on the number of items that can be tested in one case. The BFS program does allow for exceptions to its “three item rule.” According to the BFS chief, this program may increase casework efficiency and cause investigators to take greater care in making lab requests and in identifying which items of evidence should be tested. Presumably, investigators are more likely to communicate with the lab in determining which items should be tested.

Cross-Training of Laboratory Staff

Several lab directors suggested that analysts be cross-trained in multiple scientific disciplines. Cross-training would allow a lab to reassign criminalists when a particular unit of the lab experiences an increase or a decrease in workload. Moreover, cross-training may help labs retain criminalists by providing variety and enhancing job satisfaction. The Orange County Crime Laboratory, for example, currently allows analysts to spend 10 percent of their time training and working in a secondary discipline. This allows an analyst to learn other disciplines and gives more flexibility to the lab in its assignments.

⁵⁸ For purposes of this calculation, major cases are those other than blood/urine/breath alcohol, toxicology, or controlled substances analysis.

Availability of Discovery

Some laboratory representatives reported that they spend a considerable amount of time responding to discovery requests in criminal cases. Less time would be spent on these requests if discovery were standardized by discipline so that key documents were routinely provided and available electronically for review by the requesting party.

A standard discovery packet should include a complete laboratory file with all bench notes and data, curriculum vitae for the analyst, and a summary of the analyst's proficiency test results for a specified period.

In addition, items such as lab manuals and validation studies should be made available electronically through a secure website, if feasible. Having a standard minimum discovery packet for every case and making other discovery items available through a secure website would greatly reduce the time that lab personnel spend compiling information for discovery.



Orange County provides an excellent example of an electronic document discovery system, which the county's crime laboratory implemented in November 2008. When the lab receives discovery requests via fax or e-mail, the requests are logged into the Laboratory Integrated Management System (LIMS). The case file and any other requested documents are scanned and stored electronically as PDF files. Analytical data not contained in the case file, such as raw DNA data, are also obtained. The system then produces a discovery report, which details the documents requested and those that are provided in response to the request. This discovery report is scanned and placed with the other electronic documents in an electronic discovery packet (file). The discovery packet is then placed on a secure website for retrieval. Finally, an e-mail is sent to the requestor that includes a private link to the discovery packet on the secure website; the e-mail also provides a user name and password to maintain security and traceability. The documents are available on the website for two weeks and are then removed for additional security. The lab maintains the electronic discovery packets indefinitely, and the packets can be easily re-sent upon request.

Hiring Additional Support Staff

In some labs, criminalists spend time performing clerical administrative duties such as ordering supplies. Labs should consider hiring additional support staff to perform clerical and administrative, technical support, and evidence control functions. In general, the cost of hiring support staff is significantly less than hiring experienced criminalists.

Efficiency Assessments

All laboratories should assess ways to become more efficient and more productive. The Task Force found that several labs are examining "process improvements" to increase efficiency without additional funding. For example, the San Diego Police Department Crime Laboratory was mandated by the city it serves to conduct such an assessment and as a result was able to modify its operations to increase efficiency.

Flexible Work

As noted in this report, a number of laboratories do not employ enough criminalists to meet workload demands. Some of these labs are unable to hire additional staff because of space limitations. Labs might be able to process additional cases, however, if employees were permitted to work flexible work schedules. For example, a compressed workweek with longer daily hours or an evening shift might allow for a greater number of criminalists to share limited resources in the laboratory.

Ratio of Criminalists to Population

Survey respondents suggested setting statewide guidelines for the ideal number of criminalists for any given population with a specified crime rate. Complementary guidelines would describe the appropriate supervisor-to-analyst ratio and analyst-to-support-staff ratio. Further study is required to create such standards.

Recommendations

- Public crime laboratories should organize and participate in continuing education for attorneys and law enforcement in their service areas regarding effective use of forensic science and crime laboratory resources.
- Each crime laboratory should implement procedures to achieve better communication between stakeholders and laboratory personnel.
- Each crime laboratory should provide training to judges regarding the costs associated with lab personnel being away from the laboratory waiting to testify.
- Policymakers, laboratories, and laboratories' parent agencies should consider novel approaches to increasing efficiency and mitigating workload demands. Regional consolidation of services, contract services, fee-for-service programs, and evidence item testing limits should be explored and evaluated.
- Laboratories should explore cross-training analysts in multiple disciplines based on the size and needs of the laboratory.
- Laboratories and the district attorney's offices in their service areas should collaborate on standardizing routine discovery in criminal cases. In addition, labs should explore means of making items of discovery such as policy and procedure manuals available electronically.
- All crime laboratories should conduct studies to assess ways to improve efficiency and enhance productivity.
- All crime laboratories should explore whether flexible workweeks or alternative work shifts would facilitate efficiency.
- All crime laboratories should conduct a study to set standards for the number of crime lab analysts, supervisors, and support staff required to serve a particular population with a specified crime rate.

Staffing⁵⁹

The Task Force evaluated laboratory staffing, which is a critical concern for California’s forensic science community. In order to serve justice, the work product of a crime laboratory must be accurate, thorough, and unbiased. But it is just as important for the work product to be provided to client agencies in a timely manner. Unfortunately, a lack of responsiveness to the needs of the client agency is all too often the norm rather than the exception. Anecdotal news accounts exist of unopened sexual assault kits on evidence room shelves, backlogged weapons cases, and delayed DNA test results. As part of its evaluation, the Task Force sought to determine whether California crime laboratories require increased staffing—including analyst/examiners, laboratory managers, and support staff—to adequately perform this work.

Methodology

The Task Force analyzed staffing levels and service issues in the written surveys of crime laboratory directors and in interviews with laboratory management and staff. The Task Force also researched the historical perspective of laboratory staffing in California and reviewed the findings and recommendations of reports directly addressing the needs of the state’s crime laboratories.

Background

Staffing levels are one of the key indicators of a laboratory’s ability to meet service demands. Staff in the crime laboratory typically includes analysts, technical support personnel, managers, and clerical and other support personnel (see Table 6 for total number of positions in California).

Analysts are responsible for preparing and analyzing evidence within or across a range of forensic disciplines, writing reports, and testifying in court. Technical support personnel generally provide some type of technical or laboratory-aide assistance to the analyst. In some laboratories, technical support personnel are responsible for performing blood alcohol analysis, screening toxicology evidence, or screening biological evidence; technical support personnel may also testify in court. Managers include laboratory directors responsible for the operation of the crime laboratory and supervisors responsible for the management of the crime laboratory’s day-to-day operations. Clerical and other support personnel in the crime laboratory encompass a range of duties from evidence tracking and front office operations to information technology services.

Table 6
Staffing Data Collected from the 2008 California Crime Laboratory Survey
(as of December 31, 2007)

Type of Position	Total	State	County	Municipal
Analyst/Examiner, Technical Support, or Manager	1,214	211	759	244
Support (Other)	326	91	181	54
California Totals	1,540	302	940	298

⁵⁹ Information provided by Task Force members Bob Jarzen and Jim McLaughlin.

Historical Perspective

In the past, crime laboratories regarded their analyst staff as “generalists” who could be assigned a variety of laboratory tasks across an array of forensic disciplines. It was common for a single analyst to be assigned case requests for blood alcohol analysis, solid dosage drug analysis, firearms comparisons, and crime scene reconstruction—all in the same week. Caseloads in this era were correspondingly low, however, and requests relatively simple by today’s standards.

As forensic science received broader acceptance, the demand for answers to increasingly complex questions required analysts to specialize in a particular forensic discipline. This narrowing of focus served to advance professionalism through laboratory accreditation, scientist certification, and adherence to increasingly stringent quality assurance standards. These changes have improved work product, but at a price: The overall efficiency of laboratory operations has fallen. It is estimated that caseload outputs in the age of specialization have been reduced by 40 percent. This reduction is primarily due to additional requirements now placed on the crime laboratory and on individual analysts.

In recent years, a spate of reports on forensic science has highlighted case backlogs, lengthy case turnaround times, and the critical need for additional analysts. As noted in the introduction to this report, three notable publications focused directly on the needs of California’s crime laboratories.

First, the State Auditor’s report in 1998 addressed two issues: (1) changes and improvements needed for laboratories to achieve or maintain accreditation and (2) improvement of local laboratories’ efficiency and effectiveness. Only one recommendation directly addressed the need for staffing. It suggested improving laboratory quality management systems by adding quality managers and support staff at sufficient levels to implement and maintain quality programs.

Second, in 2003, Attorney General Bill Lockyer’s Task Force report noted that crime laboratories are often the bottleneck in the state’s criminal justice system. Timeliness of laboratory results was a significant source of dissatisfaction among police, sheriffs, and district attorneys. In addition, laboratory directors estimated that a 33 percent increase in professional staff was required to meet then-existing demands for services. Consequently, the report recommended that the state and local agencies consider funding overtime or limited-term staff increases in California’s crime laboratories to reduce backlogs and improve turnaround times. The report concluded that over the long term, improving turnaround time would require a net increase in permanent staffing levels.

Third, in February 2007 before the release of its *Official Report*, the California Commission on the Fair Administration of Justice (CCFAJ) released a related report titled *Emergency Report and Recommendations Regarding DNA Testing Backlogs*.⁶⁰ The report addressed the current California backlogs in processing DNA samples from crime scenes and entering the data into the DNA Data Bank Program. The Commission recommended immediate implementation of several measures, including (1) ascertaining the staffing levels required for the DNA Data

⁶⁰ California Commission on the Fair Administration of Justice, *Emergency Report and Recommendations Regarding DNA Testing Backlogs* (Feb. 2007) <<http://www.ccfaaj.org/documents/reports/problems/official/Report%20on%20DNA%20Backlogs.pdf>>. This report was incorporated into the final CCFAJ report discussed in the Introduction.



Bank Program to reduce the backlogs both then and when the demands of Proposition 69's felony arrestee collection provision take effect; (2) providing emergency budget appropriations to fund staffing for the DNA Data Bank Program; and (3) requiring the Attorney General to consult with forensic service stakeholders to urgently address, in part, the nature and scope of current capacity problems and backlogs of unprocessed evidence.⁶¹

Nationally, the U.S. Department of Justice has sponsored and issued reports relating to crime laboratories and their needs. Several of these reports provide detailed statistics and reviews of forensic science services in crime laboratories nationally. Significantly, problems identified at the national level are no different from problems experienced by California's crime laboratories.

Available data generally support the fact that most crime laboratories have large case backlogs, resulting in significant evidence processing delays and, by extension, delays in investigation and court proceedings. Most crime laboratories report insufficient staffing as the main reason for laboratory backlogs, and researchers found that crime laboratories have limited budgets to hire additional staff.⁶²

In the 2002 and 2005 reports of the census of publicly funded crime laboratories,⁶³ data are presented that support laboratories' need for more analysts. In 2002, laboratory sources estimated that about 1,900 additional full-time analysts would have been necessary to achieve a 30-day turnaround time for all requests for forensic services that year. The 2005 report concluded that, in order to achieve a 30-day turnaround time on all 2005 requests, the various forensic disciplines would have needed varying increases in the number of full-time analysts performing that work—ranging from an estimated 73 percent increase in DNA analysts (the greatest personnel need) to an estimated 6 percent increase in toxicologists.

In a 2004 report to Congress, the National Institute of Justice cited staffing shortages as the greatest concern for the forensic community.⁶⁴ The lack of sufficient personnel directly influences the ability of crime laboratories to address case backlogs. According to the report, many strategies are employed to manage the demand for forensic services, from prioritization by court date to case acceptance policies. The result is that in many cases where no suspect has been identified the evidence is never submitted to the crime laboratory, or the crime

⁶¹ California Commission on the Fair Administration of Justice, *Emergency Report and Recommendations Regarding DNA Testing Backlogs* (Feb. 2007), at pp. 1–6.

⁶² U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, *Increasing Efficiency in Crime Laboratories* (Jan. 2008) <<http://www.ncjrs.gov/pdffiles1/nij/220336.pdf>>.

⁶³ U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Census of Publicly Funded Forensic Crime Laboratories, 2002* (Feb. 2005) <<http://www.ojp.usdoj.gov/bjs/pub/pdf/cpffcl02.pdf>> and *Census of Publicly Funded Forensic Crime Laboratories, 2005* (July 2008) <<http://www.ojp.usdoj.gov/bjs/pub/pdf/cpffcl05.pdf>>.

⁶⁴ U.S. Department of Justice, Office of Justice Programs, National Institute of Justice, *Status and Needs of Forensic Science Service Providers: A Report to Congress* (May 2004) <<http://www.ncjrs.gov/pdffiles1/nij/213420.pdf>>, at pp. 4, 12.

laboratory may sometimes return the evidence to the submitting agency if it cannot be worked in a timely manner. In 2004, the national cost of addressing the staff shortfall was estimated to exceed \$36 million.

Further, Task Force member Barry Fisher raised the possibility of federal funding for an additional 10,000 forensic specialists over a five-year period. Fisher noted that during the Clinton administration, Congress provided funding for the hiring of 10,000 additional police officers. Fisher also discussed reasons why more forensic scientists are needed to handle backlog cases in a timely manner and the apparent consequences as governments fail to address the problem.

Discussion

The Task Force identified several factors affecting the ability of technical staff to meet their workload demands. These factors include staff shortages, difficulty in attracting experienced analysts, training time, analyst retention, staff turnover, and staffing fluctuations due to leave time, vacation, sick leave, and scheduled days off. In addition, laboratory staff frequently must confront and resolve non-scientific issues such as agencies requesting that everything in the case be examined, the CSI effect, time spent in court, discovery and public records requests, increased demands for DNA analyses, and providing training to law enforcement and district attorneys. Technical staff must also deal with a lack of support staff, insufficient supervisory personnel, and paperwork and administrative duties that add significantly to the time it takes to analyze a case. Finally, quality assurance demands, grant management requirements, instrument maintenance duties, lack of space, and budget constraints are additional factors that prevent existing staff from meeting casework demands.

Interviews with crime laboratory directors conducted by Task Force members also exposed staffing needs. The consensus was that inadequate staffing is a chronic problem manifested in case backlogs, unmet client demands, and unrealistic expectations that the crime laboratory could do more. Reasons for failing to fully staff crime laboratories include the retirement or transfer of experienced analysts, unfilled vacant positions due to budgetary constraints, lack of space to add more staff, lack of adequately trained candidates to fill vacancies, and significant recruitment issues.

Customer Service and Level of Service

Customer service generally refers to crime laboratory activities designed to improve the level of satisfaction among the laboratory's clients—police, prosecutors, and the courts. Level of service is a measure of the effectiveness by which crime laboratories determine the quality of forensic services they provide to their client agencies.

One means of determining whether a crime laboratory is providing adequate customer service is to review the performance expectations of the crime laboratory, the clients, and the laboratory's parent agency. Typical performance expectations for most crime laboratories include control or reduction of backlogged cases, reasonable case turnaround time, and the capacity to accept and process forensic cases. Each of these performance metrics is linked to staffing levels in the crime laboratory.

Level of service usually requires a common understanding between the crime laboratory and the client about the forensic services offered, capabilities of the crime laboratory, case

priorities, agency and laboratory responsibilities, and specified guarantees. Likewise, any understanding and guarantees between the crime laboratory and the client are based on the laboratory being adequately staffed to provide quality service.

The National Institute of Justice defines a case not completed within 30 days as backlogged.⁶⁵ Although various definitions of backlog are used by California’s crime laboratories, this Task Force defined backlog as the number of case requests in the crime laboratory that have not met the service goal. It should be noted that each crime laboratory reported a broad range of turnaround goals that were correlated to a forensic discipline. While backlog reduction can be pursued at the front end by case acceptance policies, most crime laboratories reported insufficient staffing as a reason for laboratory backlogs.

Table 7 tabulates all backlogged cases for all crime laboratories in the core forensic services offered by the majority of California’s crime laboratories. Because of the wide variety of reported service goals, these goals are not considered in the tabulated results below.

Table 7
Total Backlogs in the Core Forensic Disciplines Reported in the 2008 California Crime Laboratory Survey

Core Forensic Discipline	Total Backlog as of 12/31/06	Total Backlog as of 12/31/07
Alcohol (Blood and Breath)	1,834	1,386
Forensic Biology/DNA	6,671	15,779
Controlled Substances	10,986	10,829
Firearms/Toolmarks	7,206	8,248
Latent Prints	2,714	2,986

Backlog reduction is a key factor in determining staffing needs. Eliminating backlogged cases entirely is not feasible under most circumstances, so the questions that need to be answered are (1) Is there an acceptable “not to exceed” number of backlogged cases? (2) How many analysts does a laboratory need to stay at or below that acceptable number of backlogged cases?

Turnaround time is the time (generally in calendar days) from the receipt of the evidence by the crime laboratory to the date the laboratory report is released to the client or submitting agency. Turnaround times vary greatly by forensic discipline. As noted earlier, the National Institute of Justice believes that to achieve a 30-day turnaround time, the different forensic disciplines would need varying increases in the number of full-time analysts performing that work. But, as Task Force member Barry Fisher has noted, whether “timely service” means completion of cases in 30, 60, or 90 days, it does not mean that evidence is stored in evidence lockers with no real expectation that the case will ever be examined.

⁶⁵ U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, *Bulletin Census of Publicly Funded Forensic Crime Laboratories, 2005* (July 2008) <<http://www.ojp.usdoj.gov/bjs/pub/pdf/cpffcl05.pdf>>, at p. 1.

Survey participants were asked to report actual turnaround times for their laboratories' case requests during 2007. Table 8 tabulates the case request data for core forensic disciplines for all California crime laboratories and averages the reported turnaround times.

Table 8
Case Turnaround Times Reported in the 2008 California Crime Laboratory Survey

Core Forensic Discipline	Total Case Requests in 2007	Average Turnaround Time
Alcohol (Blood and Breath)	183,516	7 days
Forensic Biology/DNA	17,199	99 days
Controlled Substances	156,642	18 days
Firearms/Toolmarks	16,765	102 days
Latent Prints	15,413	58 days

Case turnaround times correspond to the number of backlogged cases in a crime laboratory. The basis for counting backlogged cases is the number of cases in which lab reports have not been issued and have exceeded the turnaround time goal. Improving turnaround times will result in a reduction, or in some forensic disciplines, elimination of backlogged cases.

The final performance expectation related to the need for staffing is the crime laboratory's capacity to accept and process forensic case requests. The Task Force defines a case request as a discipline-specific request for testing or analysis of one or more evidence items in a particular investigation. Capacity is defined as the number of requests completed by an analyst in a given time period or year. The 2005 Bureau of Justice Statistics national census report⁶⁶ tabulated the mean number of requests completed per full-time analyst. National statistics range from a high of 780 toxicology cases completed per analyst and 752 controlled substances cases completed per analyst to a low of 52 computer crimes cases completed per analyst. Also reported were 193 firearms/toolmark cases completed per analyst and 77 DNA cases completed per analyst. Table 9 tabulates the number of cases completed in a core forensic discipline by an analyst in California crime laboratories.

Table 9
Case Request Data Reported in the 2008 California Crime Laboratory Survey

Core Forensic Discipline	Total Requests in 2007	Full-time Analyst Positions*	Average Requests Completed per Analyst per Year†
Alcohol (Blood and Breath)	186,132	37.0	3,220
Forensic Biology/DNA	13,225	194.0	56
Controlled Substances	153,983	74.0	1,053
Firearms/Toolmarks	13,616	66.5	168
Latent Prints	14,533	67.5	215

* Data were reported by responding laboratories in the supplemental questionnaire (June 2009), included as Appendix F.

† Total requests completed have been adjusted for non-reporting crime laboratories to the supplemental questionnaire (June 2009).

In an April 2007 article, W. Mark Dale, Director of the Northeast Regional Forensic Institute at the University of Albany, wrote about forensic scientists under pressure.⁶⁷ He presented evidence of a growing shortage of needed technical workers and examined the relationship between staffing levels and performance (or capacity) in public forensic laboratories.

Dale identified 17 “pressure to perform” variables related to resource allocation and time available for forensic scientists to complete casework; significant performance variables were ranked by crime laboratory directors. Directors strongly agreed that scientists had the proper equipment to do the job and that scientists are adequately trained in scientific methods. Directors also strongly agreed that analysts are pressured to complete cases in a timely manner. Taking DNA casework as an example, Dale wrote that as “DNA casework capacity increased, pressure to complete cases too quickly, pressure to extend opinions beyond scientific methods and pressure to get a particular result increased significantly.” He noted that “capacity and quality of a laboratory with fixed staffing resources represents a trade-off situation. Increasing capacity with a given (fixed) number of analyst/examiners decreases resources needed for quality assurance functions.” The corollary to Dale’s observations is that “[i]ncreasing capacity with a corresponding increase in staffing levels increases resources needed to maintain quality assurance functions and reduces the impact of performance variables.”

Increasing Capacity

As previously noted, staffing needs in California’s crime laboratories are tied to case backlogs, turnaround time goals, and demands for forensic services. If crime laboratory services increase because demands require greater capacity, then there must be a corresponding increase in crime laboratory staffing. The process of adding capacity by adding staff should be part of a comprehensive agency plan that improves the crime laboratory’s operations.

Table 10 presents a comparison between the number of backlogged cases reported as of December 31, 2007 (Table 7) and the average requests completed per analyst (Table 9) to estimate the additional number of analysts that would have been needed to eliminate the backlog of cases.

Table 10 makes clear that there is a critical need for additional analysts to eliminate case backlogs. The data indicate that in order to eliminate the 2007 backlog in the core disciplines, California crime laboratories would have needed an additional 356 analysts, with a percent increase in staff ranging from 3 percent in the number of alcohol analysts to 145 percent in the number of DNA analysts.

⁶⁶ *Ibid.*, at p. 10.

⁶⁷ Wendy S. Becker and W. Mark Dale, Critical Human Resource Issues: Scientists Under Pressure, *Forensic Science Communications* (Apr. 2007), Volume 9, Issue 2
<http://www.fbi.gov/hq/lab/fsc/backissu/april2007/research/2007_04_research02.htm>.

Table 10

Estimated Number of Additional Analysts Needed to Eliminate the 2007 Case Backlog

Core Discipline	Backlog as of 12/31/07	Requests Completed per Analyst	Number of Additional Analysts Needed to Eliminate Backlog	Percent Increase in Analysts Needed
Alcohol (Blood and Breath)	1,386	3,220	1	3%
Forensic Biology/DNA	15,779	56	282	145%
Controlled Substances	10,829	1,054	10	14%
Firearms/Toolmarks	8,248	168	49	74%
Latent Prints	2,986	215	14	21%

Table 11 presents a comparison between the ideal case turnaround times as reported by crime laboratory directors versus the actual case turnaround times reported for 2007.

Table 11

Comparison Between Ideal Turnaround Times Vs. Actual Turnaround Times

Core Discipline	Ideal Case Turnaround Time	Actual Case Turnaround Time
Alcohol (Blood and Breath)	1 – 10 days	3 – 21 days
Forensic Biology/DNA	30 – 180 days	7 – 227 days
Controlled Substances	1 – 20 days	1 – 63 days
Firearms/Toolmarks	5 – 90 days	5 – 241 days
Latent Prints	2 – 60 days	46 – 180 days

As noted in Table 11, there are substantial differences between ideal and actual turnaround times.

The Demand for Forensic Services

California crime laboratories that offer an expanded range of forensic science services often experience a higher volume of client requests. The demand for forensic services appears to be exponential, but a crime laboratory's ability to meet the demand is hampered by inadequate staffing levels and funding. As stakeholders become more aware of technology, especially in DNA, they want even more analyses done on all cases. Therefore, as crime rates grow, forensic science caseloads increase. And police agency expansions do not ordinarily include a corresponding increase in crime laboratory staff. Some researchers have postulated that law enforcement and the adversarial system exert considerable pressure on forensic scientists, which may result in ethical breaches.⁶⁸ Increases in caseloads and demands for services aggravate the pressures on forensic scientists; thus, crime laboratories are victims of their own success. As the demand for forensic services exceeds crime laboratories' capacity, client satisfaction declines but with no corresponding solution for adding staff.

⁶⁸ *Ibid.*

Other Factors Affecting Staffing Needs

Aside from the elements of customer service, level of forensic service, and the demand for forensic services, other less apparent factors affect crime laboratory staffing needs:

- Population and crime demographics of different jurisdictions served by laboratories;
- Awareness by law enforcement, prosecutors, and defense counsel of forensic science practices and capabilities;
- Increased or decreased numbers of law enforcement officers;
- The potential for database automation in various forensic science disciplines;
- Juror expectations;
- Legal requirements;
- Laboratory accreditation requirements and staff certification;
- Infrastructure limitations and laboratory budgets;
- Technology improvements and automation;
- Sufficient and stable funding;
- Training and continuing education of personnel;
- Impending retirement of a large number of currently practicing analysts; and
- Increased awareness of forensic science through popular media and the release of the 2009 NAS report.

One of the more significant factors affecting timeliness of forensic services and the need for more staffing is accreditation requirements. While rigid accreditation standards are a positive development in forensic science, and are widely viewed as a key component of quality forensic science services, there is a sense within the forensic community that the increased scrutiny associated with accreditation requirements results in a decrease in analyst, and even management, productivity. Most accredited crime laboratories now employ a minimum of one full-time quality assurance manager to oversee the laboratory's quality assurance program.

Accreditation requirements permeate the workforce and the workday. In addition to performing analyses and testifying to results, each analyst is required to exhibit proficiency in all assigned disciplines on at least an annual basis (semi-annually for a DNA analyst). The analysts must also actively contribute as technical and administrative case reviewers, program auditors, and technical peer group members. Crime laboratories must perform an internal audit of all technical disciplines on an annual basis. Further, the laboratory director must provide an annual written report to the accrediting body, and the laboratory must submit to an external accreditation inspection every five years. The existing crime laboratory personnel have shouldered all of these relatively recent demands. However, increasing the level of staffing ensures continued participation and success in the crime laboratory accreditation process.

Recommendations

- Jurisdictions and laboratory parent agencies should develop comprehensive plans for adding staff to their crime laboratories and detail all the anticipated benefits, both short- and long-term.
- The crime laboratory, parent agency, and all crime laboratory service stakeholders within the laboratory's jurisdiction should collaborate to set acceptable standards for turnaround time service goals and the "not to exceed" number of backlogged cases.

- Crime laboratories, parent agencies, and other stakeholders should coordinate efforts to obtain authorization and funding for necessary additional staff.
- The state should conduct a study to establish a laboratory staffing formula that addresses the following areas:
 - o The acceptable number of cases per analyst in each forensic discipline;
 - o The acceptable analyst-to-manager ratio within laboratories;
 - o The acceptable number of laboratory support staff; and
 - o The feasibility of statewide guidelines that establish the ideal number of analysts to serve a particular size population with a specified crime rate.

In addition, the study should consider the feasibility of contract-based crime laboratory services or payment for forensic services (i.e., fee-for-service).

Equipment and Facilities⁶⁹

Many of California’s crime laboratories lack necessary equipment or facilities. While the Task Force believes that laboratories should possess all equipment and facilities necessary to provide the highest quality forensic science services, this does not mean that each lab should contain every possible piece of equipment. Therefore, the Task Force examined how laboratories could consider outsourcing some requests to laboratories that possess additional or different capabilities. For example, one possible approach to trace evidence analysis would be to regionalize all such work in the state. This effort would allow specialized equipment to be available at a few locations to all California laboratories and thus used regularly. In this example, increased efficiency and enhanced trace evidence service statewide would likely result.

In addition to having the appropriate equipment for each discipline in forensic science, the Task Force examined ways that laboratories could ensure that equipment is maintained and replaced as necessary. For example, the Sacramento County District Attorney’s Forensic Services Laboratory has a five-year replacement cycle for all equipment written into its budget. By maintaining an equipment replacement budget, this laboratory ensures that its equipment is modern and functional.

Methodology

Penal Code section 11062(d) requires that the Task Force report “include a complete inventory of existing California crime laboratories.” To meet this mandate, a summary of state, county, and city crime laboratory needs is set forth in Table 12. This summary reflects information provided in the laboratory surveys as of December 31, 2008. The complete inventory of laboratory equipment is provided in the individual survey responses included on a DVD that accompanies this report.

⁶⁹ Information provided by Task Force member Charlotte Wacker.

Table 12

California Crime Laboratory Equipment and Facility Needs

Laboratory	Equipment Needs	Facility Needs
Alameda Co. Sheriff's Dept.	Digital photography equipment, crime scene laser scanning documentation system (i.e., Leica ScanStation), improved NIBIN technology, and more advanced auto search scopes for finding sperm	Have 10,000 ft ² , need 60,000 ft ²
BFS Central Valley	None	Have 32,000 ft ² , stated as not sufficient; no facilities assessment has been done
BFS Fresno	Another qPCR machine	Have 36,000 ft ² , stated as not sufficient; no facilities assessment has been done
BFS Riverside	None	Needs are met at 38,500 ft ²
BFS Chico	A new firearm/toolmark comparison microscope	Unknown
BFS Eureka	None	Needs are met at 10,000 ft ²
BFS Freedom	None	Needs are met at 12,600 ft ²
BFS Redding	Elemental analysis, DNA equipment (on order)	Needs are met at 16,744 ft ²
BFS Richmond	Technology changes require updating or replacing of equipment every 2 – 3 years	Needs are met at 100,000 ft ²
BFS Sacramento	Additional DNA analysis equipment	Needs are met at 4,800 ft ² ; future needs are an expanded facility with more file storage, evidence storage, and climate control
BFS Santa Barbara	Crime scene response vehicle	Needs are met at 13,480 ft ²
BFS Santa Rosa	Crime scene response vehicle, general use vehicle replacement (i.e., court response vehicles)	Needs are met at 16,400 ft ²
BFS Toxicology, Sacramento	LC/MS/MS and court travel vehicle	Have a 4,150 ft ² ; estimate need at 27,250 ft ²
California Fish & Game	Additional DNA equipment such as ABI 3130 to enhance research possibilities and to expand into other wildlife genetic projects	Have a 1,200 ft ² ; stated as not sufficient; no facilities assessment has been done

Table 12 continued

California Crime Laboratory Equipment and Facility Needs

Laboratory	Equipment Needs	Facility Needs
Contra Costa Co. Sheriff's Dept.	Robotics, multi-capillary DNA instruments, new FTIR/ATR, new SEM-EDX, horizontal water tank, indoor shooting range, LC/MS, third laser scanner, computer forensic workstation, AVID video enhancement workstation, digital data recovery systems for cell phones, PDAs	Have 20,000 ft ² in four facilities, stated as not sufficient; from 1999 facilities assessment they need 65,000 ft ²
El Cajon Police Dept.	Additional equipment to support crime scene unit/lab evidence technician, two vehicles with cameras and other fundamental equipment	Have 2,387 ft ² , estimate needs at 6,000 ft ² (1,000 ft ² per person)
Fresno County Sheriff's Dept.	One GC/MS, centrifuges	Have two facilities of 5,000 ft ² each; unknown needs for the future
Kern County District Attorney	Visible microspectrophotometer, ICP/MS, various upgrades to hardware and software, instruments or equipment that allows automation	Needs are met at 24,000 ft ²
Long Beach Police Dept.	Additional ALSs, comparison microscope, Superglue chamber, Ninhydrin chamber, new digital comparator, stereoscope, GC/MS, FTIR, LC/MS, digital media management system	Have 5,150 ft ² , stated as not sufficient; needs indicate 17,000 ft ²
Los Angeles County Sheriff's Dept.	None	Have eight facilities totaling 158,240 ft ² , stated as sufficient for current needs; future needs are unknown
Los Angeles Police Dept.	Replacement breath alcohol system, Micro FTIR, UV-Vis, microspectrophotometer, XRD, XRF, GCMS, microtome, comparison scopes, stereoscopes, crime scene response vehicles, digital camera systems, crime scene documentation technology, VSC 6000, LC/MS/MS	Have 93,000 ft ² , stated as sufficient for current needs; future needs are unknown, and no facilities assessment has been done
Los Angeles County Coroner	Replacement of current GCMS systems, analytical balance	Have 15,000 ft ² , needs are 25,000 ft ² ; increased security is a key need
Oakland Police Dept.	Digital imaging system linked to central server, Adobe Photoshop software, portable lasers, computers and monitors, two crime scene response vehicles, 360° digital camera, CODIS server, liquid handlers, EZ1 DNA extraction robots, micro-dissection microscope, laminar flow hood, 7500 Real Time PCR unit, 9700 thermal cyler, comparison microscope, stereo microscope, new IBIS data acquisition station, GC/MS, UV-visible spectrophotometer, FTIR, GC/MS library, latent print imaging system, fuming/humidity cabinets	Have 6,822 ft ² ; future needs indicate 54,000 ft ² for 20 years of growth

Table 12 continued

California Crime Laboratory Equipment and Facility Needs

Laboratory	Equipment Needs	Facility Needs
Orange County Sheriff-Coroner	LC/MS systems for toxicology	Have 94,000 ft ² , needs indicate a 100,000 ft ² facility would enable growth
Sacramento County District Attorney	Five-year replacement schedule for all equipment	Have 48,000 ft ² ; stated as not sufficient; no facilities assessment has been done
San Bernardino County Coroner	CSI trucks, DIMS server, comparable GC (for blood alcohol) to use with LIMS	Have 26,926 ft ² ; need approximately 94,873 ft ²
San Diego County Medical Examiner	LC/MS, GC/MS HPLC, atomic absorption	Unknown
San Diego Police Department	None	Have 28,000 ft ² , stated as not sufficient; no facilities assessment has been done
San Diego County Sheriff's Dept.	None	Have 62,000 ft ² , stated as not sufficient; needs indicate 125,000 ft ²
San Francisco Medical Examiner	GC/MS, LC/MS/MS	Have 3,000 ft ² ; needs indicate 10,000 ft ²
San Francisco Police Dept.	FTIR microscope, breath instrument update, LC/MS	Have 14,500 ft ² , needs indicate 65,000 ft ²
San Mateo County Sheriff's Office	LRIM, digital cameras, large fume hood	Have 28,000 ft ² , stated as not sufficient; no facilities assessment has been done
Santa Clara County District Attorney	GRIM III, balances, microscopes, LC/MS, GC/MS, computers, crime scene vehicles, DNA/toxicology reagents	Recently acquired sufficient space of 90,000 ft ²
Ventura County Sheriff's Dept.	SEM, Micro XRF, GRIM III, x-ray cabinet, GC/MS/MS, LC/MS/MS, headspace GC, FTIR, 3-D video camera for crime scene reconstruction, ICPMS, comparison polarizing scope with phase contrast, Keyence portable microscope, GC/MS with pyroprobe	Have 20,214 ft ² ; needs indicate 95,532 ft ²

Recommendations

- Laboratories should ensure that they possess all equipment and facilities necessary to provide the highest quality forensic science services and to meet all client demands in a timely manner.
- Laboratories should investigate and identify underutilized forensic science services for potential regional consolidation.
- Each laboratory should maintain an equipment replacement budget to ensure that its equipment is modern and functional.

Accreditation⁷⁰

As part of its examination of performance standards, the Task Force reviewed the status of crime laboratory accreditation in California to make recommendations regarding accreditation of state and local crime laboratories. The Task Force's recommendations take into account the strengths and limitations of existing accreditation programs, both voluntary and mandated, that pertain to forensic science laboratories in the United States.

Methodology

The Task Force collected information on accreditation in California's public forensic laboratories through the written surveys and on-site interviews. The Task Force also reviewed and considered information gathered from several reports that address accreditation, such as the 2009 NAS report, as well as information gathered directly from the various accreditation programs.

Background

Attempts to open lines of communication between forensic science laboratories in the United States led to the creation of the American Society of Crime Laboratory Directors (ASCLD) in 1973 by a small group of crime lab directors convened by then-FBI Director Briggs White. The group's formation was the result of a report issued by the Law Enforcement Assistance Administration (LEAA) that alarmed leaders in the criminal justice and forensic community. The LEAA researched and reported results of a voluntary proficiency-testing program that identified serious concerns about the quality of work in the nation's crime labs.

In 1974, ASCLD was incorporated as a non-profit professional organization with its primary focus on advocacy, communication, and education. As a result of the LEAA report, the Committee on Laboratory Evaluation and Standards was formed to respond to the LEAA's concerns. As the Committee worked on its mission, it evolved into the Committee on Laboratory Accreditation. In 1982, the committee was formalized into the Laboratory Accreditation Board. Then in 1988, the American Society of Crime Laboratory Directors/ Laboratory Accreditation Board (ASCLD/LAB) was formally created as a new corporate entity, which spun off ASCLD as a strategic partner.

⁷⁰ Information provided by Task Force member Bob Jarzen.

Professional Terminology

“Accreditation” is defined in the forensic science profession as the formal assessment and recognition by an impartial authority that a forensic laboratory is capable of meeting and maintaining defined standards of performance, competence, and professionalism.⁷¹ Accreditation is a status awarded to forensic laboratories, while *certification* is earned by individual forensic scientists. The accreditation of forensic science laboratories is a voluntary process. An accreditation program for forensic science laboratories involves independent third-party scrutiny.

A “standard” is a weight or measure to which others conform or by which the accuracy or quality of others is judged. Standards of performance as they relate to forensic laboratories provide the laboratory with specific performance expectations and communicate expectations to the laboratory and its users. Standards of performance are the observable actions that explain whether and how accreditation criteria are being met by the laboratory.

“Competence,” as it relates to a forensic science laboratory, is the ability of the laboratory to successfully perform the critical scientific functions of forensic science and provide satisfactory service to the laboratory’s users. It is impossible to define or recognize competence in any objective manner in the absence of standards against which to measure the performance of a forensic laboratory.

“Professionalism,” as it relates to a forensic science laboratory, refers to the standing, practice, or methods of forensic science and depends on the three pillars of expertise, ethics, and service. A profession possesses a discrete body of knowledge and skills over which its members have exclusive control. Professional forensic scientists are considered experts with a high degree of generalized and systematic knowledge with a theoretical base. A profession is responsible for the ethical and technical criteria by which its members are evaluated, and they are subject to discipline for unprofessional conduct. Thus, professional forensic scientists are governed by a code of ethics. It is expected that forensic science professionals will gain their livelihood by providing service to the public in the area of their expertise.

Discussion

Between 1981 and 2009, ASCLD/LAB offered a voluntary forensic laboratory accreditation program known as the ASCLD/LAB Legacy accreditation program. Most California forensic laboratories are accredited under this program.

⁷¹ *Encyclopedia of Forensic Sciences*, Edited by Siegel, Saukko and Knupfer (2000), Academic Press, Volume 1, Glossary, at p. Aii.

The ASCLD/LAB Legacy accreditation program⁷² consisted of statements of principles describing acceptable levels of performance and the criteria for evaluation. Each criterion was assigned a rating:

- Essential – 91 standards that directly affect and have fundamental impact on the work product of the laboratory or the integrity of the evidence.
- Important – 45 standards that are key indicators of the overall quality of the laboratory but may not directly affect either the work product or the integrity of the evidence.
- Desirable – 16 standards that have the least effect on the work product or the integrity of the evidence but which nevertheless enhance the professionalism of the laboratory.

Each laboratory must achieve 100 percent of the essential criteria, 75 percent of the important criteria, and 50 percent of the desirable criteria. The decision to grant accreditation to the forensic laboratory can only be made by the ASCLD/LAB Board of Directors.

As of March 31, 2009, the ASCLD/LAB Legacy accreditation program was terminated, and the ASCLD/LAB-*International* accreditation program became the only available option.⁷³ Any forensic laboratory seeking ASCLD/LAB-*International* accreditation must demonstrate conformance to the requirements in International Organization for Standardization/International Electrotechnical Commission (ISO/IEC) 17025:2005, *General Requirements for the Competence of Testing and Calibration Laboratories*, as well as the ASCLD/LAB-*International Supplemental Requirements for the Accreditation of Forensic Science Laboratories* (2006).⁷⁴ There is no criterion rating system in the ASCLD/LAB-*International* accreditation program. Conforming to the numbered requirements in each document is mandatory to achieve or retain accreditation, unless a requirement does not apply to work conducted in the laboratory. Once a laboratory has successfully achieved accreditation status under ISO/IEC 17025, the ASCLD/LAB Accreditation Board monitors continued conformance with accreditation criteria⁷⁵ in the following ways:

- Requires annual reports from accredited laboratories that include a declaration from the laboratory director of the laboratory's ongoing conformance with all accreditation requirements and the laboratory's own management system;
- Requests documentation and records related to any aspect of accreditation at any time during the accreditation cycle;
- Monitors the laboratory's participation and performance in external proficiency testing programs;
- Monitors ongoing performance by reviewing complaints received and other forms of feedback and public media; and
- Conducts annual surveillance visits to the accredited laboratory at any time deemed necessary by the Board.

⁷² ASCLD/LAB 2008 Manual, Introduction, at pp. 1–2.

⁷³ Forensic Quality Services International (FQS-I) offers an ISO/IEC 17025:2005 accreditation program for testing and forensic laboratories: < <http://www.forquality.org/accreditation.htm>>.

⁷⁴ ASCLD/LAB-*International* Accreditation Program, Program Overview (Mar. 2007) <<http://www.ascd-lab.org/international/pdf/alpd3013.pdf>>, at p. 3.

⁷⁵ *Ibid.*, at p. 22.

There are two points to emphasize regarding the use of an ISO/IEC 17025 accreditation program.⁷⁶ First, the ISO/IEC 17025 requirements were written by qualified forensic science experts. Second, the two major goals underlying the requirements of ISO/IEC 17025 are quality and standardization of results.

ASCLD/LAB adopted four objectives that define the purpose and nature of its accreditation program.⁷⁷ They are:

- To improve the quality of laboratory services;
- To adopt, develop, and maintain standards that may be used by a laboratory to assess its level of performance and to strengthen its operation;
- To provide an independent, impartial, and objective system by which laboratories may benefit from a total operational review; and
- To offer the public and users of laboratory services a means of identifying those laboratories that have demonstrated compliance with established standards.

The ASCLD/LAB-*International* accreditation program introduction states that for a forensic laboratory to achieve accreditation, it must demonstrate conformance with each applicable requirement before the ASCLD/LAB Board of Directors votes to accredit. Further, the forensic laboratory must apply for accreditation in all testing disciplines in which ASCLD/LAB-*International* provides accreditation and the laboratory provides services (except crime scene). A laboratory may apply for accreditation in either “forensic science testing” or “forensic science calibration,” or both. Within each field, accreditation is offered in the following disciplines:

- Forensic science testing
 - Controlled substances
 - Toxicology
 - Trace evidence
 - Biology
 - Firearms/toolmarks
 - Questioned documents
 - Latent prints
 - Crime scene
 - Digital and multimedia evidence
- Forensic science calibration
 - Toxicology – breath alcohol measuring instrument

In addition to the ASCLD/LAB-*International* accreditation program, laboratories in the United States and Canada can apply for laboratory accreditation in forensic toxicology through the American Board of Forensic Toxicology (ABFT). For ABFT accreditation, the applicant laboratory must be actively engaged in the practice of either or both postmortem forensic toxicology or human performance toxicology (DUID-type toxicology) to include at least the detection, identification, and quantitation of alcohol and other drugs in biological specimens. There is a proficiency test and inspection component to the accreditation program. No public forensic laboratories in California are accredited by the ABFT.

⁷⁶ Malcolm and Peel, *Introduction to Accreditation for Forensic Labs* (2004), at p. 10.

⁷⁷ ASCLD/LAB-*International* Accreditation Program, Program Overview (Mar. 2007), at p. 3.

Benefits of Accreditation

Laboratory accreditation encompasses external third-party oversight of laboratory operations, including whether:

- Laboratory facilities are adequate;
- Laboratory personnel have the appropriate background (expertise and experience) and opportunities for continuing education to perform assigned tasks satisfactorily; and
- The laboratory has a quality assurance program and the degree to which the program strives for excellence as measured by proficiency testing, periodic assessments, and other factors affecting reliability and accuracy of test results.

Benefits associated with accreditation of forensic laboratories include:

- A distinctive mark of quality, recognized internationally, that affords external recognition of the forensic laboratory's distinctive commitment to quality;
- Standards of quality based on research that would be recognized internationally;
- An opportunity to gain valuable input, validation, and support from peers;
- Proven, clear, and intuitive processes for laboratory improvement that are grounded in best practices from other forensic laboratories and scientific disciplines;
- Connection to peer-recommended practices, best practices, resources, and analytical tools from across the spectrum of accredited forensic laboratories; and
- Greater accessibility for forensic laboratories to federal and state grant programs that require accreditation as a key component of eligibility.

Accreditation Status of California Crime Laboratories

California's public forensic laboratories have voluntarily pursued accreditation. Table 13 summarizes the accreditation status of California's forensic laboratories.

Two computer forensics laboratories—San Diego Regional Computer Forensics Laboratory in San Diego and Silicon Valley Regional Computer Forensics Laboratory in Menlo Park—are accredited by ASCLD/LAB. Two private forensic laboratories—Human Identification Technologies, Inc., of Redlands and Serological Research Institute of Richmond—are accredited by ASCLD/LAB; both laboratories are DNA laboratories. Forensic Analytical Laboratories, Inc., is accredited by FQS.

Criticism of Accreditation Programs

Forensic laboratory accreditation programs are not without their critics. Some criticism centers on the inadequacy of accreditation or other forms of self-regulation to address deficiencies in the scientific foundations of the field; that is, many areas of forensic science are poorly validated. One critic declared that “[w]hen whole areas of forensic science are poorly validated and entire categories of forensic testimony rest on shaky scientific foundations, asking the forensic scientists who work within those areas to regulate one another is akin to asking the blind to lead the blind.”⁷⁸

⁷⁸ Statement of Task Force member William C. Thompson to the California Commission on the Fair Administration of Justice, January 10, 2007.

Table 13

Accreditation Status of Forensic Laboratories in California

Forensic Testing Laboratory	Accreditation Body	First Year	Controlled Substances	Toxicology	Trace Evidence	Biology	Firearms/ Toolmarks	Questioned Documents	Latent Prints	Crime Scene	Digital & Multimedia	Breath Alcohol Calibration
Alameda Co. Sheriff's Dept.	ASCLD/LAB Legacy	1999	✓		✓	✓	✓		✓			
BFS Central Valley	ASCLD/LAB Legacy	1994	✓	✓*	✓	✓	✓					
BFS Chico	ASCLD/LAB Legacy	1994	✓		✓	✓	✓			✓		
BFS Freedom	ASCLD/LAB Legacy	1994	✓	✓*		✓†	✓					
BFS Fresno	ASCLD/LAB Legacy	1993	✓	✓*	✓	✓	✓		✓			
BFS DNA Lab	ASCLD/LAB Legacy	1993				✓†						
BFS Latent Prints & Quest. Docs	ASCLD/LAB Legacy	1994						✓	✓			
BFS Eureka	ASCLD/LAB Legacy	1994	✓	✓*	✓	✓	✓			✓		
BFS Redding	ASCLD/LAB Legacy	1994	✓		✓	✓	✓		✓	✓		
BFS Riverside	ASCLD/LAB Legacy	1994	✓		✓	✓	✓					
BFS Sacramento	ASCLD/LAB Legacy	1994	✓	✓*	✓	✓	✓					
BFS Santa Barbara	ASCLD/LAB Legacy	1994	✓			✓†	✓			✓		
BFS Santa Rosa	ASCLD/LAB Legacy	1994	✓	✓*	✓	✓	✓					
BFS Toxicology	ASCLD/LAB Legacy	1994		✓								
Contra Costa County Sheriff	ASCLD/LAB Legacy	2002	✓	✓		✓	✓		✓			
El Cajon Police Dept.	ASCLD/LAB Legacy	2003							✓	✓		

Table 13 continued

Accreditation Status of Forensic Laboratories in California

Forensic Testing Laboratory	Accreditation Body	First Year	Controlled Substances	Toxicology	Trace Evidence	Biology	Firearms/ Toolmarks	Questioned Documents	Latent Prints	Crime Scene	Digital & Multimedia	Breath Alcohol Calibration
Fresno County Sheriff	FQS-ISO	2008				✓	✓					
Kern County District Attorney	ASCLD/LAB Legacy	2006	✓	✓	✓	✓	✓			✓		
Long Beach Police Dept.	ASCLD/LAB Legacy	2003	✓	✓*			✓		✓	✓		
Los Angeles County Coroner	ASCLD/LAB Legacy	1996	✓	✓			✓					
Los Angeles County Sheriff	ASCLD/LAB Legacy	1989	✓	✓	✓	✓	✓	✓	✓			
Los Angeles Police Dept.	ASCLD/LAB Legacy	1998	✓	✓	✓	✓	✓	✓				
Oakland Police Dept.	ASCLD/LAB Legacy	1983	✓			✓	✓		✓			
Orange County Sheriff	ASCLD/LAB ISO	1992	✓	✓	✓	✓	✓	✓	✓	✓		
Sacramento Co. District Attorney	ASCLD/LAB Legacy	2000	✓	✓	✓	✓	✓			✓		
San Bernardino County Sheriff	ASCLD/LAB Legacy	1995	✓	✓*	✓	✓	✓			✓		
San Diego County Sheriff	ASCLD/LAB Legacy	2003	✓	✓*	✓	✓	✓	✓	✓	✓		
San Diego Police Dept.	ASCLD/LAB Legacy	1997	✓	✓*	✓	✓	✓	✓	✓	✓		
San Francisco Police Dept.	ASCLD/LAB Legacy	2005	✓		✓	✓	✓	✓				
San Mateo County Sheriff	ASCLD/LAB Legacy	2005	✓	✓*	✓	✓	✓		✓			
Santa Clara Co. District Attorney	ASCLD/LAB Legacy	1996	✓	✓	✓	✓	✓	✓	✓		✓	
Ventura County Sheriff	ASCLD/LAB ISO	2003	✓	✓	✓	✓	✓					✓

Abbreviations and symbols used in Table 13:

- ASCLD/LAB Legacy – American Society of Crime Laboratory Directors/Laboratory Accreditation Board Legacy accreditation program
- ASCLD/LAB ISO – American Society of Crime Laboratory Directors/Laboratory Accreditation Board International accreditation program
- FQS-ISO – Forensic Quality Services – International accreditation program
- ✓* Toxicology subdiscipline alcohol testing
- ✓† Biology subdiscipline DNA (nuclear and mitochondrial)
- ✓‡ Biology subdiscipline serology (body fluid identification)

While the NAS report called for mandatory accreditation of crime laboratories, it noted that accreditation is “just one aspect of an organization’s quality assurance program, which should also include proficiency testing where relevant, continuing education and other programs to help the organization provide better overall services.” The report went on to state that “accreditation does not mean that accredited laboratories do not make mistakes, nor does it mean that a laboratory utilizes best practices in every case, but rather, it means that the laboratory adheres to an established set of standards of quality and relies on acceptable practices within these requirements.”⁷⁹

Mandating Accreditation

There are advantages and disadvantages to a mandated accreditation program. For example, the cost of ASCLD/LAB or FQS-ISO accreditation can run into the thousands of dollars for even a moderately sized forensic laboratory. It is an open question whether mandated accreditation of California’s crime laboratories would permit lab parent agencies to claim reimbursement from the state for costs.

New York and Texas are two notable examples of mandated accreditation of a state’s crime laboratories. In New York, state law requires the state’s Commission on Forensic Science to develop minimum standards and a program of accreditation for all forensic laboratories in New York. Further, the laboratory director and personnel involved in DNA testing are required to satisfy appropriate educational and training standards. The commission requires that any forensic laboratory performing DNA testing must be accredited by ASCLD/LAB. In disciplines other than DNA testing, forensic laboratories must be accredited by ASCLD/LAB or, if the laboratory is performing only toxicology analysis, by either ASCLD/LAB or the American Board of Forensic Toxicology (ABFT). The New York accreditation program requires documentation of accreditation by ASCLD/LAB and information pertaining to the application process, the accreditation inspection, the summation conference, the final inspection report, and disciplinary actions or proceedings. Sanctions are imposed for noncompliance.

The Texas mandated accreditation program requires the Texas Department of Public Safety (DPS) to accredit an individual laboratory for admission of evidence or testimony if the laboratory conducts forensic analysis of physical evidence for use in a criminal trial. The DPS director recognizes ASCLD/LAB, FQS-ISO, ABFT, the Texas Department of Health and Human Services’ Substance Abuse and Mental Health Services Administration (SAMHA), and the College of American Pathologists (CAP) as appropriate accrediting bodies. A laboratory may apply to the director for DPS accreditation in forensic disciplines for which accreditation is available from a recognized accrediting body. However, the program excludes DPS

⁷⁹ NAS report, at p. 195.

accreditation of breath specimen testing, latent print examination, digital evidence, autopsies conducted by a medical examiner, forensic photography, non-criminal paternity testing, and other forensic subdisciplines. If accredited by ASCLD/LAB, the laboratory must provide the DPS director with a copy of each annual accreditation review report. There is a system for complaints, special review, and administrative actions against the laboratory. Most notably, Texas includes private forensic laboratories, both in-state and out-of-state, in its accreditation program.

Strengths and Limitations of Existing Accreditation Programs

Accreditation is a process of comparison and evaluation of a forensic laboratory's operation against the requirements of ISO/IEC 17025 and other supplemental accreditation requirements.



Further, accreditation is a process with a course of action directed toward quality improvement that continues indefinitely and is not intended to be an absolute guarantee of accuracy and reliability. However, forensic laboratory accreditation does offer laboratory clients a greater degree of confidence in the results produced by the laboratory. Under the ASCLD/LAB-*International* accreditation program, a forensic laboratory must meet all requirements to become accredited. If a laboratory fails to meet a requirement, a corrective action request is created, and the laboratory must prove that the requirement has been addressed to the assessor's satisfaction.

Laboratory Accreditation and State-Level Oversight

The Task Force has considered, and will continue to study, the establishment of state-level oversight of forensic science in California. The following paragraphs describe the ways in which current accreditation standards address or do not address concerns underlying the call for statewide forensic science oversight.⁸⁰

- Allocation of resources and inefficiency are not directly addressed by the ISO/IEC 17025 or other supplemental accreditation requirements. Allocation of resources is agency dependent; in other words, it depends on how the parent agency perceives the value of the crime laboratory and whether the agency adequately funds laboratory operations. Regardless of the budget of the laboratory, it is estimated that 10 percent to 15 percent of the laboratory's budget may be spent on establishing and maintaining the laboratory's quality system. There may be small gains in efficiencies tied to better purchasing practices.

⁸⁰ Numbered requirements in the following paragraphs refer to the ASCLD/LAB-*International* ISO/IEC 17025:2005 requirements and ASCLD/LAB-*International* Supplemental Accreditation Requirements.

- Accreditation requirements protect the “independence” of laboratories. For example, ISO/IEC management requirements mitigate conflicts of interest (4.1.4) by requiring a demonstration of professional independence from other parts of the parent agency and freedom from internal and external pressures (4.1.5(b)). ISO/IEC management requirements also scrutinize the lab’s organizational relationships (4.1.5(e)), focusing on the position of the laboratory within the parent organization and the reporting relationship between management, quality assurance program staff, and technical operations. Finally, accreditation addresses the authority of scientific personnel (4.1.5(f)) whose work affects the examination of exhibits and the reporting of the results, the qualifications of supervisors (4.1.5(g)), and the presence of a quality manager (4.1.5(i)) responsible for quality assurance and reporting directly to the laboratory director.
- Best practices for forensic disciplines and research priorities are elements of accreditation. ISO/IEC mandates a comprehensive laboratory quality system (4.2.1) to ensure both the quality and accuracy of the test results. Accreditation also requires standard operating procedures, instructions or methods for performing examinations, and directions for running instruments. In addition, the accreditation process assesses a lab’s selection of methods (5.4.2) that meet the forensic needs of the laboratory’s clients and includes the use of standard methods, although these methods may not apply to all forensic samples. A laboratory’s development and validation of in-house methods are considered, as are details of method validation (5.4.5.2). However, accreditation requirements do not address priorities for forensic research.
- The standardization of terminology and the improved communication of forensic science findings are addressed in part by accreditation. A supplemental accreditation requirement addresses standardizing abbreviations or symbols specific to the laboratory (4.13.2.13) by ensuring that the meaning of the abbreviations or symbols is clearly documented. However, accreditation requirements do not address standardizing report terminology. There is considerable discussion in ISO/IEC manuals concerning reports (5.10.1, 5.10.2, 5.10.3, and 5.10.4) as the means for communicating test results to the client, and ISO/IEC mandates include a list of all the information that is expected to be in the laboratory report (5.10.2). Supplemental accreditation requirements discuss the significance of an association being clearly communicated and properly qualified in the report (5.10.3.5), and when no definitive conclusions can be reached, the reasons must be documented in the case record (5.10.3.6). Further, the author or authors of the test report must have conducted, participated in, observed, supervised, or technically reviewed the testing (5.10.3.7). Finally, opinions and interpretations presented in the report (5.10.5) have to be well documented.
- ISO/IEC requirements address education and training needs of forensic scientists (5.2.1) with mandates that require particular levels of education, training, experience, and demonstrated competence of the scientific staff. ISO/IEC identifies training needs (5.2.2) and creation of a formal plan containing goals set by the laboratory for training and professional development, as well as procedures for retraining and maintenance of skills and court training. Supplemental accreditation requirements go further in providing educational qualifications for technical personnel (5.2.6.1.1, 5.2.6.1.2, 5.2.6.1.1.3, 5.2.6.4, and 5.6.2.1.5) in specific forensic disciplines; requirements for competency testing (5.2.6.2, 5.6.2.1, 5.6.2.2, 5.6.2.3, and 5.6.2.4) that require a

satisfactorily completed competency test before assuming casework responsibilities; and a documented proficiency testing program (5.9.3) that maintains records of proficiency testing (5.9.3.5) to include any discrepancies noted and details of corrective actions taken. Accreditation does not address the coordination or delivery of continuing education programs.

- Accreditation does not address the need for independent investigations of negligence and misconduct. ISO/IEC does provide a means for a lab to internally process complaints (4.8), such as establishing a complaint file and identifying the individuals responsible for investigating the complaints, correcting the problems, and contacting the client. Procedures also exist for control of non-conforming testing (4.9) and corrective action (4.10).

Corrective action involves identifying the root cause (4.10.1, 4.10.2, 4.10.3, 4.10.4, and 4.10.5), taking preventive measures (4.11), and anticipating problems before they occur (4.11.1 and 4.11.2). ISO/IEC also requires internal audits (4.13) to verify that the laboratory's quality system is functioning properly and complies with its own procedures and ISO/IEC 17025. As a final requirement, ISO/IEC discusses annual management reviews (4.14) that assess whether laboratory management is committed to and involved in the operation of the laboratory and its quality system.



Santa Clara County District Attorney's Office
Laboratory of Criminalistics

Accreditation of Limited Service Forensic Science Units

Another limitation of the accreditation model, as noted in the NAS report, is that not all government forensic scientists work in accredited laboratories. The NAS report notes that "identification units—that is, those forensic entities outside crime laboratories—do not participate in accreditation systems and are not required to do so. Given that some disciplines are practiced largely outside the laboratory environment (e.g., 66 percent of fingerprint analyses are not conducted in crime laboratories) there is a substantial gap in the number of programs participating in accreditation."⁸¹ This gap also exists in California. For example,

⁸¹ NAS report, at p. 200.

in various jurisdictions around the state the latent print unit is not deemed part of the crime laboratory and is therefore out of compliance with accreditation requirements. In some jurisdictions, experts who process crime scenes work in accredited crime laboratories; in other jurisdictions, they do not.

ASCLD/LAB-*International*⁸² defines “crime/forensic laboratory” as a laboratory with at least one full-time scientist who examines physical evidence in criminal matters and provides opinion testimony with respect to such physical evidence in a court of law. And a “scientist” is defined as a person who employs scientific methods in the examination of evidence in a forensic laboratory. These broad definitions permit eligible sheriff and police departments that operate latent print units, digital evidence units, or crime scene units to apply for accreditation to ASCLD/LAB-*International* or FQS-ISO. Private laboratories and law enforcement agencies are largely conducting forensic examinations without any form of comparison, review, or evaluation of their work against national accreditation standards. Accreditation would offer formal recognition that these agencies are competent to carry out the specific tests in the forensic services they provide. (This Task Force report does not address private laboratory or limited service law enforcement programs.)

Recommendations

- All California public crime laboratories should be accredited through one of the available crime laboratory accreditation programs. The Task Force does not see a need to establish a parallel or unique forensic laboratory accreditation program in California. Conformance to existing accreditation programs is a rigorous and time-consuming endeavor for even the smallest forensic laboratories, and it is unlikely that any of California’s public crime laboratories would allow their accreditation status to lapse because the cost would be too great, especially the cost to the reputation of the forensic laboratory and its ability to acquire grant funding. Direct applications to the National Institute of Justice for DNA and forensic science improvement grants require proof of accreditation status to be considered for grant funding.
- The state should further study whether or how forensic science activities that occur outside of accredited crime laboratories could be brought within an accredited organization.

⁸² ASCLD/LAB-*International* Supplemental Requirements – Testing, January 2006.



Chapter 6

Statewide Forensic Science Oversight

During its discussions on ways to improve crime laboratory services in California, the Task Force repeatedly debated the potential advantages and disadvantages of creating a statewide advisory or regulatory body to facilitate or oversee the delivery of forensic science services in the state. The idea is a controversial one in some respects, although a consensus exists on several basic principles.

Some members of the Task Force view the creation of a state advisory body for forensic science as a vital and necessary step. They believe such a body could play a crucial role in the following areas:

- Improving the allocation of forensic science resources;
- Protecting the independence of crime laboratories;
- Establishing and promoting best practices;
- Establishing priorities for education, training, and research;
- Moving toward standardization of terminology and reporting of results; and
- Investigating allegations of serious negligence and misconduct.

Other Task Force members had strong reservations about the idea, questioning both the need for and the desirability of such a statewide body, particularly if it were empowered to micromanage local crime laboratory operations. The California Department of Public Health's regulation of forensic alcohol testing was cited as an example to be avoided. Further, some Task Force members believe that the Department of Public Health exercised its regulatory authority in an obtuse and arbitrary manner, forcing laboratories to comply with rules in a way that was cumbersome and inefficient and discouraged innovation. The Department of Public Health's regulatory authority over forensic alcohol testing is currently under review.⁸³ There are, however, a number of helpful functions that a statewide body could potentially perform that would not necessarily entail micromanagement, and this Task Force proposes to examine all sides of this issue in the next year.

⁸³ See also California State Auditor, *Department of Health Services: The Forensic Alcohol Program Needs to Reevaluate Its Regulatory Efforts* (Aug. 1999) <<http://www.bsa.ca.gov/pdfs/reports/97025.1.pdf>>.

The Need for Statewide Oversight of Forensic Science Services in California

The call for a unified, statewide perspective on forensic science issues is a product of the various concerns expressed in this report. While some laboratory shortcomings identified by the Task Force can be addressed locally by individual laboratories, others would be most effectively studied, and corrected, through inter-jurisdiction coordination and advocacy at a state government level. Thus, the creation of a statewide entity concerned with the timely delivery of reliable forensic science should be considered.

Improving Allocation of Resources and Reducing Inefficiency

Forensic science provides tremendous benefit to society by helping solve crime. The Task Force has found, however, that crime laboratories in California do not always achieve their full potential because of lack of funding. Funding is not only limited but is uneven, with some jurisdictions receiving more support than others, and some services, such as DNA testing, receiving more support than other services. One major finding of the Task Force is that more study is needed to determine appropriate staffing levels for crime laboratories and optimal funding levels for various crime laboratory functions. The Legislature and funding agencies need to know which funding requests will produce the greatest benefits per dollar spent in order to allocate resources in an efficient, cost-effective manner. Moreover, both the Legislature and local governments will benefit from knowing the number of criminalists a crime lab should employ in order to serve a community of a particular population with a particular crime rate.



A state-level advisory body could help meet this need by conducting or commissioning studies to determine appropriate staffing and support levels and making the findings known to the Legislature and local governments. The advisory body could take a systemic view to determine what forensic science services are most needed and what mechanisms for delivering those services will be most cost-effective. The advisory body could then serve as an authoritative voice, helping to educate the Legislature about the benefits of forensic science and offering guidance on funding priorities.

In concept, a statewide advisory body could recommend to laboratories ways to streamline funding needs by performing an overall assessment of funding priorities. At present, the allocation of funding for new services is done by local agencies and is driven partly by demand. But demand is not always the best indicator of which services will contribute most to solving crime. High demand currently exists for additional DNA testing services in part because police agencies have become familiar with the benefits of DNA evidence. However, other forensic services could contribute as much or more to solving crime, perhaps at lower cost. Police agencies may fail to seek those services simply because they do not know they are available, or do not understand their benefits. A holistic statewide perspective of the forensics field may encourage more efficient allocation of limited resources.

Funding inefficiencies might be reduced if a state-level advisory body existed that could study and make recommendations about funding priorities. For example, the City of Glendale and the Los Angeles County Coroner have both committed substantial funding to create their own separate DNA testing laboratories. However, this may not be an optimal use of scarce taxpayer dollars. Careful study might reveal, for example, that it would be more efficient to expand the DNA testing capability of the existing laboratories operated by the Los Angeles Police Department and the Los Angeles County Sheriff's Department than to create entirely new DNA laboratories. This is particularly true in the case of the Coroner, which reports needing the services of at most one DNA analyst to meet its testing needs in non-criminal matters, but will be compelled to hire at least two DNA analysts to meet standards for laboratory accreditation. Adding a DNA laboratory may also strain the Coroner's laboratory facilities, possibly creating the need for another building, while the necessary testing could be accommodated in existing facilities of the Los Angeles Police Department or Sheriff's Department.

Standardizing Terminology and Improving Communication of Findings

Laboratory findings must be communicated to those in the criminal justice system in a manner that is accurate and comprehensible both on and off the witness stand. Standardized communication of laboratory findings would go far in achieving this goal. Standards could be established regarding what information should be included in laboratory reports, as well how such findings should be best communicated in a courtroom. In addition, a statewide advisory body could formulate and suggest standardized laboratory performance metrics (e.g., "backlog") to facilitate statewide planning efforts and coordination.

In 2009, the National Academy of Sciences declared that "[t]here is a critical need in most fields of forensic science to raise the standards for reporting and testifying about the results of investigations."⁸⁴ The NAS report noted that many forensic science disciplines have not reached agreement on the precise meaning of terms that are commonly used in report writing and courtroom testimony, such as "match," "consistent with," or "identification." Because confusion about terminology has created difficulties in communicating results clearly to lawyers, judges, and juries, there is a need to standardize terms and establish best practices for communicating results. The National Academy of Sciences suggested that a new federal agency, the National Institute of Forensic Science (NIFS), "should establish standard terminology to be used in reporting on and testifying about the results of forensic science investigations."⁸⁵ However, at this point it is unclear whether such an agency will be established. Although existing accreditation standards, particularly ISO 17025, are contributing to standardized reporting, more needs to be done to assure that findings are communicated effectively throughout the justice system.

Interviews with laboratory directors also revealed inconsistency in laboratories' practices regarding disclosure of information to attorneys, and some uncertainty exists about the scope of the legal obligation to disclose. Some laboratories report devoting considerable time to discovery issues that might be better devoted to direct provision of services. A statewide advisory body might usefully establish best practice standards in this area as well.

⁸⁴ NAS report, at p. 185.

⁸⁵ *Ibid.*, at p. 189.

Evaluating the Education and Training Needs of Forensic Scientists

This report has emphasized the importance of education and training to the future of forensic science in California. Although California is fortunate to possess substantial educational and training resources, it is clear that the needs of forensic laboratories are not fully being met. Lack of funding is a major issue, but part of the problem is also the diversity of the existing resources and a lack of coordination in how these resources are used. A statewide advisory body could play a useful role in this area by making recommendations to policy makers and funding agencies about how best to use existing resources to meet statewide needs.

Investigating Serious Negligence and Misconduct

One potential function of a statewide advisory body could be to act as a clearinghouse for complaints and allegations concerning serious misconduct or negligence in California laboratories. Even if not conducting or overseeing the resulting investigations themselves, the advisory body could ensure that investigations are referred to the proper entity and conducted in a manner that satisfies federal grant requirements.

Strengths and Limitations of Existing Self-Regulatory Methods

Accreditation

Accreditation plays a vital role in laboratory quality assurance and quality control. The fact that all of California's public crime laboratories are now accredited speaks well of their commitment to providing quality services. Funding agencies must continue to recognize the need for laboratory accreditation and to support accreditation efforts.

But laboratory accreditation, by itself, does not meet all laboratory needs identified in this report. By design, accreditation does not address issues related to the efficient allocation of resources among laboratories in different jurisdictions or among various laboratory services on a statewide level. Nor does accreditation address the need to coordinate education and training statewide. Moreover, as noted previously, not all forensic science services occur in accredited laboratories.

Certification

Certification also plays an important role in quality assurance. California should support and expand opportunities for government-employed forensic scientists to become certified. In the future, the state should consider making certification mandatory for government experts who testify in court. Like accreditation, however, certification by design does not meet the need for broader oversight of the field with regard to allocation of resources, education, and planning.

Should the federal government adopt or enact new certification or accreditation requirements for crime laboratories, a California advisory body would be in the best position to advise state leaders on how to address such changes. The state should consider existing methods for ensuring quality forensic science, such as ASCLD/LAB accreditation, when formulating California policy and responding to federal mandates or incentives.

Forensic Science Oversight: Other States' Approaches

States across the nation are adopting unified statewide approaches to forensic science issues with increasing frequency. At least 15 states have created an entity charged with some degree of oversight over crime laboratories. The approaches taken by these entities vary broadly along a spectrum of proactive to reactive. Likewise, the scope of their concerns ranges from limited to comprehensive while the nature of their authority extends from firm control over laboratory licenses and operations to passive recommendations to policymakers. So too does the composition and support staff infrastructure, and agency placement of these entities, differ from state to state. Nonetheless, most of these state entities share certain functional features, and they possess common concerns about the challenges facing crime laboratories. Ideally, examining other states' approaches to forensic science oversight will provide California policymakers with a menu of options as they consider the best statewide approach to facilitating high-quality forensic science testing.

In devising a state forensic science body, a fundamental question to be answered is whether a body will be authorized to assert independent regulatory control—from a fiscal, scientific, or operational perspective—over laboratories, or whether the body's mission will be advisory in nature. One perspective is that an oversight body's purpose is to monitor and study crime laboratory operations in order to keep the state legislature and other interested state agencies informed of the needs of the forensic science community. This kind of body advocates for increased funding or reforms from a neutral perspective. It could also encourage or facilitate scientific research in the forensic disciplines. As an adjunct to its advisory function, a body often has the power to investigate allegations of wrongdoing, negligence, or substandard science and issue public reports describing its findings.



California Department of Justice, Bureau of Forensic Services, Jan Bashinski DNA Laboratory, Richmond

A competing perspective maintains that an oversight body should have binding regulatory authority over laboratories, or at least have influence based on the ability to withhold funding or issue licenses. These bodies apply subject-matter expertise to questions of laboratory management, scientific best practices, and professional standards without necessarily involving the legislature. Adopting this approach would require thorough delineation of standards and expectations for crime laboratories. In addition, care would have to be taken to avoid redundancy or conflict between existing quality control requirements and those that would be enforced by an oversight body. For example, observation of ASCLD/LAB Legacy or ISO standards already may be sufficient to ensure that laboratories use valid methodologies and best practices.

Creating a statewide oversight body also requires practical considerations such as its funding source; use of permanent staff; composition and appointment procedures; meeting schedule; reporting obligations; and ability to use other state resources, facilities, and personnel.

Existing State Oversight Entities

The following state entities, listed in alphabetical order, are those that were created to address and improve forensic science practices. The source of their authority or other origin is indicated parenthetically; Appendix K provides a detailed description of each program.

- Alabama Coroner's Training Commission (Code of Ala. § 11-5-31)
- Arizona Forensic Sciences Advisory Committee (Formed by the Arizona Attorney General in cooperation with the Arizona Criminal Justice Commission. See http://www.azag.gov/law_enforcement/ColdCaseTaskForceReport2007.pdf)
- Illinois Laboratory Advisory Committee (20 Ill. Comp. Stat. 3981/1 et seq.)
- Indiana Commission on Forensic Sciences (Burns Ind. Code Ann. § 4-23-6-1 et seq.)
- Maryland Forensic Laboratory Advisory Committee (Md. Code Ann., Health-Gen §§ 17-2A-12; 17-2A-01 et seq.)
- Massachusetts Inspector General (See <http://www.mass.gov/ig>)
- Minnesota Forensic Laboratory Advisory Board (Minn. Stat. § 299C.156)
- Missouri Crime Laboratory Review Commission (Exec. Order 07-16 (June 2007) [complementary legislation pending: SB 8 (2009)])
- Montana Forensic Science Laboratory Advisory Board (See <http://www.doj.mt.gov/enforcement/crimelab/default.asp#advisoryboard>)
- New Mexico DNA Oversight Committee (N.M. Stat. § 29-16-5)
- New York Commission on Forensic Science (NY CLS Exec § 995 et seq.)
- Rhode Island Crime Laboratory Commission (R.I. Gen. Laws § 12-1.1-1 et seq.)
- Texas Forensic Science Commission (Tex. Code Crim. Proc. art. 38.01)
- Virginia Forensic Science Board (Va. Code Ann. § 9.1-1109 et seq.)
- Virginia Scientific Advisory Committee (Va. Code Ann. § 9.1-1111)
- Washington State Forensic Investigations Council (Rev. Code Wash. § 43.103.010 et seq.)

Creation of a Crime Laboratory Advisory Board in California

Although not expressly included in the Task Force mandate, it became increasingly clear during discussions that the creation of some type of crime lab advisory, review, or oversight body is warranted. Rather than further delay release of the report mandated by Penal Code section 11062, the Task Force members unanimously determined to continue deliberations for up to one additional year specifically on this issue. The members felt that the effort already expended on reviewing materials, including presentations at the public sessions and discussing the need for a statewide body and the form it should take, should continue. The Task Force will review and evaluate the various oversight models used by other states, as well as solicit further input from lab directors, controlling agencies, stakeholders, and relevant professional organizations. The Task Force will then consider the following issues in a supplemental report:



- Composition (i.e., number of members, appointing authority, and terms);
- Funding, organization, and staffing;
- Functions; and
- Reporting requirements.

As noted in the beginning of this report, forensic science provides a valuable tool for the investigation and prosecution of criminal acts, including the exclusion and exoneration of the innocent. This report recommends ways in which public crime labs in California can better serve those needs. The Task Force will build on this effort in its further study and supplemental report with the goal of ensuring that California provides the highest level of forensic services to the benefit of all the state's citizens.

Recommendation

- California should establish a statewide body to consider issues related to forensic science. The specifics of this proposal, including the composition and functions of this body, will be described in a supplemental report published within one year of this report.

Appendix A

Task Force Member Biographies

Task Force Chair:

Dane Gillette, Chief Assistant Attorney General California Attorney General's Office

Dane Gillette is the Chief Assistant in charge of the Criminal Division at the California Attorney General's Office, a position he has held since January 2007. From 1992 to 2007, he served as the Attorney General's statewide capital case coordinator. Mr. Gillette graduated from Occidental College in 1972 and from Hastings College of Law in 1975, and he joined the Attorney General's Office in 1975. In addition to his position as Chief Assistant, Mr. Gillette is Chair of the California Crime Laboratory Review Task Force, serves on the Judicial Council's Criminal Law Advisory Committee, and is on the board of directors and a past president of the Association of Government Attorneys in Capital Litigation (AGACL).

During his career Mr. Gillette has represented the state on numerous occasions before the California Supreme Court and United States Court of Appeals for the Ninth Circuit and twice before the Supreme Court of the United States. He lectures regularly on issues pertaining to capital litigation and federal habeas corpus and has received awards for excellence from the Attorney General's Office, the California District Attorney's Association, and AGACL.

(Listed in alphabetical order)

Michael Burt, Criminal Defense Attorney Law Office of Michael Burt

Michael Burt is a certified criminal specialist in private practice in San Francisco, and he is also a Federal Death Penalty Resource Counsel. Prior to entering private practice in January 2003, he was head trial attorney with the San Francisco Public Defender's Office where he practiced trial work for 25 years. Mr. Burt has specialized in the defense of capital cases since 1982, with an emphasis on forensic science issues. From 1993 to 2003, he was the editor-in-chief of the California Death Penalty Defense Manual. He lectures throughout the country on all aspects of capital case defense and forensic science issues.

Dolores A. Carr, District Attorney Santa Clara County

Dolores Carr was elected as the Santa Clara County District Attorney on November 6, 2006. During the past 29 years, Ms. Carr has worked in private practice, was a Deputy District Attorney for 15 years, and was a Superior Court Judge from 2000 to 2006. She served as the Supervising Judge of the Family Division and the Supervising Judge of the Unified Family Court. She was appointed to the Board of Reappraisers for the California State Bar in 1991 and, until 2004, was one of nine attorneys in the state responsible for developing questions for and supervising the grading of the California Bar Exam. Ms. Carr received an undergraduate degree in Spanish with honors from UC Berkeley in 1975, earned her J.D. in 1980 from Southwestern University School of Law, and was admitted to the California Bar in 1980.

Arturo Castro, Attorney

Office of the General Counsel, Judicial Council of California

Arturo Castro is an attorney with the Administrative Office of the Courts (AOC), the staff agency to the Judicial Council, the policy and rule-making body for the California judicial branch. Mr. Castro has worked in the AOC's Office of the General Counsel since 2007, first in the Legal Opinion Unit and currently in the Rules and Projects Unit. Prior to joining the AOC, he worked as a deputy public defender in Los Angeles County from 1999 to 2005. Mr. Castro graduated from UC Berkeley in 1995 and from Boalt Hall School of Law in 1998. He is the AOC's staff attorney to the Judicial Council's Criminal Law Advisory Committee.

Barry Fisher, Director (Retired)

Crime Laboratory, Los Angeles County Sheriff's Department

Barry Fisher served as the Crime Laboratory Director for the Los Angeles County Sheriff's Department from 1987 to 2009. He started his career in criminalistics in 1969 at the crime lab and worked in a wide variety of assignments. His current interests include the interrelationship between forensic science and the law along with public policy issues concerning the timely delivery of quality forensic support services to the criminal justice system.

Mr. Fisher is a member of several professional organizations: a distinguished fellow and past-president of the American Academy of Forensic Sciences; a past-president of the International Association of Forensic Sciences; a past-president of the American Society of Crime Laboratory Directors; and a former chair of the American Society of Crime Laboratory Directors – Laboratory Accreditation Board. Mr. Fisher is on the editorial boards of the Journal of Forensic Sciences; the Journal of Forensic Identification; Forensic Science, Medicine and Pathology; Forensic Science Policy and Management; and the McGraw-Hill Encyclopedia of Science and Technology. He is also a member of the International Association of Chiefs of Police Forensics Committee. His textbook, *Techniques of Crime Scene Investigation*, is in its 7th edition, and he is co-author of *Introduction to Criminalistics: The Foundation of Forensic Science and Forensics Demystified*. Mr. Fisher received a B.S. degree in chemistry from the City College of New York. He holds an M.S. degree in Organic Chemistry from Purdue University and an M.B.A. from CSU Northridge.

Jennifer Friedman, Deputy Public Defender

Los Angeles County

Jennifer Friedman has been a Deputy Public Defender in Los Angeles County for more than 23 years. Ms. Friedman graduated from the University of Wisconsin, Madison, in 1984 and the University of Wisconsin, Madison, Law School in 1986. She is currently the Assistant Special Circumstances Coordinator and Forensic Science Coordinator for the Los Angeles County Public Defender's Office. She assists in the supervision of the office's capital cases and represents clients charged with capital murder. She has tried over 130 felony jury trials, many of which were sexual assaults and homicides involving complex scientific issues. Ms. Friedman is a contributing writer for the expert section of the California Death Penalty Manual, and she is a frequent lecturer on the death penalty and the use of forensic sciences in the courts.

Dean M. Gialamas, Director

Forensic Science Service Division, Orange County Sheriff's Department

Dean Gialamas has been active in the field of forensic science for many years and is currently the President of the American Society of Crime Laboratory Directors (ASCLD) and the ASCLD representative to the Consortium of Forensic Science Organizations. He has experience in both public and private forensic labs. He has received awards for his contributions to the field of forensic science and has presented numerous papers to professional organizations, written several articles in peer reviewed journals, and authored a textbook chapter. Mr. Gialamas earned two B.S. degrees in Chemistry and Biology from UC Irvine and earned an M.S. degree in Criminalistics from CSU Los Angeles. He holds professional certification in forensic science from the American Board of Criminalistics and is a graduate of the West Point Leadership and Command Academy.

Robert A. Jarzen, Director

Laboratory of Forensic Services, Sacramento County District Attorney's Office

Robert Jarzen has been the Director of the Laboratory of Forensic Services for the Sacramento County District Attorney's Office since January 1991. Prior to working in Sacramento he was employed as a criminalist and supervisor with the Arizona Department of Public Safety Crime Laboratory for 16 years in various scientific and managerial positions. During his career he has served as President of both the Southwestern Association of Forensic Scientists (SWAFS) and the California Association of Crime Laboratory Directors (CACLD).

Mr. Jarzen was the CACLD representative on the California State Attorney General's Forensic Science Task Force, the California State Attorney General's Task Force on Post-Conviction DNA, the California State Attorney General's Proposition 69 Implementation Committee, and the California Crime Laboratory Review Task Force. He has also served on the Board of Directors of the American Society of Crime Laboratory Directors. Mr. Jarzen is an Adjunct Professor in forensic science at CSU Sacramento. He was also the Graduate Program Coordinator and Practitioner-in-Residence at the University of New Haven California Campus from 1997 to 2006. Mr. Jarzen was invited by the U.S. Department of Justice to teach leadership skills to crime laboratory directors from Bosnia-Herzegovina in Budapest, Hungary, and he was subsequently selected by the U.S. Department of Justice for a teaching assignment in the Republic of Kosovo. He is currently a consultant for Mexico's Secretariat of Public Security and is assisting Mexico in the development of a national crime laboratory.

**Elizabeth A. Johnson, Ph.D., Forensic Scientist
Consultant**

Elizabeth Johnson is a graduate of Wofford College and the Medical University of South Carolina. She has been a practicing forensic scientist since 1992, specializing in forensic biology and DNA issues. She established and directed the DNA laboratory at the Harris County Medical Examiner's Office in Houston, Texas, from 1992 to 1996, then worked at Technical Associates, a private criminalistics laboratory in Ventura, California, for six years.

Dr. Johnson has been instrumental in exposing bad work done by other laboratories including the exposé of the Houston Police Department Crime Laboratory's DNA testing that led to the closure of the lab and re-examination of hundreds of cases. She is currently a sole practitioner providing review, consultation, testimony, and education to those in need of assistance with forensic biology matters.

Sam Lucia, Lieutenant**San Bernardino County Sheriff's Department**

Sam Lucia is a 20-year veteran of the San Bernardino County Sheriff's Department and serves as the California Peace Officers' Association representative on the Task Force. Lieutenant Lucia has served as a deputy sheriff, detective, supervisor, and more recently as the executive officer for the Department's Scientific Investigations Division's Crime Lab.

Gregory Matheson, Director**Criminalistics Laboratory, Los Angeles Police Department**

Gregory Matheson is currently the Director of the Los Angeles Police Department's Criminalistics Laboratory. He has been with the laboratory as a criminalist, supervisor, and manager for more than 31 years. As a criminalist, he was court qualified in toxicology, serology, crime scene investigation, and the examination of explosives, flammable liquids, and vehicle lamp filaments. His professional involvement has included board of director positions with the California Association of Criminalists, California Association of Crime Laboratory Directors, American Society of Crime Laboratory Directors and the American Board of Criminalistics, and membership in the American Academy of Forensic Sciences.

James McLaughlin, Chief**Planning and Analysis Division, California Highway Patrol (CHP)**

James McLaughlin is a 29-year member of the CHP and is presently assigned as Chief of the Planning and Analysis Division (PAD). As the PAD commander, he serves as the Director for the department's traffic safety grant program. In addition, he serves on the California Council on Criminal Justice and chairs the Enforcement Technology Advisory Technical Subcommittee for the International Association of Chiefs of Police. He also oversees the California Motorcyclist Safety Program.

Prior to his current assignment, he served as Assistant Commander of the department's Golden Gate Division in the San Francisco Bay Area. During his career he has served as the commander of the CHP's Napa and El Centro Area offices and the Sacramento Communications Center. He has served as a Peace Officer Standards and Training (POST) Advisory Committee member and as chair of the departmental Occupational Safety Board. In 1980, he earned a B.S. degree in Economics from UC Davis and is a graduate of the FBI National Academy.

Jennifer Mihalovich, Criminalist III**Criminalistics Laboratory, Oakland Police Department**

Jennifer Mihalovich is currently the supervisor and the DNA Technical Lead of the Biology Unit at the Oakland Police Department's Criminalistics Laboratory. She obtained a B.S. degree in Microbiology from the University of Montana and her Masters of Public Health in Forensic Science from UC Berkeley. She has been a criminalist for more than 24 years, working in both private and government laboratories.

Ms. Mihalovich holds an American Board of Criminalistics Diplomate certificate in General Criminalistics and a Fellow certificate in Molecular Biology, and she is a qualified ASCLD/LAB Assessor and an FBI DNA Quality Assurance Auditor. Her professional involvement has

included board of director positions with the California Association of Criminalists and the American Board of Criminalistics. She holds membership in the California Association of Criminalists, the American Academy of Forensic Sciences, and the California Association of Crime Laboratory Directors.

**Steven Nash, Detective (Retired)
Marin County Sheriff's Department**

Steven Nash was a Deputy Sheriff with the Marin County Sheriff's Department since 1979, working in the Jail, Patrol and Crime Prevention, and Investigations Divisions. He graduated from the Robert Presley Institute of Criminal Investigation with the specialty of Arson/ Explosive Investigation and was a field training officer for patrol personnel before transferring to the Investigations Division in 1988. His prior experience includes work as a field evidence technician and an assignment with the Crime Scene and Latent Print Section. He was an instructor for the Marin County Sheriff's Department, local law enforcement agencies, and state and federal agencies in the area of crime scenes and development and comparison of latent fingerprints.

Detective Nash was a past-president of the International Association for Identification; past-president of the California Division of the International Association for Identification; former chair of the International Association for Identification Crime Scene Investigations; and former chair of the Crime Scene Certification for the State Division of the International Association for Identification. He is a certified member of the International Association of Identification as a Senior Crime Scene Analyst, and he belongs to the Crime Scene Certification for the International Association for Identification, the California Homicide Investigators Association, and the California Robbery Investigators Association.

**Jeff Rodzen, Ph.D., Senior Wildlife Forensic Specialist
Wildlife Forensics Laboratory, California Department of Fish and Game (DFG)**

Jeff Rodzen is one of two Governor's appointees to the California Crime Laboratory Review Task Force. He has worked in the DFG Forensics Laboratory since completing graduate studies at UC Davis in 2000. Prior to graduation, he was a student assistant at the California Department of Justice's Berkeley DNA Lab. Currently he performs the role of Director of DFG's Forensics Laboratory, which includes overseeing the lab's daily operation as well as organizing and conducting long-term forensic research projects and lab planning for DFG. Dr. Rodzen is a full member of the California Association of Criminalists and the California Association of Crime Laboratory Directors.

**William C. Thompson, J.D., Ph.D., Professor
Department of Criminology, Law and Society, University of California, Irvine**

William Thompson is the Chair of the Department of Criminology, Law and Society at UC Irvine. He has been teaching at the university since 1983 and has written extensively about forensic DNA evidence. His prior experience includes working as an attorney at the Law Offices of Clark L. Deichler in Oakland and as a staff fellow for the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research in Washington, D.C.

Professor Thompson received his Ph.D. from Stanford University and his J.D. from Boalt Hall School of Law, UC Berkeley. He is a member of the California Bar, American Academy of Forensic Sciences, National Association of Criminal Defense Lawyers, American Bar Association, and American Psychology-Law Society.

**Charlotte Wacker, Director
Body Donation Program, University of California, Davis**

Charlotte Wacker is the Director of the UC Davis Body Donation Program, a position she has held since 2005. From 2001 to 2005, she served as the Assistant Director of the program. Ms. Wacker graduated from UC Davis in 2000 and obtained a Masters degree in Forensic Science from the University of New Haven in 2003. In addition to her position at UC Davis, Ms. Wacker is a Governor's Appointee to the California Crime Laboratory Review Task Force, serves on multiple committees regarding the use of human anatomical specimens, and is an active member of the American Academy of Forensic Science and the American Association of Clinical Anatomy.

Appendix B

Penal Code Section 11062

California Codes

Penal Code Section 11062

11062. (a) The Department of Justice shall establish and chair a task force to conduct a review of California's crime laboratory system.

(b) The task force shall be known as the "Crime Laboratory Review Task Force." The composition of the task force shall, except as specified in paragraph (16), be comprised of one representative of each of the following entities:

- (1) The Department of Justice.
- (2) The California Association of Crime Laboratory Directors.
- (3) The California Association of Criminalists.
- (4) The International Association for Identification.
- (5) The American Society of Crime Laboratory Directors.
- (6) The Department of the California Highway Patrol.
- (7) The California State Sheriffs' Association, from a department with a crime laboratory.
- (8) The California District Attorneys Association, from an office with a crime laboratory.
- (9) The California Police Chiefs Association, from a department with a crime laboratory.
- (10) The California Peace Officers' Association.
- (11) The California Public Defenders Association.
- (12) A private criminal defense attorney organization.
- (13) The Judicial Council, to be appointed by the Chief Justice.
- (14) The Office of the Speaker of the Assembly.
- (15) The Office of the President pro Tempore of the Senate.
- (16) Two representatives to be appointed by the Governor.

(c) The task force shall review and make recommendations as to how best to configure, fund, and improve the delivery of state and local crime laboratory services in the future. To the extent feasible, the review and recommendations shall include, but are not limited to, addressing the following issues:

- (1) With respect to organization and management of crime laboratory services,

consideration of the following:

(A) If the existing mix of state and local crime laboratories is the most effective and efficient means to meet California's future needs.

(B) Whether laboratories should be further consolidated. If consolidation occurs, who should have oversight of crime laboratories.

(C) If management responsibilities for some laboratories should be transferred.

(D) Whether all laboratories should provide similar services.

(E) How other states have addressed similar issues.

(2) With respect to staff and training, consideration of the following:

(A) How to address recruiting and retention problems of laboratory staff.

(B) Whether educational and training opportunities are adequate to supply the needs of fully trained forensic criminalists in the future.

(C) Whether continuing education is available to ensure that forensic science personnel are up-to-date in their fields of expertise.

(D) If crime laboratory personnel should be certified, and, if so, the appropriate agency to assume this responsibility.

(E) The future educational role, if any, for the University of California or the California State University.

(3) With respect to funding, consideration of the following:

(A) Whether the current method of funding laboratories is predictable, stable, and adequate to meet future growth demands and to provide accurate and timely testing results.

(B) The adequacy of salary structures to attract and retain competent analysts and examiners.

(4) With respect to performance standards and equipment, consideration of the following:

(A) Whether workload demands are being prioritized properly and whether there are important workload issues not being addressed.

(B) If existing laboratories have the necessary capabilities, staffing, and equipment.

(C) If statewide standards should be developed for the accreditation of forensic laboratories, including minimum staffing levels, and if so, a determination regarding what entity should serve as the sanctioning body.

(d) The task force also shall seek input from specialized law enforcement disciplines, other state and local agencies, relevant advocacy groups, and the public. The final report also shall include a complete inventory of existing California crime laboratories. This inventory shall contain sufficient details on staffing, workload, budget, major instrumentation, and organizational placement within the controlling agency.

(e) The first meeting of the task force shall occur no later than December 9, 2007.

(f) On or before July 1, 2009, the task force shall submit a final report of its findings to the Department of Finance and to the budget and public safety committees of both houses of the Legislature.

Appendix C

2008 CALIFORNIA CRIME LABORATORY INVENTORY & SURVEY

Pursuant to California Penal Code section 11062, the California Crime Laboratory Review Task Force is conducting a statewide survey and inventory of public law enforcement crime laboratories. In order to meet its statutory mandate, the Task Force respectfully requests that the following information be provided and the survey returned within 60 days of receipt. *All questions, unless otherwise noted, relate to the current status of the laboratory.*

Please also attach a copy of your laboratory's most recent final ASCLD/LAB five-year inspection report. This document will assist the Task Force by providing an external perspective of your laboratory's operations. Note that this document will become accessible to the public once it is received.

Thank you very much for your assistance.

If you have any questions about the survey, please contact Barry Fisher, Crime Laboratory Director, Los Angeles County Sheriff's Department, at (323) 260-8502, or by e-mail at bjfisher@earthlink.net.

Glossary of Terms and Phrases Used in This Survey

"Case request"	A discipline-specific request for testing or analysis of one or more evidence item(s) in a particular investigation
"Turnaround time"	The time from the submission of a request to the laboratory to the transmission of the report to the client agency

Your name and contact information:

GENERAL INFORMATION

1. Name of Laboratory: _____

2. Name of parent agency or organization: _____

3. Organizational placement within controlling agency: _____

4. Size of jurisdiction served: _____

5. Do any other public crime laboratories routinely provide service to this jurisdiction?
 YES NO If "YES", please explain briefly: _____

6. Please list the law enforcement agencies your laboratory serves:

7. What type of management information system does your laboratory use?
 Fully computerized, networked (i.e., can interface with requesting agencies) system
 Fully computerized, non-networked system
 Partially computerized system, some manual record-keeping
 Manual record-keeping system
 Other (describe) _____

Does your information management system track personnel time usage?
 YES NO

8. Is your laboratory accredited?
 Yes, by the ASCLD/LAB. Year of first accreditation: _____
 Yes, by (specify) _____
Please choose one, if applicable: Legacy ISO
 Not accredited

If your laboratory is NOT accredited, please answer questions 9-13. Otherwise, proceed to Question 14.

9. Does your laboratory maintain Standard Operating Procedures (“SOP”) manuals for every discipline in which services are provided? YES NO

If “NO”, list those disciplines for which SOP manuals are not maintained: _____

10. Does your laboratory maintain a Quality Assurance manual(s) that addresses every discipline in which services are provided? YES NO

If “NO”, list those disciplines for which QA manuals are not maintained: _____

11. Does your laboratory maintain quality assurance documents:

- in individual case files
- collectively in a centralized location
- both

Do quality assurance documents include unexpected results? YES NO N/A

List any disciplines for which such materials are not maintained, and explain:

12. List all disciplines in which your laboratory has ever conducted an internal validation study: _____

13. Does your laboratory include a quality assurance unit/section? YES NO

If “YES”: How many FTE employees work in that unit? _____

What are their responsibilities? _____

14. Does your laboratory support individual criminalist certification? (mark all that apply)

- Yes, by paying for examination sitting fees.
- Yes, by paying recertification fees.
- Yes, by providing on-duty study time.
- Yes, by offering pay or promotional credits for becoming certified.
- Yes, by (specify) _____
List acceptable certifying organizations: _____
- No

15. Please complete the following chart:

Discipline	Number of Analysts Certified	Name of Certifying Body

(Attach additional page(s) as needed.)

FACILITIES & EQUIPMENT

16. Current crime lab space (square feet):

17. Are your current physical facilities adequate for current needs? YES NO
For anticipated future needs? YES NO

18. Has your agency conducted a facility needs assessment? YES NO

19. If yes, what is the recommendation of square footage for your facility?

20. In the table below, please list major instrumentation (including software) used in your laboratory, broken down by discipline. Include quantity. "Major instrumentation" means equipment critical to scientific results achieved, and costing \$5,000 or more. Where available, indicate approximate age of item.

Discipline	Major Instrumentation

(Additional space on next page.)

Discipline	Major Instrumentation

(Please attach additional page(s) as needed.)

BUDGET

21. What was your laboratory's FY 2006/2007 annual budget? _____

22. What is your laboratory's FY 2007/2008 annual budget? _____

23. If applicable, what was/is your budget for each fiscal year listed below? (Indicate "N/A" where no budget exists.)

FY 2006/2007		FY 2007/2008	
Personnel Budget	\$	Personnel Budget	\$
Operating Budget	\$	Operating Budget	\$
Facilities Budget	\$	Facilities Budget	\$
Training Budget	\$	Training Budget	\$
Equipment Budget	\$	Equipment Budget	\$
Supply Budget	\$	Supply Budget	\$

24. If available, please provide the following *actual expenses*:

FY 2006/2007		FY 2007/2008 to date (specify: ____/08)	
Personnel Costs	\$	Personnel Costs	\$
Operating Costs	\$	Operating Costs	\$
Facilities Costs	\$	Facilities Cost	\$
Training Costs	\$	Training Costs	\$
Equipment Costs	\$	Equipment Costs	\$
Supply Costs	\$	Supply Costs	\$

25. Please list FY 2006/2007 grant funding in the following table:

Name of Grant	Source	Discipline	Amount

(Attach additional page(s) as needed.)

26. Please list FY 2007/2008 (to date) grant funding in the following table:

Name of Grant	Source	Discipline	Amount

(Attach additional page(s) as needed.)

STAFFING

27. Please attach an organization chart for your laboratory. Names need not be included.

28. How many FTE (full-time equivalent) positions were authorized at your laboratory as of December 31, 2007? Please account for all types of employees, and round to the nearest tenth. _____

29. Please complete the following chart for *technical and managerial staff only*:

Job Title	Salary Range	Number of FTE Employees Allocated as of 12/31/07	Number of FTE Employees Actually Working as of 12/31/07	Minimum Educational Requirement

30. Of your laboratory's technical and management staff, please indicate how many possess the following as their *highest-level* degree:

- _____ B.A. or B.S.
- _____ Masters
- _____ Ph.D.

31. Please list the number of direct report employees per manager/supervisor, broken down by discipline:

Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
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Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____
Discipline: _____	Direct reports per manager/supervisor: _____

(attach additional page(s) as needed)

32. How many supervisors also do casework regularly? _____ out of _____

33. What factor(s) have a significant effect on the ability of your laboratory's technical staff to meet its workload (e.g., law enforcement expectations [be specific]; time spent in court; discovery responses/litigation). Please quantify where possible:

34. Does your laboratory have an active recruitment process? YES NO

35. Does your laboratory's technical staff hiring process include:

- written exam
- oral exam (How many? _____)
- background investigation
- polygraph exam

36. Does your laboratory offer internship opportunities? YES NO

If "YES", please describe briefly: _____

37. Describe any recruitment and/or retention problems recently experienced, citing specific factors: _____

38. Describe any mandatory continuing education protocols your laboratory's technical staff must observe: _____

39. Are adequate training opportunities available to your technical staff? YES NO

Describe training opportunities, both in-house and external: _____

40. Describe any perceived deficiencies in the education and training of entry-level technical staff, both pre-employment and post-employment:

41. Describe any notable opportunities or deficiencies in the continuing education/training of your technical staff: _____

42. What is your laboratory protocol for the monitoring of staff courtroom testimony?

43. How often, on average, is each analyst monitored by a supervisor or a technical peer in a year? _____

44. Describe the support staff structure in your laboratory, broken down by function (e.g., IT, evidence custodian(s), quality control manager(s)): _____

45. Describe additional support staff needs: _____

SERVICES PROVIDED

46. Please complete the tables on the following pages. Indicate "Not Provided" where applicable:

Discipline	Case requests in 2007	Case requests completed in 2007	Average # hours per case	Actual turnaround time	Number of court appearances in 2007
Alcohol – Bl. & Br.					
Explosives					
Biology / Serology					
CALID					
Clandestine labs					
Computer / Digital Crime					
Controlled Substances					
Crime Scene Processing					
Crime Scene Reconstr.					
Fibers					
Fire Debris					
Firearms / Tool Marks					
Gunshot Residue					
Hairs					
Foot / tire Impressions					
Latent Prints					
Other Trace Evidence					
Questioned Documents					
Toxicology (ante-mortem)					

Discipline	Case requests in 2007	Case requests completed in 2007	Average # hours per case	Actual turnaround time	Number of court appearances in 2007
Other (specify)					
Other (specify)					
Other (specify)					
DNA: STRs					
DNA: Y-STRs					
mtDNA					
Review / QC of outsourced DNA profiles to enable CODIS upload (DOJ only)					

47. Does your laboratory perform the following:

- LCN DNA Analysis YES NO
- SNP DNA Analysis YES NO
- MiniFiler DNA Analysis YES NO

48. Describe any special or innovative programs in your laboratory (e.g., "fast-track" cases, research/development, etc.):

49. Please complete the following table. "Backlog" can be defined as the number of unreported case requests in the laboratory that have exceeded the service goal turnaround time. If you use a different definition, please explain:

Discipline	Service Goal (explain if necessary)	Backlog as of 12/31/06	Backlog as of 12/31/07
Alcohol – BI. & Br.			
Explosives			
Biology / Serology			
CALID			
Clandestine labs			
Computer / Digital Crime			
Controlled Substances			
Crime Scene Processing			
Crime Scene Reconstr.			
Fibers			
Fire Debris			
Firearms / Tool Marks			
Gunshot Residue			
Hairs			
Foot / tire Impressions			
Latent Prints			
Other Trace Evidence			
Questioned Documents			
Toxicology (ante-mortem)			

(Continued on next page.)

Discipline	Service Goal (explain if necessary)	Backlog as of 12/31/06	Backlog as of 12/31/07
Other (specify)			
Other (specify)			
Other (specify)			
DNA: STRs			
DNA: Y-STRs			
mtDNA			
CODIS offender samples (DOJ only)			

50. If your laboratory provides DNA testing services, do you have a policy or an agreement with client agencies relating to the number of evidence items per case that will be tested? YES NO

If YES, please describe: _____

Provide any further thoughts related to this topic, including the number of items typically submitted for testing in DNA cases: _____

51. What types of services not performed by your laboratory are commonly requested?

52. Does your laboratory outsource services? YES NO

53. If YES, in what disciplines, and under what circumstances, does outsourcing occur?

54. Describe the effectiveness and sustainability of your outsourcing policy:

55. Describe the anticipated effectiveness of your outsourcing policy in the long term:

56. Describe limitations, if any, imposed by your laboratory on the type of crime(s) from which evidence can be submitted: _____

57. Describe your laboratory's policy, if any, regarding services rendered (e.g., analysis, consultation) on behalf of criminal defendants: _____

58. Does your laboratory have a formal policy permitting defense experts to observe testing in your facilities under defined circumstances? YES NO

If "YES", please describe: _____

59. Does your laboratory have a formal policy permitting defense experts to use its facilities to conduct independent examinations and/or testing under defined circumstances? YES NO

If "YES", please describe: _____

60. What operational changes, if any, have you implemented to meet increasing demands/reduced resources? _____

61. Describe any limitations that have been placed on your laboratory's casework capacity, and resulting impact(s), if any, in your jurisdiction: _____

62. Do you think that regionalization or other inter-laboratory consolidation of forensic science services should be pursued by policymakers? Why and how, or why not?

LABORATORY NEEDS

63. How would you prioritize the following needs for your lab? (If you acquired a one-time windfall in your budget, how would it be used?) Rank these from 1 (high) to 8 (low). There should be only one "1" one "2" etc.

<u>Current Needs</u>	<u>Prioritize (1-8)</u>
System for overall laboratory information management	_____
Computerized system for tracking evidence	_____
Additional staff (technical)	_____
Training on available technology or technology being acquired	_____
Additional laboratory space	_____
Continuing education and/or in-service training on new technologies or new developments in the field	_____
Equipment (specify below)	_____
Other (specify below)	_____

64. Equipment needs: _____

65. Other needs: _____

66. What are the laboratory's major training needs, if any? _____

THANK YOU

Appendix D

CALIFORNIA CRIME LABORATORY REVIEW TASK FORCE 2008 LAW ENFORCEMENT SURVEY

Pursuant to California Penal Code section 11062, the California Crime Laboratory Review Task Force is conducting a statewide survey of public law enforcement crime laboratories. In order to meet its statutory mandate, the Task Force respectfully requests that the following information be provided and the survey returned within 60 days of receipt. Thank you for your assistance.

We are requesting that the person or persons that have the most knowledge of the agency's use of forensic science services complete the survey.

We greatly appreciate your help with this survey, which will help identify ways in which forensic science services in California can be maintained and improved.

If you have any questions about the survey, please contact Dane Gillette, Chief Assistant Attorney General, California Department of Justice, at (415) 703-5866, or by e-mail at dane.gillette@doj.ca.gov.

Name, title, and contact information of person primarily responsible for completion of the survey:

Name of your law enforcement agency:

Number of sworn personnel: _____

Population Served: _____

1. Are forensic science services readily available to your agency? Yes _____ No _____

If no, explain why not. _____

2. Does your agency regularly use forensic science services? Yes _____ No _____

If no, explain why not. _____

3. Is the use of or availability of forensic services a priority for your agency? Yes ____ No ____

Explain _____

4. Do laboratories providing forensic science services to your agency also provide training or other information regarding the services available? Yes _____ No _____

If yes, explain _____

5. Does your agency have a crime scene processing unit? Yes _____ No _____

If yes, what services does your crime scene process unit provide?

_____ Search for latent finger prints:

_____ Photography

_____ Evidence Collection

If no, who performs crime scene processing services?

6. For each of the following types of laboratories, please indicate the approximate percentage of use in your 2007 caseload, and identify the laboratories in that category used by your agency:

Type of Laboratory	Laboratory Names
a. Private lab(s): _____ %	_____

b. CA State (DOJ) lab(s) _____ %	_____

c. DA lab _____ %	_____
d. Sheriff lab _____ %	_____
e. Police lab(s) _____ %	_____

f. Other _____ %	_____

7. Do the governmental laboratories that provide your agency with forensic science services charge for their services? Yes _____ No _____

If yes, how much money did your agency spend on forensic science testing in 2007?
\$ _____

8. If your agency uses private laboratories to provide forensic science services, check all reasons that apply:

- a. To obtain faster turn-around times _____
- b. To access better equipment or skill in specific areas _____
- c. Gov't lab lacks capability to conduct particular test(s) _____
- d. Gov't lab lacks the capacity to complete all requests _____
- e. Other (please describe) _____

9. If your office uses private laboratories to provide forensic science services, indicate which services are provided by the private laboratory:

10. How much money did your agency spend on outsourcing forensic science testing to a private laboratory in 2007?

\$ _____

11. Identify the frequency your agency uses each forensic discipline regardless of the laboratory.

Discipline	Never	Rarely	Occasionally	Frequently
Alcohol – Blood. & Breath				
Explosives				
Biology / Serology				
CALID (10 print)				
AFIS				
Clandestine labs				
Computer / Digital Crime				
Controlled Substances				
Crime Scene Processing				
Crime Scene Reconstruction				
Fibers				
Fire Debris				
Firearms / Tool Marks				
Gunshot Residue				
Hairs				
Foot / Tire Impressions				
Latent Prints				
Other Trace Evidence				
Questioned Documents				
Toxicology (ante-mortem)				
DNA				
Other (specify)				

12. Please rate the following categories as applicable based on the collective and generalized experience of your agency. Please print out additional copies of this page as needed.

Name of Laboratory: _____

Laboratory function	Unsatisfactory		Satisfactory		Exceeds Expectations
	1	2	3	4	
Evidence collection at crime scene					
Chain of evidence					
Evidence preservation					
Testing methods available					
Laboratory staff scientific expertise					
Ability to seek advice from laboratory staff during investigation					
Timeliness of test results					
Presentation of results in court					
Objectivity of lab staff					
Discovery process					
Access to expert witnesses					
Written reports are understandable					
Other (please define)					
Other (please define)					
Other (please define)					

13. Describe the extent (if any) to which your agency would seek forensic science testing in additional cases, or additional testing in cases where testing already occurs, if you had no budgetary restrictions. Please reference specific disciplines in your discussion (e.g., DNA, narcotics, toxicology, trace evidence):

14. What measures could be taken to improve the delivery of forensic science services for your agency? _____

15. Does your agency have responsibility for storing evidence due to a lack of space at the crime lab? Yes _____ No _____

If yes, does your agency have sufficient facilities for such storage? Yes _____ No _____

Does your agency have the proper environmental controls for preservation of stored evidence? Yes _____ No _____ N/A _____

16. Do the crime laboratories used by your agency store evidence following completion of analysis? Yes _____ No _____

If yes, has your agency experienced problems retrieving the evidence?

Yes _____ No _____

If yes, please explain: _____

THANK YOU

Appendix E

CALIFORNIA CRIME LABORATORY REVIEW TASK FORCE 2008 ATTORNEY SURVEY

Pursuant to California Penal Code section 11062, the California Crime Laboratory Review Task Force is conducting a statewide study of public law enforcement crime laboratories. In order to meet its statutory mandate, the Task Force respectfully requests that the following information be provided and the survey returned within 30 days of receipt. Thank you for your assistance.

This survey is directed to District Attorneys, Public Defenders and defense organizations, prosecuting City Attorneys, and City Attorneys and County Counsel in jurisdictions which fund a Crime Laboratory. Please respond only to those questions applicable to your office's use of or contact with state, county, or local crime laboratories.

If you have any questions about the survey, please contact Dane Gillette, Chief Assistant Attorney General, California Department of Justice, at (415) 703-5866, or by e-mail at dane.gillette@doj.ca.gov.

Your name, title, and contact information:

1. In 2007, how many felony cases did your office handle?

[If your office records are kept on a fiscal year basis, please provide the requested data for FY 2006-2007 in this and all similarly worded questions instead.]

2. Approximately what percentage of those felony cases involved forensic science testing of any kind? _____

3. What percentage of felony cases filed in 2007, involving laboratory analysis, went to trial? _____

4. In 2007, how many misdemeanor cases did your office handle?

5. Approximately what percentage of those misdemeanor cases involved forensic science testing of any kind? _____

6. What percentage of misdemeanor cases filed in 2007, involving laboratory analysis, went to trial? _____

7. For each of the following types of laboratories, please indicate the approximate percentage of use in your 2007 *felony* caseload, and identify the laboratories in that category used by your office:

Type of Laboratory		Laboratory Names
a. CA State (DOJ) lab(s)	_____ %	_____ _____ _____
b. DA lab	_____ %	_____ _____
c. Sheriff lab	_____ %	_____
d. Police lab(s)	_____ %	_____ _____ _____
e. Private lab(s)	_____ %	_____ _____ _____
f. Other	_____ %	_____ _____ _____

8. For each of the following types of laboratories, please indicate the approximate percentage of use in your 2007 *misdemeanor* caseload, and identify laboratory:

Type of Laboratory	Laboratory Names
a. CA State (DOJ) lab(s) _____%	_____

b. DA lab _____%	_____
c. Sheriff lab _____%	_____
d. Police lab(s) _____%	_____

e. Private lab(s) _____%	_____

f. Other _____%	_____

9. How much money did your office spend on forensic science testing in 2007?
 \$ _____

10. If your office regularly hires private laboratories to provide forensic science services, check all reasons that apply:
- a. To obtain faster turn-around times _____
 - b. To access better equipment or skill in specific areas _____
 - c. Gov't lab lacks capability to conduct particular test(s) _____
 - d. Other (please describe) _____

11. Describe any particular forensic science test(s) characterized by frequent and problematic delays in receiving results: _____

12. For each laboratory with which your office has significant experience, please check the following categories based on the collective and generalized experience of your office. Please print out additional copies of this page as needed:

Name of Laboratory: _____

	Laboratory function	Significant or frequent issues causing concern	Occasional issues causing concern	Generally satisfactory	Exemplary	Comments
A.	Evidence collection at crime scene					
B.	Chain of evidence issues					
C.	Evidence preservation					
D.	Testing methods available					
E.	Laboratory staff expertise					
F.	Laboratory equipment					
G.	Timeliness of results					
H.	Presentation of results in court					
I.	Objectivity of lab staff					
J.	Discovery issues					
K.	Access to expert witnesses					
L.	Other (define)					

Additional Comments:

13. For each laboratory with which your office has significant experience, please rate the analysts in the following areas, based on the collective and generalized experience of your office. Please print out additional copies of this page as needed:

Name of Laboratory: _____

		Never		Sometimes			Always	
		1	2	3	4	5	6	7
A.	Competent							
B.	Honest / Credible							
C.	Objective / unbiased							
D.	Forthcoming about problems							

Additional Comments:

For each laboratory with which your office has significant experience, please answer questions 14-20. Please print out additional copies of this page as needed:

Name of Laboratory: _____

14. Are analysts from the laboratory willing to meet privately with attorneys from your office to explain their work (on a case the attorney is handling)?

Always ____ Usually ____ Rarely ____ Never ____

15. Are analysts from the laboratory willing to speak to attorneys from your office by telephone in order to answer questions about cases the attorneys are handling?

Always ____ Usually ____ Rarely ____ Never ____

16. Is there a laboratory policy that either encourages or prohibits direct consultation between lawyers in your office and laboratory analysts?

Yes ____ No ____

If "Yes," please explain: _____

17. Have attorneys from your office had difficulty obtaining information from the laboratory about work the laboratory performed on a case they are handling?

Yes ____ No ____

If "Yes," please explain: _____

18. Are the reports produced by the lab clear and easy to understand?

Always ____ Sometimes ____ Never ____

19. Do the reports include sufficient information about what was examined or tested and what the results were?

Always ____ Sometimes ____ Never ____

20. When charges have been filed against a defendant and your office is prosecuting or defending, does the attorney involved routinely receive notice before the laboratory performs tests that will consume or destroy evidentiary samples?

Always ____ Sometimes ____ Never ____

21. For each laboratory with which your office has significant experience, please describe document disclosure practices by checking the applicable box in the following chart. (Again, based on the collective and generalized experience of your office.) Please print out additional copies of this page as needed:

Name of Laboratory: _____

	Routinely disclosed in all cases	Disclosed if requested	Disclosed only if ordered by court
Laboratory reports			
Analysts' notes/bench notes			
Copies of photographic documentation			
Electronic files/data in DNA cases			
Proficiency test results			
Proficiency test files (bench notes)			
Protocols or Standard operating procedures			
Unexpected Results and/or corrective action files			
Audit Reports			
Quality Control / Quality Assurance documents			
Validation studies			
CV of laboratory analyst			
Personnel file of laboratory analyst			

Additional comments: _____

22. Describe the extent (if any) to which your office would seek forensic science testing in additional cases, or additional forensic science testing in cases where testing already occurs, if you had no budgetary restrictions. Please reference specific disciplines in your discussion (e.g., DNA, narcotics, toxicology, trace evidence, handwriting, fingerprints, firearms, tool marks, bite marks, etc.):

23. What measures could be taken to improve the delivery of forensic science services in your jurisdiction? _____

24. Describe the extent to which your office seeks additional forensic science testing in cases beyond that independently sought by the investigating agency. Reference specific forensic disciplines where possible:

25. Does your office have specialized training in forensic science?

Yes ____ No ____

If "Yes," please describe: _____

26. Does your office employ lawyers who have been specially trained to complex forensic science issues?

Yes ____ No ____

If "Yes," please provide explain: _____

Questions 27-29 are for prosecutors only.

27. Describe procedures taken by your office to obtain, store, and disseminate "Brady" material from forensic science laboratories:

28. Under what circumstances do you disclose to defense counsel information and documentation concerning errors and mistakes at forensic science laboratories? _____

29. Does your office participate in training forensic science laboratory personnel on "Brady" or other discovery obligations? Yes No

If "Yes," please explain:

Questions 30-31 are for City Attorneys and County Counsel only.

30. Does your office represent a forensic science laboratory in legal challenges to production of laboratory documents and materials? Yes No

If "Yes," please identify the laboratory or laboratories: _____

If "Yes," please describe the representation provided and approximate number of cases: _____

31. Does your office participate in training forensic science laboratory personnel on "Brady" or other discovery obligations? Yes No

If "Yes," please explain:

Questions 32- 37 are for criminal defense counsel only.

32. Do you believe that you are provided sufficient funding to hire experts to help you evaluate scientific evidence being offered by the prosecution?

33. Do you believe that there are a sufficient number of qualified experts who are available to evaluate scientific evidence being offered by the prosecution?

34. Do you believe that you have available to you sufficient training in order to effectively represent clients whose prosecutions are based in whole or in part on scientific evidence?

35. Under what circumstances, if any, are experts retained by the defense allowed to observe or monitor the work of the crime laboratory?

36. Under what circumstances, if any, are experts retained by the defense allowed to use laboratory facilities or equipment to examine evidence?

37. Does your office participate in training forensic science laboratory personnel on "*Brady*" or other discovery obligations? Yes No

If "Yes," please explain:

THANK YOU

Appendix F

Supplemental Survey Questions (laboratories only)

(1) Please complete the following chart:

DATE: _____

NAME OF LABORATORY: _____

NAME OF LAB DIRECTOR: _____

CONTACT INFORMATION: _____

Core Forensic Discipline	Number of Full Time Criminalist Positions	Average Case* Turnaround Time	Ideal Case Turnaround Time	Factors Impeding Faster Turnaround
Alcohol (blood & breath)				
Forensic Biology / DNA				
Controlled Substances				
Firearms / Toolmarks				
Latent Prints				

* "Case" = one investigation submitted under a law enforcement agency case number; could include multiple evidence items for analysis.

(2) Please describe any personnel incentives offered by your laboratory, such as job-sharing and flexible work-week options: _____

(3) If your laboratory offers any other special programs designed to encourage retention (e.g., “PIP” compensated time for independent research project), please describe below:

Please send completed survey to:

Colleen Higgins
California Department of Justice
colleen.higgins@doj.ca.gov

Appendix G

List of Meeting Presentations

California Crime Laboratory Review Task Force

Peter Barnett, *Forensic Science Associates*

- Presented on criminalist ethics

Frank Dolejsi, *Minnesota Bureau of Criminal Apprehension Forensic Science Laboratory*

- Presented an overview of the ASCLD/LAB's new ISO standards and process

Keith Inman and Pat Zajac, *CSU East Bay*

- Discussed the bachelors of science forensic science program at CSU East Bay

Steve Lee, *Professor at San Jose State University*

- Unable to attend, but submitted a written summary of his comments

Kevin Miller, *Professor at CSU Fresno*

- Discussed the professional science masters degree program at CSU Fresno

Jennifer Mnookin, *Professor at the UCLA School of Law*

- Spoke about the notable lack of forensic science training at law schools

Gabriel Oberfield, *Research Analyst, Innocence Project*

Rose Ochi and Harley Sagara, *California Forensic Science Institute at CSU Los Angeles*

- Presented a description of their Institute's contribution to forensic science education

Joseph Peterson, *Director of Criminal Justice and Criminalistics at CSU Los Angeles*

- Presented his findings regarding the national 2002 Bureau of Justice Statistics crime lab survey

Bill Phillips, *California Department of Justice*

- Offered a brief description of the California Criminalistics Institute

Kathy Roberts, *Professor of CSU Los Angeles' Criminalistics Department*

- Presented a description of her school's undergraduate and graduate programs

Norah Rudin, member of Virginia's Scientific Advisory Committee

- Gave brief overview of her role as member of Advisory Committee

Barry Scheck, Cardozo School of Law and the Innocence Project

- Gave an informative presentation about his experience with the New York Commission on Forensic Science

Jan Scully, Sacramento District Attorney

- Spoke to the Task Force about placement of crime laboratories within district attorneys' offices

Jill Spriggs, California Department of Justice's Bureau of Forensic Services Bureau Chief

- Spoke about fee-for-service considerations

Fred Tulleners, UC Davis Forensic Science Graduate Program

- Spoke about his school's offerings in forensic science training and education

Beatrice Yorker, Dean of the CSU Los Angeles College of Health and Human Services

- Spoke about the CSU Los Angeles program in forensic nursing and other related course offerings

Crime Labs Toured

- Hertzberg-Davis Forensic Science Center, CSU Los Angeles
- Orange County Sheriff-Coroner Department – OC Crime Lab
- Sacramento County District Attorney – Laboratory of Forensic Services
- California Department of Justice, Bureau of Forensic Services, Jan Bashinski DNA Laboratory, Richmond
- Santa Clara County District Attorney's Office – Laboratory of Criminalistics

Appendix H

Recommendations
from
Strengthening Forensic Science in the United States:
A Path Forward
2009 National Academy of Sciences Report

Recommendation 1

To promote the development of forensic science into a mature field of multidisciplinary research and practice, founded on the systematic collection and analysis of relevant data, Congress should establish and appropriate funds for an independent federal entity, the National Institute of Forensic Science (NIFS). NIFS should have a full-time administrator and an advisory board with expertise in research and education, the forensic science disciplines, physical and life sciences, forensic pathology, engineering, information technology, measurements and standards, testing and evaluation, law, national security, and public policy. NIFS should focus on:

- a) Establishing and enforcing best practices for forensic science professionals and laboratories;
- b) Establishing standards for the mandatory accreditation of forensic science laboratories and the mandatory certification of forensic scientists and medical examiners/forensic pathologists—and identifying the entity/entities that will develop and implement accreditation and certification;
- c) Promoting scholarly, competitive peer-reviewed research and technical development in the forensic science disciplines and forensic medicine;
- d) Developing a strategy to improve forensic science research and educational programs, including forensic pathology;
- e) Establishing a strategy, based on accurate data on the forensic science community, for the efficient allocation of available funds to give strong support to forensic methodologies and practices in addition to DNA analysis;
- f) Funding state and local forensic science agencies, independent research projects, and educational programs as recommended in this report, with conditions that aim to advance the credibility and reliability of the forensic science disciplines;
- g) Overseeing education standards and the accreditation of forensic science programs in colleges and universities;
- h) Developing programs to improve understanding of the forensic science disciplines and their limitations within legal systems; and
- i) Assessing the development and introduction of new technologies in forensic investigations, including a comparison of new technologies with former ones.

Recommendation 2

NIFS, after reviewing established standards such as the International Organization for Standardization (ISO) 17025, and in consultation with its advisory board, should establish standard terminology to be used in reporting on and testifying about the results of forensic science investigations. Similarly, it should establish model laboratory reports for different forensic science disciplines and specify the minimum information that should be included. As part of the accreditation and certification processes, laboratories and forensic scientists should be required to utilize model laboratory reports when summarizing the results of their analyses.

Recommendation 3

Research is needed to address issues of accuracy, reliability, and validity in the forensic science disciplines. NIFS should competitively fund peer-reviewed research in the following areas:

- a) Studies establishing the scientific bases demonstrating the validity of forensic methods.
- b) The development and establishment of quantifiable measures of the reliability and accuracy of forensic analyses. Studies of the reliability and accuracy of forensic techniques should reflect actual practice on realistic case scenarios, averaged across a representative sample of forensic scientists and laboratories. Studies also should establish the limits of reliability and accuracy that analytic methods can be expected to achieve as the conditions of forensic evidence vary. The research by which measures of reliability and accuracy are determined should be peer reviewed and published in respected scientific journals.
- c) The development of quantifiable measures of uncertainty in the conclusions of forensic analyses.
- d) Automated techniques capable of enhancing forensic technologies.

Recommendation 4

To improve the scientific bases of forensic science examinations and to maximize independence from or autonomy within the law enforcement community, Congress should authorize and appropriate incentive funds to NIFS for allocation to state and local jurisdictions for the purpose of removing all public forensic laboratories and facilities from the administrative control of law enforcement agencies or prosecutors' offices.

Recommendation 5

NIFS should encourage research programs on human observer bias and sources of human error in forensic examinations. Such programs might include studies to determine the effects of contextual bias in forensic practice (e.g., studies to determine whether and to what extent the results of forensic analyses are influenced by knowledge regarding the background of the suspect and the investigator's theory of the case). In addition, research on sources of human error should be closely linked with research conducted to quantify and

characterize the amount of error. Based on the results of these studies, and in consultation with its advisory board, NIFS should develop standard operating procedures (that will lay the foundation for model protocols) to minimize, to the greatest extent reasonably possible, potential bias and sources of human error in forensic practice. These standard operating procedures should apply to all forensic analyses that may be used in litigation.

Recommendation 6

To facilitate the work of NIFS, Congress should authorize and appropriate funds to NIFS to work with the National Institute of Standards and Technology (NIST), in conjunction with government laboratories, universities, and private laboratories, and in consultation with Scientific Working Groups, to develop tools for advancing measurement, validation, reliability, information sharing, and proficiency testing in forensic science and to establish protocols for forensic examinations, methods, and practices. Standards should reflect best practices and serve as accreditation tools for laboratories and as guides for the education, training, and certification of professionals. Upon completion of its work, NIST and its partners should report findings and recommendations to NIFS for further dissemination and implementation.

Recommendation 7

Laboratory accreditation and individual certification of forensic science professionals should be mandatory, and all forensic science professionals should have access to a certification process. In determining appropriate standards for accreditation and certification, NIFS should take into account established and recognized international standards, such as those published by the ISO. No person (public or private) should be allowed to practice in a forensic science discipline or testify as a forensic science professional without certification. Certification requirements should include, at a minimum, written examinations, supervised practice, proficiency testing, continuing education, recertification procedures, adherence to a code of ethics, and effective disciplinary procedures. All laboratories and facilities (public or private) should be accredited, and all forensic science professionals should be certified, when eligible, within a time period established by NIFS.

Recommendation 8

Forensic laboratories should establish routine quality assurance and quality control procedures to ensure the accuracy of forensic analyses and the work of forensic practitioners. Quality control procedures should be designed to identify mistakes, fraud, and bias; confirm the continued validity and reliability of standard operating procedures and protocols; ensure that best practices are being followed; and correct procedures and protocols that are found to need improvement.

Recommendation 9

NIFS, in consultation with its advisory board, should establish a national code of ethics for all forensic science disciplines and encourage individual societies to incorporate this national code as part of their professional code of ethics. Additionally, NIFS should explore mechanisms of enforcement for those forensic scientists who commit serious ethical violations. Such a code could be enforced through a certification process for forensic scientists.

Recommendation 10

To attract students in the physical and life sciences to pursue graduate studies in multidisciplinary fields critical to forensic science practice, Congress should authorize and appropriate funds to NIFS to work with appropriate organizations and educational institutions to improve and develop graduate education programs designed to cut across organizational, programmatic, and disciplinary boundaries. To make these programs appealing to potential students, they must include attractive scholarship and fellowship offerings. Emphasis should be placed on developing and improving research methods and methodologies applicable to forensic science practice and on funding research programs to attract research universities and students in fields relevant to forensic science. NIFS should also support law school administrators and judicial education organizations in establishing continuing legal education programs for law students, practitioners, and judges.

Recommendation 11

To improve medicolegal death investigation:

- a) Congress should authorize and appropriate incentive funds to NIFS for allocation to states and jurisdictions to establish medical examiner systems, with the goal of replacing and eventually eliminating existing coroner systems. Funds are needed to build regional medical examiner offices, secure necessary equipment, improve administration, and ensure the education, training, and staffing of medical examiner offices. Funding could also be used to help current medical examiner systems modernize their facilities to meet current Centers for Disease Control and Prevention-recommended autopsy safety requirements.
- b) Congress should appropriate resources to the National Institutes of Health (NIH) and NIFS, jointly, to support research, education, and training in forensic pathology. NIH, with NIFS participation, or NIFS in collaboration with content experts, should establish a study section to establish goals, to review and evaluate proposals in these areas, and to allocate funding for collaborative research to be conducted by medical examiner offices and medical universities. In addition, funding, in the form of medical student loan forgiveness and/or fellowship support, should be made available to pathology residents who choose forensic pathology as their specialty.

- c) NIFS, in collaboration with NIH, the National Association of Medical Examiners, the American Board of Medicolegal Death Investigators, and other appropriate professional organizations, should establish a Scientific Working Group (SWG) for forensic pathology and medicolegal death investigation. The SWG should develop and promote standards for best practices, administration, staffing, education, training, and continuing education for competent death scene investigation and postmortem examinations. Best practices should include the utilization of new technologies such as laboratory testing for the molecular basis of diseases and the implementation of specialized imaging techniques.
- d) All medical examiner offices should be accredited pursuant to NIFS-endorsed standards within a timeframe to be established by NIFS.
- e) All federal funding should be restricted to accredited offices that meet NIFS-endorsed standards or that demonstrate significant and measurable progress in achieving accreditation within prescribed deadlines.
- f) All medicolegal autopsies should be performed or supervised by a board certified forensic pathologist. This requirement should take effect within a timeframe to be established by NIFS, following consultation with governing state institutions.

Recommendation 12

Congress should authorize and appropriate funds for NIFS to launch a new broad-based effort to achieve nationwide fingerprint data interoperability. To that end, NIFS should convene a task force comprising relevant experts from the National Institute of Standards and Technology and the major law enforcement agencies (including representatives from the local, state, federal, and, perhaps, international levels) and industry, as appropriate, to develop:

- a) Standards for representing and communicating image and minutiae data among Automated Fingerprint Identification Systems. Common data standards would facilitate the sharing of fingerprint data among law enforcement agencies at the local, state, federal, and even international levels, which could result in more solved crimes, fewer wrongful identifications, and greater efficiency with respect to fingerprint searches; and
- b) Baseline standards—to be used with computer algorithms—to map, record, and recognize features in fingerprint images, and a research agenda for the continued improvement, refinement, and characterization of the accuracy of these algorithms (including quantification of error rates).

Recommendation 13

Congress should provide funding to NIFS to prepare, in conjunction with the Centers for Disease Control and Prevention and the Federal Bureau of Investigation, forensic scientists and crime scene investigators for their potential roles in managing and analyzing evidence from events that affect homeland security, so that maximum evidentiary value is preserved

from these unusual circumstances and the safety of these personnel is guarded. This preparation also should include planning and preparedness (to include exercises) for the interoperability of local forensic personnel with federal counterterrorism organizations.

Appendix I

California Association of Criminalists 2008-2009 Salary Survey

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks	
Alameda Co. Sheriff's Office	Director	Director	1	8557-10436	December-08	MISC	6.9	YES	A		A, B, C100, E, H, J, L	Management	
	Supervising Criminalist	Supervising Criminalist	3	7103-8637	December-08	MISC	6.9	YES	A		A, B, C100, H, J, L	Management	
	DNA Technical Lead	DNA Technical Lead	1	7095-8624	December-08	MISC	6.9	YES	A	C, D		B, C100, H, J, L	Service Employees International Union (SEIU)
	Criminalist III	Criminalist III	5	6787-8183	December-08	MISC	6.9	YES	A	C, D		B, C100, H, J, L	SEIU
	Criminalist II	Criminalist II	8	6189-7431	December-08	MISC	6.9	YES	A	C, D		B, C100, H, J, L	SEIU
	Criminalist I	Criminalist I	1	5639-6787	December-08	MISC	6.9	YES	A	C, D		B, C100, H, J, L	SEIU

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks	
Calif. Dept. of Justice	CEA III Bureau Chief	CEA III Bureau Chief	1	8594-9476	July-08	SAFETY	6	No	D	E	A, B, C, D, E, J, L	Management	
	Assistant Bureau Chief	Assistant Bureau Chief	3	8401-9264	July-08	SAFETY	6	No	D	E	A, B, C, D*, J, L, E*	Management *Misc benefits D&E for 2 of the 3 Asst. Chiefs only	
	Criminalist Manager	Criminalist Manager	14	7483-8665	July-08	SAFETY	6	No	A	E	A, B, C, D, J, L	Management	
	Criminalist Supervisor	Criminalist Supervisor	34	6163-7821	July-08	SAFETY	6	No	A	E	A, B, C, D, J, L	Supervisory	
	Senior Criminalist	Senior Criminalist	127	5458-7094	July-08	SAFETY	6	No	B	C, D	A, B, C, J, L	Calif. Union of Safety Employees (CAUSE)	
	Criminalist Range C	Criminalist Range C	89	4974-6451	July-08	SAFETY	6	No	B	C, D	A, B, C, J, L	CAUSE	
	Criminalist Range B	Criminalist Range B	36	4129-5353	July-08	SAFETY	6	No	B	C, D	A, B, C, J, L	CAUSE	
	Criminalist Range A	Criminalist Range A	n/a										
	Laboratory Technician	Laboratory Technician	4	3050-3706	July-08	PERS	5	Yes	A	C, D		A, B, C, J, L	Calif. State Employees Assoc. (CSEA)

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Calif. Dept. of Fish and Game	JNS	Senior Wildlife Forensic Spec.	1	5196-6271		PERS	2 at 55	Yes	B	A, B	A, B, C, E, I, J, L	Calif. Assoc. Professional Scientists, Unit 10
	LEXP-2	Wildlife Forensic Spec. Range C	1	4633-5584		PERS	2 at 55	Yes	B	A, B	A, B, C, I, J, L	Calif. Assoc. Professional Scientists, Unit 10
	LEXP-1	Wildlife Forensic Spec. Range B	0	3476-4183		PERS	2 at 55	Yes				
		Wildlife Forensic Spec. Range A	0	2817-3193		PERS	2 at 55	Yes				

**California Association of Criminalists
2008-2009 Salary Survey (cont.)**

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Contra Costa Co. Sheriff's Office – Forensic Services Div.	MNGMT	Sheriff's Chief of Forensics	1	9397-11707	November-08	SAFETY 3% @ 50	VARIES- based on yrs of service and age at time of hire	No	A	E	A, B(80), C(80), E, I, J, L, M(5%, 15Yr), N	Management/DSA
	MNGMT	Deputy Sheriff Forensic Manager	1	8028-10002	November-08	SAFETY 3% @ 50	VARIES	No	A	E	A, B(80), C(80), I, J, L, M(5%, 15Yr), N	Management/DSA
	MNGMT	Forensic Manager Non-Sworn	1	8029-9760	November-08	TIER 2% @ 55	VARIES	Yes	A	E	A, B(80), C(80), J, L, M(2.5%, 15Yr), N	Unrepresented
	MNGMT	Manager CIS	1	6535-7943	November-08	TIER 2% @ 55	VARIES	Yes	A	E	A, B(80), C(80), J, L, M(2.5%, 15Yr), N	Unrepresented
	MNGMT	Director of Property Services	1	6250-7597	November-08	TIER 2% @ 55	VARIES	Yes	A	E	A, B(80), C(80), J, L, M(2.5%, 15Yr), N	Unrepresented
	SCW-50	Deputy Sheriff Forensic Supervisor	3	7716-9613	November-08	SAFETY 3% @ 50	VARIES	No	A	D	A, B(80), C(80), L, M(5%, 15Yr), N	DSA
	SCW-50	Supervisor Non-Sworn	1	7679-9334	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	JNS	Deputy Sheriff Criminalist III	5	7171-8934	November-08	SAFETY 3% @ 50	VARIES	No	B	D	A, B(80), C(80), L, M(5%, 15Yr), N	DSA
	JNS	Criminalist III Non-Sworn	8	7165-8709	November-08	TIER 2% @ 55	VARIES	Yes	B	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	JNS/LEXP-4	Deputy Sheriff Criminalist II	2	6193-7717	November-08	SAFETY 3% @ 50	VARIES	No	B	D	A, B(80), C(80), L, M(5%, 15Yr), N	DSA
	JNS/LEXP-4	Criminalist II Non-Sworn	4	6188-7522	November-08	TIER 2% @ 55	VARIES	Yes	B	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	NEXP	Deputy Sheriff Criminalist I	1	5688-6271	November-08	SAFETY 3% @ 50	VARIES	No	B	D	A, B(80), C(80), L, M(5%, 15Yr), N	DSA
	NEXP	Criminalist I Non-Sworn	2	5683-6266	November-08	TIER 2% @ 55	VARIES	Yes	B	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	JNS	Lead Fingerprint Examiner	1	5479-6659	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	JNS/LEXP-2	Fingerprint Examiner II	4	5097-6195	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	NEXP	Fingerprint Examiner I	0	4589-5059	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	JNS	Lead Fingerprint Tech	3	3897-4737	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	JNS/LEXP-2	Fingerprint Tech II	10	3625-4407	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	NEXP	Fingerprint Tech I	1	3386-3,733	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
	NEXP	Lab Aide	3	3018-3669	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA
NEXP	Sheriff's Aide	5	3325-3932	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA	
NEXP	Sheriff's Specialist	3	3813-4635	November-08	TIER 2% @ 55	VARIES	Yes	A	D	A, B(80), C(80), L, M(2.5%, 10Yr), N	DSA	

California Association of Criminalists 2008-2009 Salary Survey (cont.)

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Fresno Co. Sheriff's Office		Director of Forensic Services	1	6563-8785	July-08	MISC	2.5	Yes	C	E	A, B100, C100, E, G, J, L	Management
	SCW-50	Supervising Criminalist	1	6034-7700	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	Supervisory
	JNS	Criminalist Specialist	4	5573-7111	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	LEXP-3	Criminalist II	1	5183-6613	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	LEXP-1	Criminalist I	1	3878-4950	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	SCW-50	Sr. Identification Technician	2	3794-5221	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	JNS	Identification Technician IV	8	3647-4586	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	LEXP-4	Identification Technician III	3	3384-4444	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	LEXP-2	Identification Technician II	0	2927-3735	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	NEXP	Identification Technician I	0	2602-3322	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA
	NEXP	Lab Technician	0	11.35/HR	July-08	MISC	2.5	Yes	A	D	B100, C100, G, J, L	DSA

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks	
Kern Co. District Attorney's Office - Forensic Science Div.	Management	Chief Criminalist	1	7886-9631	July-08	MISC (See Remarks)	See Remarks	Yes	D	E	A, B, C, E, J	Union: SEIU Local #521; Management has no union representation Management: Plus mgmt package = 10% base salary Retirement: Variety of plans that depend on MOU in effect when the employee started. Current MOU: 1.62% at 65 plus County gives new employee a 6% premium pay, can be invested into a 457K. County will match contribution up to 6% of base pay. Employees pay 100% of base retirement. Medical: County pays 80% of insurance premium. Health, dental and vision; amount adjusted annually. Longevity: 2% at 10 years, 4% at 15, 6% at 20, 8% at 25 and 10% at 30 years. On Call: 5% while on call out team. Special: Membership in one professional organization paid.	
	SCW-(0-50)	Supervising Criminalist	4	7137-8713	July-08	MISC (See Remarks)	See Remarks	Yes	D	C or D (choice)	A, B, C, J, M		
	SCW-25	DNA Technical Leader	1	7137-8713	July-08	MISC (See Remarks)	See Remarks	Yes	D	C or D (choice)	A, B, C, J, M		
	JNS	Criminalist III	1	6459-7886	July-08	MISC (See Remarks)	See Remarks	Yes	D	C or D (choice)	A, B, C, J, M		
	LEXP-1	Criminalist II	7	5562-6790	July-08	MISC (See Remarks)	See Remarks	Yes	D	C or D (choice)	A, B, C, J, M		
	NEXP	Criminalist I	11	4602-5618	July-08	MISC (See Remarks)	See Remarks	Yes	D	C or D (choice)	A, B, C, J, M		
	LEXP-2	Forensic Tech II	1	3640-4444	July-08	MISC (See Remarks)	See Remarks	Yes	A	C	C	A, B, C, M	
	NEXP	Forensic Tech I	6	3294-4022	July-08	MISC (See Remarks)	See Remarks	Yes	A	C	C	A, B, C, M	

**California Association of Criminalists
2008-2009 Salary Survey (cont.)**

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Los Angeles Co. Dept. of the Coroner Forensic Laboratories		Chief	1	7715-11677	Oct-08	PERS	0	No	A	A	A, B, C, J, K, L	
	SCW-25	Supervising Criminalist II	1	7329-9105	Jan-09	PERS	0	No	A	A	A, B, C, J, K, L	Management
	SCW-25	Supervising Criminalist I	0	6942-8624	Jan-09	PERS	0	No	A	A	A, B, C, J, K, L	Management
	JNS	Research Criminalist	1	6723-8352	Jan-09	PERS	0	No	A	A	A, B, C, J, K, L	Management
	JNS	Senior Criminalist	10	6576-8169	Jan-09	PERS	0	No	D \$1.50/Hr	C, D	C, D	A, B, C, J, K, L Prof. Peace Officers Assoc. (PPOA), AFL-CIO
	NEXP	Criminalist	0	4880-6062	Jan-09	PERS	0	No	D \$1.50/Hr	C, D	C, D	A, B, C, J, K, L PPOA, AFL-CIO

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Los Angeles Co. Sheriff's Scientific Services Bureau		Director	1	7798-11832	Jan-09	MISC	0	No	D	A	A, B&C % varies/plan, E, J, L	Management, Retirement pay (varies) *Health/Dental Benefits - Cafeteria Plan
		Assistant Director	5	7392-10239	Jan-09	MISC	0	No	A	A	A, B&C % varies, J, L	Same as above
		Supervising Criminalist	15	6942-8624	Jan-09	MISC	0	No	A	A	A, B&C % varies, J, L	Same as above
	JNS	Senior Criminalist	80	6576-8169	Jan-09	MISC	0	No	B \$1.50/hr	C, D	C, D	A, B&C % varies, J, L Same as above
	NEXP	Criminalist	18	4880-6062	Jan-09	MISC	0	No	B \$1.50/hr	C, D	C, D	A, B&C % varies, J, L Same as above
	NEXP	Crime Lab Technician	14	3289-4076	Jan-09	MISC	0	No	A	A	C, D	A, B&C % varies, J, L Same as above

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Los Angeles Police Dept. - Scientific Invest. Div.	LEXP-5	Chief Forensic Chemist II (Lab Director)	1	9591-11916	July-08	MISC - 2.16@55	6	No	A		A, Bset\$, Cset\$, E, J, L	Management, Engineers and Architects Assoc. (EAA)
	LEXP-5	Chief Forensic Chemist I (Asst. Director)	3	8474-10530	July-08	MISC - 2.16@55	6	No	D**	A	A, Bset\$, Cset\$, J, L	Mgmt. **1hr/weekday, 1/6 Weekends+Holidays, EAA
	LEXP-2	Supervising Criminalist	12	7778-9662	July-08	MISC - 2.16@55	6	No	D**	A	A, Bset\$, Cset\$, J, L	Supervisory, **1hr/weekday, 1/6 Weekends+Holidays, EAA
	JNS/LEXP-4*	Criminalist III	15	7184-8926	July-08	MISC - 2.16@55	6	No	B***	C, D	C, D	*Court Qualified in 3 disciplines, ***1/8 weekday, 1/6 Weekends+Holidays, EAA
	JNS/LEXP-1.5	Criminalist II	92	6845-8503	July-08	MISC - 2.16@55	6	No	B***	C, D	C, D	***1/8 weekdays, 1/6 Weekends +Holidays, EAA
	NEXP	Criminalist I		5225-6495	July-08	MISC - 2.16@55	6	No	D	C, D	C, D	A, Bset\$, Cset\$, J, L Cset\$, L

**California Association of Criminalists
2008-2009 Salary Survey (cont.)**

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Long Beach Police Dept.	SCW-70	Supervising Criminalist	1	5655-7578	Oct-08	PERS	2.7% @ 55	Yes	D	A, D	A, B, C, F, G, I, J, L	Supervisor
	JNS	Criminalist II	2	5025-6844	Oct-08	PERS	2.7% @ 55	Yes	D	A, D	A, B, C, F, G, I, J, L	Union: International Assoc. of Machinists and Aerospace Workers
	LEXP-2	Criminalist I	2	4216-5724	Oct-08	PERS	2.7% @ 55	Yes	D	A, D	A, B, C, F, G, I, J, L	Supervisor
	SCW-30	Forensic Specialist Supervisor	1	4663-6343	Oct-08	PERS	2.7% @ 55	Yes	B	A, D	A, B, C, F, G, I, J, L	Supervisor
	JNS	Forensic Specialist II	7	4111-5583	Oct-08	PERS	2.7% @ 55	Yes	B	A, D	A, B, C, F, G, I, J, L	All positions
	LEXP-2	Forensic Specialist I	2	3623-4921	Oct-08	PERS	2.7% @ 55	Yes	B	A, D	A, B, C, F, G, I, J, L	Health/dental 50-100% depends on plan option

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Oakland Police Dept. - Crime Lab		Laboratory Manager	1	9255-11364	June-07	PERS	4	No	A	*	A, Bset, C100, D-2 ea., J, L, N, Vision Plan	Management Local 21
	SCW-50	Criminalist III	3	7249-8899	June-07	PERS	4	No	A	C, D	A, Bset, C100, D-2 ea., J, L, N, Vision Plan	Supervisory, Local 21; 37.5 hr/wk
	LEXP-2	Criminalist II	7	6264-7691	June-07	PERS	4	No	A	C, D	A, Bset, C100, D-2 ea., J, L, N, Vision Plan	Local 21; 37.5 hr/wk
	NEXP	Criminalist I	3	32.61-40.03/hr	June-07	PERS	4	No	A	C, D	A, Bset, C100, D-2 ea., J, L, N, Vision Plan	SEIU 790; 37.5 hr/wk
	NEXP	Latent Print Examiner II	1	4359 - 6240	June-08	PERS	4	No	none	C, D	A, Bset, C100, D-2 ea., J, L, N, Vision Plan	37.5 hr/wk
	NEXP	Latent Print Examiner	1	5965-7324	June-07	PERS	4	No	none	C, D	A, Bset, C100, D-2 ea., J, L, N, Vision Plan	37.5 hr/wk

**California Association of Criminalists
2008-2009 Salary Survey (cont.)**

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Orange Co. Sheriff-Coroner Dept.	Director	Director	1	7686-12596 2% increase due Jan 09	July-08	MISC 2.7% @ .55	7.54	No	A	E	A, B, C100, D, E, H, J, K, L	Management, +\$3500, H-Tuition only
	Asst. Director	Asst. Director	4	6148-10197 2% increase due Jan 09	July-08	MISC 2.7% @ .55	7.54	No	A	E	A, B, C100, D, H, J, K, L	Management, +\$3500, H-Tuition only
	Senior Forensic Scientist	Senior Forensic Scientist	12	6382-8597	July-08	MISC 2.7% @ .55	11.5-15.5	No	A	C, D	A, B, C100, D, H, J, L	Supervisory/Project Leader (Dual Track) H- Tuition only
	Forensic Scientist III	Forensic Scientist III	49	5897-7916	July-08	MISC 2.7% @ .55	11.5-15.5	No	B, 25%	C, D	A, B, C100, D, H, J, L	H- Tuition only
	Forensic Scientist II	Forensic Scientist II	5	4994-6725	July-08	MISC 2.7% @ .55	11.5-15.5	No	B, 25%	C, D	A, B, C100, D, H, J, L	H- Tuition only
	Forensic Scientist I	Forensic Scientist I	9	4500-6058	July-08	MISC 2.7% @ .55	11.5-15.5	No	A	C, D	A, B, C100, D, H, J, L	H- Tuition only
	Supervising Forensic Specialist	Supervising Forensic Specialist	4	5143-6913	July-08	MISC 2.7% @ .55	11.5-15.5	No	A	C, D	A, B, C100, D, H, J, L	Supervisory H- Tuition only
	Senior Forensic Specialist	Senior Forensic Specialist	12	4612-6217	July-08	MISC 2.7% @ .55	11.5-15.5	No	A	C, D	A, B, C100, D, H, J, L	H- Tuition only
	Lead Forensic Specialist	Lead Forensic Specialist	19	4337-5840	July-08	MISC 2.7% @ .55	11.5-15.5	No	B, 25%	C, D	A, B, C100, D, H, J, L	H- Tuition only
	Forensic Specialist	Forensic Specialist	9	3444-4612	July-08	MISC 2.7% @ .55	11.5-15.5	No	A	C, D	A, B, C100, D, H, J, L	H- Tuition only
	Fingerprint Technician II	Fingerprint Technician II	9	2851-3829	July-08	MISC 2.7% @ .55	11.5-15.5	No	A	C, D	A, B, C100, D, H, J, L	10 Print / Cal-ID

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
*Sacramento Co. District Attorney's Office - Forensic Services	Director	Director	1	7901-9603	July-05	SAFETY	9.6	Yes	D	E	A, B100, C100, D, J, K, L	Mgmt. +3.5% differential
	Supervising Criminalist	Supervising Criminalist	5	5799-7050	July-05	SAFETY	4.8	Yes	D	C	A, B100, C100, D, J, K, L	Supervisory Represented by SCALE
	Criminalist IV	Criminalist IV	2	5484-6668	July-05	SAFETY	4.8	Yes	D	C	A, B100, C100, D, J, K, L	SCALE
	Criminalist III	Criminalist III	25	5349-6501	July-05	SAFETY	4.8	Yes	D	C	A, B100, C100, D, J, K, L	SCALE
	Criminalist II	Criminalist II	6	4296-5222	July-05	SAFETY	4.8	Yes	D	C	A, B100, C100, D, J, K, L	SCALE
	Criminalist I	Criminalist I	0	3219-3913	July-05	SAFETY	4.8	Yes	D	C	A, B100, C100, D, J, K, L	SCALE
	Forensic Lab Technician	Forensic Lab Technician	5	2869-3487	July-05	MISC	3.7	Yes	D	C	A, B100, C100, D, J, K, L	SCALE

**California Association of Criminalists
2008-2009 Salary Survey (cont.)**

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
*San Bernardino Co. Sheriff's Dept. - Forensic Lab		Captain	1	8187-10478	July-07	SAFETY	var	No	C	E	A, B, C, D, E, H, I, J, L, N	Exempt
		Lab Director	1	7999-10237	June-07	MISC	var	No	C	A	A, B, C, D, E, H, J, L, N	Management/Supervisory
		Lieutenant	2	7095-8859	July-07	SAFETY	var	No	B \$120/wk	A	A, B, C, D, E, H, I, J, L, N	Safety Management/Supervisory
	SCW-0	Criminalist III (Dep. Sheriff)	1	7095-8859	July-07	SAFETY	var	No	B \$120/wk	C, D	A, B, C, D, E (on call), H, I, J, L, N	Safety Management/Supervisory
	SCW-0	Supervising Criminalist	2	6566-8401	June-07	MISC	var	No	B \$3.50/hr	C, D	A, B, C, D, E (on call), H, J, L, N	Management/Supervisory
	SCW-0	Sergeant	0			SAFETY	var	No	B \$120/wk	C, D	A, B, C, D, E (on call), H, I, J, L, N	Safety Management/Supervisory
	JNS	Criminalist II (Dep. Sheriff)	2	6347-8150	July-07	SAFETY	var	No	B \$120/wk	C, D	A, B, C, D, E (on call), H, I, J, L, N	Safety Unit
	JNS/LEXP-2	Criminalist II	14	5668-7245	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E (on call), J, L	PEA, Admin. Service
	SCW-0	Deputy Sheriff	1	4435-6067	July-07	SAFETY	var	No	B \$120/wk	C, D	A, B, C, D, E (on call), H, I, J, L, N	Safety Unit
	NEXP	Criminalist I	11	4661-5954	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E (on call), J, L	PEA, Admin. Service
	SCW-0	Supervising Crime Scene Specialist	1	4661-5954	June-07	MISC	var	No	B \$3.50/hr	C, D	A, B, C, D, E (on call), H, J, L	PEA Supervisory Unit
	SCW-0	Supervising Fingerprint Examiner	2	4335-5531	June-07	MISC	var	No	B \$3.50/hr	C, D	A, B, C, D, E, H, J, L	PEA Supervisory Unit
	NEXP	Criminalist Trainee	1	4125-5268	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E (non-call), H, J, L	PEA, Technical & Inspection Unit
	LEXP	Crime Scene Specialist II	2	4030-5139	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E (on call), H, J, L	PEA, Technical & Inspection Unit
	NEXP	Crime Scene Specialist I	10	3742-4775	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E (on call), H, J, L	PEA, Technical & Inspection Unit
	NEXP	Fingerprint Examiner I	7	3078-3929	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E, H, J, L	PEA, Technical & Inspection Unit
	NEXP	Fingerprint Examiner II	15	3742-4775	June-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E, H, J, L	PEA, Technical & Inspection Unit
	NEXP	Fingerprint Examiner Trainee	2	2794-3564	Jun-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E, H, J, L	PEA, Technical & Inspection Unit
	NEXP	Forensic Specialist II	1	3396-4335	Jun-07	MISC	var	No	B \$3.25/hr	C, D	A, B, C, D, E, H, J, L	PEA, Technical & Inspection Unit

California Association of Criminalists 2008-2009 Salary Survey (cont.)

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks	
San Diego Co. Sheriff's Office Crime Lab		Crime Lab Director	1	6413-12307	July-08	CERS w/ PERS reciprocity	6.2	Yes	A	E	A, B (varies), E, L	Management	
		Assistant Crime Lab Director	1	8577-10424	July-08	CERS w/ PERS reciprocity	6.2	Yes	A	A, B	A, B (varies), E, L	Management	
		Supervising Criminalist	6	7779-9455	July-08	CERS w/ PERS reciprocity	6.2	Yes	B	C, D	A, B (varies), E, L	Middle management; stand-by pay for on call	
	SCW-70	Criminalist III	9	7058-8582	July-08	CERS w/ PERS reciprocity	6.2	Yes	A, D	C, D	A, B (varies), E (on call), L	Professional; stand-by pay for on call	
	JNS	Criminalist II	23	6590-8011	July-08	CERS w/ PERS reciprocity	6.2	Yes	A, D	C, D	A, B (varies), E (on call), L	Professional; stand-by pay for on call	
	NEXP	Criminalist I	6	5645-6864	July-08	CERS w/ PERS reciprocity	6.2	Yes	A, D	C, D	A, B (varies), E (on call), L	Professional; stand-by pay for on call	
	NEXP w/AA, LEXP-1 or 2	Forensic Evidence Tech	5	4339-5273	July-08	CERS w/ PERS reciprocity	6.2	Yes	B	C, D	A, B (varies), E, L	Public service; stand-by pay for on call	
	SCW-70	Senior Forensic Document Examiner	1	7067-8590	July-08	CERS w/ PERS reciprocity	6.2	Yes	A	A	A, B (varies), L	Confidential employees	
	JNS	Forensic Document Examiner	1	6590-8011	July-08	CERS w/ PERS reciprocity	6.2	Yes	A	A	A, B (varies), L	Professional	
	JNS	Senior IT Engineer (Computer Crimes)	1	6900-8788	July-08	CERS w/ PERS reciprocity	6.2	Yes	C	E	A, B (varies), E (on call), L	Confidential employees	
	JNS	IT Engineer (Computer Crimes)	1	5106-6221	July-08	CERS w/ PERS reciprocity	6.2	Yes	C	E	A, B (varies), E (on call), L	Confidential employees	
	SCW-70	Senior Latent Print Examiner	2	6590-8011	July-08	CERS w/ PERS reciprocity	6.2	Yes	A	A	C, D	A, B (varies), L	Public service
	LEXP-2 or 3	Latent Print Examiner	7	5264-6398	July-08	CERS w/ PERS reciprocity	6.2	Yes	A, D	C, D	A, B (varies), E (on call), L	Public service; standby pay for on call	
NEXP	Lab Assistant	2	2421-2943	July-08	CERS w/ PERS reciprocity	6.2	Yes	A	A	C, D	A, B (varies), L	Health services	

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
San Diego Police Dept. Crime Lab		Laboratory Manager	1	8073-9417	July-07	MISC	12.8	No	C	E	A*, B100*, C*, J, L	Management, Unclassified, 2.5 @ 55
	LEXP-3	Supervising Criminalist	4	7183-8676	July-07	MISC	7	No	C	C, D	A*, B100*, C*, J, L	Supervisory, MEA, 2.5 @ 55
	JNS-2	Criminalist II	25	6244-7546	July-07	MISC	7	No	B	C, D	A*, B100*, C*, J, L	MEA (Municipal Employees Assn), 2.5 @ 55
	NEXP	Criminalist I	3	4676-5667	July-07	MISC	7	No	A	C, D	A*, B100*, C*, J, L	MEA, 2.5 @ 55

California Association of Criminalists 2008-2009 Salary Survey (cont.)

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
*San Francisco Police Dept. Crime Lab		Director, Forensic Services Division	1	11803	July-06	SAFETY	7.5	No		C, D		Management; Div. includes Crime Lab
		Crime Lab Manager	2	8929-10729	July-06	MISC	7.5	Yes	D	C, D	A, B, C, H, J, L	Management
	SCW-25 SCW-75	Criminalist III	3	8368-10173	July - 06	MISC	7.5	Yes	D	C, D	A, B, C, H, J, L	Supervisory, technical leads
	JNS	Criminalist II	17	6559-7971	July-06	MISC	7.5	Yes	D	C, D	A, B, C, H, J, L	
		Criminalist I	1	4869-5919	July-06	MISC	7.5	Yes	D	C, D	A, B, C, H, J, L	

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
*San Mateo Co. Sheriff's Office Crime Lab		Laboratory Manager	1	8292-10365	Novem ber-07	MISC 2% @ 55.5	0	Yes	A	E	A,B/C (80-90%), Vis.=100%,D,E,G,J,L	Management
		Quality Assurance Manager	1	7520-9401	Novem ber-07	MISC 2% @ 55.5	0	Yes	A	E	A,B/C (80-90%), Vis.=100%,D,G,J,L	Management
	SCW-20	Supervising Criminalist	3	7341-9177	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,J,L,N	Supervisory; Law enforcement unit (non-safety classifications); N=2.5% Crime Scene Cert. 5.0% ABC, IAI, AFTE Cert.; average % for retirement based upon age when hired and plan with additional 3%.
	SCW-20	Supervising Forensic Spec.	0	5783-7229	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	
	JNS/LEXP-3	DNA Technical Leader	1	6946-8682	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	
	JNS/LEXP-3	Criminalist II	10	6615-8269	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	
	NEXP	Criminalist I	1	5311-6639	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	Law enforcement unit (non-safety classifications); N=2.5% Crime Scene Cert. 5.0% ABC, IAI, AFTE Cert.; average % for retirement based upon age when hired and plan with additional 3%.
	JNS/LEXP-3	Firearms Technical Leader	1	6946-8682	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	
	JNS/LEXP-2	Forensic Technical Leader	1	5430-6787	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	
	JNS/LEXP-2	Forensic Specialist II	5	5171-6464	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N	
NEXP	Forensic Specialist I	1	4654-5818	June-07	MISC 2% @ 55.5	7	Yes	B	C, D	A,B/C (80-90%), Vis.=100%,D,G,I,J,L,N		

California Association of Criminalists 2008-2009 Salary Survey (cont.)

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Santa Clara Co. District Attorney's Crime Lab	Laboratory Director	Laboratory Director	1	10741-13785	Dec-07	PERS 2.5% @ .55	3.9	Yes	A	E	A, B, C, D, E, G, H, J, L	Management
	Assistant Laboratory Director	Assistant Laboratory Director	1	9081-11054	Aug-08	PERS 2.5% @ .55	3.9	Yes	A	E	A, B, C, D, G, H, J, L	Mgmt: \$800 tuition reimbursement, \$1250 professional development. Lump sum payment equal to 2% of yearly pay in effect as of Aug. 08.
	SCW	Supervising Criminalist	6	8034-9769	Aug-08	PERS 2.5% @ .55	3.9	Yes	A	E	A, B, C, D, G, H, J, L	
	JNS	Criminalist III	23	7167-8681	June-08	PERS 2.5% @ .55	3.9	Yes	B	D	A, B, C, D, G, H, J, L	
	LEXP-1	Criminalist II	14	6211-7518	June-08	PERS 2.5% @ .55	3.9	Yes	B	D	A, B, C, D, G, H, J, L	
	NEXP	Criminalist I	4	5384-6516	June-08	PERS 2.5% @ .55	3.9	Yes	B	D	A, B, C, D, G, H, J, L	
	JNS	Toxicologist III	0	6094-7376	June-08	PERS 2.5% @ .55	3.9	Yes	A	D	A, B, C, D, G, H, J, L	SEIU, \$900 tuition reimbursement. Lump sum payment equal to 2% of yearly pay in effect as of Jun. 08.
	LEXP-1	Toxicologist II	1	5485-6641	June-08	PERS 2.5% @ .55	3.9	Yes	A	D	A, B, C, D, G, H, J, L	
	NEXP	Toxicologist I	0	4516-5457	June-08	PERS 2.5% @ .55	3.9	Yes	A	D	A, B, C, D, G, H, J, L	

Laboratory Name	Job Description	Position	No.	Monthly Salary	Eff. Date	Retirement Type	%	SSI	On-Call Type	O.T. Comp	Miscellaneous Benefits	Remarks
Ventura Co. Sheriff's Dept. - Forensic Sciences Lab	Forensic Sciences Lab Manager	Forensic Sciences Lab Manager	1	7733-10827	Dec-08	1937 ACT	0	Yes	D	E	A, B, D, E, H, J, L, M, N, 2.5% to 401(k)	Management; 5% for Advanced Degree
	Assistant Forensic Services Lab Manager	Assistant Forensic Services Lab Manager	1	6778-9489	Dec-08	1937 ACT	0	Yes	D	E	A, B, D, H, J, L, M, N, 2.5% to 401(k)	Management; 5% for Advanced Degree
	SCW-50	Supervisor Forensic Scientist	5	5850-8207	Dec-08	1937 ACT	2	Yes	D	C, D	A, B, D, H, L, N, 2.5% to 401(k)	SEIU Supervisory Unit; 5% for Advanced Degree, \$563 per month for medical ins.
	JNS	Forensic Scientist III	23	5472-7676	Dec-08	1937 ACT	2	Yes	D	C, D	A, B, D, H, L, N, 1.75% to 401(k)	SEIU Supervisory Unit; 5% for Advanced Degree, \$563 per month for medical ins.
	LEXP-3	Forensic Scientist II	0	5050-7077	Dec-08	1937 ACT	2	Yes	D	C, D	A, B, D, H, L, N, 1.75% to 401(k)	SEIU Supervisory Unit; 5% for Advanced Degree, \$563 per month for medical ins.
	LEXP-1	Forensic Scientist I	0	4072-5698	Dec-08	1937 ACT	2	Yes	D	C, D	A, B, D, H, L, N, 1.75% to 401(k)	SEIU Supervisory Unit; 5% for Advanced Degree, \$563 per month for medical ins.
	NEXP	Forensic Scientist Trainee	0	3131-4379	Dec-08	1937 ACT	2	Yes	D	C, D	A, B, D, H, L, N, 1.75% to 401(k)	SEIU Supervisory Unit; 5% for Advanced Degree, \$563 per month for medical ins.
	NEXP	Forensic Lab Technician	3	2540-3576	Dec-08	1937 ACT	2	Yes	D	C, D	A, B, D, H, L, N, 1.75% to 401(k)	SEIU Supervisory Unit; 5% for Advanced Degree, \$563 per month for medical ins.

* 2008 data not received.

Legend

Job Description:

- NEXP** No experience necessary
- LEXP** Limited experience required, followed with the number of years experience required; e.g., LEXP-2
- JNS** Full journeyman with no supervisory requirement
- SCW** Supervisor also doing casework--indicate percentage of casework; e.g. SCW-25

Retirement:

- SAFETY** State Peace Officer/Safety Retirement--please state what percentage and at what age the retirement system in your agency (i.e., 3% @ 50, 2.5% @ 55)
- PERS** Public Employees Retirement System--please state what percentage and at what age the retirement system in your agency (i.e., 3% @ 50, 2.5% @ 55)
- MISC.** Other Retirement (Local Govt. Funded)
- PERCENT** Percent of Salary Contributed by Employee
- SOCIAL SECURITY** Yes or No

ON-CALL COMPENSATION

- A** Not required
- B** Required & compensated
- C** Required but not compensated
- D** Voluntary

OVERTIME COMPENSATION

- A** Straight time off
- B** Straight time pay
- C** Time & half off
- D** Time & half pay
- E** None

MISCELLANEOUS BENEFITS

- A** Life insurance
- B** Health insurance paid (%)
- C** Dental insurance paid (%)
- D** CAC dues paid
- E** Vehicle
- F** Research time
- G** Educational leave
- H** Educational pay
- I** Uniform pay
- J** Pay & travel to professional meetings
- K** Annual physical
- L** Time off for professional meetings
- M** Longevity pay (%/year)
- N** Career/education incentive pay

Appendix J

Presentation on ASCLD/LAB Certification

What is ASCLD/LAB?

American Society of Crime Laboratory Directors
Laboratory Accreditation Board

- Non-profit Corporation
- Governed by volunteer full-time Laboratory Managers
- Supported by small professional staff



1

How did ASCLD/LAB come to be?

- Established by ASCLD in mid '70s
- Objectives were established
- First laboratories accredited in 1982
- Delegate Assembly formed in 1984
- Bylaws adopted & ASCLD/LAB formed as an independent corporate entity

2

ASCLD/LAB Today

- Two accreditation programs
 - Legacy
 - International
- 338 laboratories currently accredited
 - 22 Federal
 - 178 State
 - 104 Local
 - 24 Private
 - 10 International
- 56 labs are accredited under the International Program
- 282 labs are accredited under the Legacy Program

3

ASCLD/LAB Objectives

- Improve the quality of laboratory services
- Develop and maintain criteria to assess performance and strengthen operations
- Provide independent, impartial and objective operational reviews
- Offer a means of identifying laboratories that meet established standards

4

Organization of ASCLD/LAB

Delegate Assembly
comprised of director of
accredited laboratories and
systems or their designees

5

Board of directors is elected to 4-year terms by Delegate Assembly

- 11 Board members
- 8 from Delegate Assembly membership
- 1 from public at-large
- 1 from law enforcement or prosecuting attorneys
- 1 non-voting ex-officio president of ASCLD

6

Professional Staff

- Executive Director
- Legacy Program Manager
- International Program Manager
- Quality Manager
- Proficiency Test Manager
- Business Manager
- Training Manager
- 3 Administrative Assistants
- Financial Assistant
- 12 part-time staff inspectors

7

Approximately 500 volunteer inspectors/assessors

- Volunteers are the heart of the program
- Primarily active practitioners in the various accredited disciplines
- Senior or supervisory level personnel
- Selected from accredited laboratories and trained by ASCLD/LAB as inspectors and assessors

8

Who/ What does ASCLD/LAB accredit?

Crime/ Forensic Laboratories

Definition of Crime/ Forensic Laboratory

A laboratory (with at least one full-time scientist) that examines physical evidence in criminal matters and provides opinion testimony with respect to such physical evidence in a court of law.

9

ASCLD/LAB Accreditation

A voluntary program in which a crime laboratory meets established standards in:

- Management
- Operations
- Personnel
- Equipment
- Physical Plant
- Security
- Health & Safety

10

Legacy Program

The ASCLD/LAB Legacy program consists of statements of principles, basic standards, criteria for evaluation of the standards, and a discussion.

11

An example ...

- **Principle** – Management will be more effective when, before initiating any course of action, the objectives are clearly determined, articulated, and understood.
- **Standard** – The laboratory should establish objectives which are relevant to the community that it serves and communicate them to all employees orally and in written form.
- **Criteria** – Does the laboratory have a written statement of its objectives?
- **Discussion** – A written statement of objectives fulfills a need for direction through a careful analysis of what the director and the parent organization believe are the appropriate functions of the laboratory ...

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ASCLD/LAB Currently Accredits in Nine Disciplines

- Controlled Substances
- Toxicology
- Trace Evidence
- Biology
- Latent Prints
- Firearms/Tool marks
- Questioned Documents
- Digital & Multimedia Evidence
- Crime Scene (optional)

13

Does ASCLD/LAB Accredit Only a Part of a Laboratory?

- A laboratory must apply for and be accredited in all disciplines in which it conducts examinations.
- One exception is that a laboratory has an option to not apply for accreditation in crime scene.

14

How does the Accreditation Process Work for Interested Laboratories?

- Prospective applicants purchase and review a current accreditation manual.
- Candidates conduct a self-assessment using the standards in the manual.
- Candidates initiate necessary corrective actions, prepare required manuals and document their procedures.

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How does the Accreditation Process Work? (continued)

- When the candidate laboratory is satisfied that it is prepared, an application including all required documentation is completed and submitted to ASCLD/LAB.
- An inspection team captain (generally a staff inspector) is selected by ASCLD/LAB and the application documents are sent to the team captain for review.
- The applicant laboratory and the team captain agree upon a date for an on-site inspection.
- An inspection team of ASCLD/LAB trained inspectors, of the appropriate size (a minimum of 2 inspectors), is assembled.

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How does the Accreditation Process Work? (continued)

- At the conclusion of the inspection, the team conducts holds a closing meeting with the laboratory to review and summarize the findings.
- A draft report will be prepared by the inspection team captain. The report will be audited and the audited report will be sent to the laboratory director, usually within ten days.
- The laboratory may begin the process of correcting deficiencies noted in the report. If the laboratory takes exception to a finding in the report, it has the option to appeal to the Board.

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How does the Accreditation Process Work? (continued)

- The laboratory will work with the inspection team captain in determining compliance with the requirements of the program. A supplemental report will be prepared and the Board will make a decision concerning the granting of accreditation.
- Accreditation is granted for a period of five (5) years.

18

What are the Requirements for Accreditation?

- There are approximately 140 evaluation standards in the current program
- Some of the standards are only applicable to specific disciplines
- The standards are designated as either Essential, Important or Desirable

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Essential, Important & Desirable

- **Essential Standards** are defined as standards which directly affect and have fundamental impact on the work product of the laboratory or the integrity of the evidence.
- **Important Standards** are defined as standards which are considered to be key indicators of the overall quality of the laboratory but may not directly affect the work product nor the integrity of the evidence.
- **Desirable Standards** are defined as standards which have the least effect on the work product or the integrity of the evidence but which nevertheless enhance the professionalism of the laboratory.

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Compliance Requirements

To become accredited a laboratory must comply with:

100% of the Essential criteria,
75% of the Important criteria and
50% of the Desirable criteria

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General Standards must be met by examiners in all disciplines, including the following:

- Operational and technical procedure manuals
- Quality manual
- Documented training program
- Documentation of chain of custody
- Proper identification and storage of evidence
- Facility security

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General Standards ... (continued)

- Examination documentation
- Protection of evidence from loss, cross transfer, contamination and/or deleterious change
- External proficiency testing
- Technical review of the work product
- Monitoring of testimony

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***For additional information
about crime laboratory accreditation, contact --***

***American Society of Crime Laboratory Directors
Laboratory Accreditation Board
ASCLD/LAB***

***Executive Director Ralph Keaton
919-773-2600***

www.ascl-d-lab.org

Thank You !!

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Appendix K

Existing State Oversight Entities for Forensic Science Practices

The California Crime Laboratory Review Task Force compiled a list of states that created commissions, boards, or other government organizations to address and improve forensic science practices. The 16 oversight entities are described below, with information about the source of their authority or origin.

Alabama Coroner's Training Commission

(Code of Ala. § 11-5-31)

The Alabama Coroner's Training Commission is charged with authorizing, overseeing, and administering pre-service and in-service training for coroners. The Commission establishes minimum standards of training, in addition to developing and periodically revising a list of approved training programs for coroners and their designated assistants. The authorizing legislation provides also for a minimum number of training hours and sets forth sanctions for coroners who fail to meet minimum standards.

The Commission is composed of seven appointed members serving four-year terms, following initial staggered terms, as follows:

- One county coroner appointed by the president of the Alabama Coroner's Association;
- One district attorney appointed by the attorney general;
- One county coroner appointed by the governor;
- One medical examiner or forensic scientist appointed by the director of the Alabama Department of Forensic Sciences;
- Three county coroners appointed by the board of directors of the Alabama Coroner's Association.

Arizona Forensic Sciences Advisory Committee

(Formed by the Arizona Attorney General in cooperation with the Arizona Criminal Justice Commission. See www.azag.gov/law_enforcement/ColdCaseTaskForceReport2007.pdf)

The Arizona Forensic Sciences Advisory Committee is designed to facilitate coordination of efforts between state and local crime laboratories in Arizona. It is authorized to establish and monitor performance measures and to work with lab directors to coordinate long-term planning, including equipment sharing and specialization by state and local laboratories. The Advisory Committee also considers and addresses questions or concerns from law enforcement agencies that do not have their own crime lab and from the public regarding lab operations. In particular, the Advisory Committee monitors and assesses backlog concerns at labs throughout the state. It works with the laboratories to make backlog reduction a priority and to help secure additional funding, where necessary, to eliminate backlogs.

In addition, the Advisory Committee constitutes the central independent entity to address and investigate questions and/or complaints from the public relating to laboratory operations. It monitors laboratory audits and other accreditation activities. The Advisory Committee membership is as follows:

- The attorney general (or designee);
- The director of Arizona Criminal Justice Commission (or designee);
- The director of the Department of Public Safety (or designee);
- Lab directors (or designees) from all state and local forensic laboratories;
- The police chief (or designee) of municipalities that operate a forensic laboratory;
- One police chief (or designee) from a municipality with a population over 200,000 that does not have a forensic laboratory;
- One police chief (or designee) from a municipality with a population of 200,000 or less that does not operate a forensic laboratory;
- One county sheriff and one county attorney from a county with a population of four hundred thousand persons or more;
- One county sheriff and one county attorney from a county with a population of less than four hundred thousand persons;
- A representative of an organization representing victims' families;
- A retired superior court or appellate court judge;
- A forensic scientist from a national organization such as the American Society of Crime Lab Directors (ASCLD) or the National Forensic Science Technology Center (NFSTC).

Illinois Laboratory Advisory Committee

(20 Ill. Comp. Stat. 3981/1 et seq.)

The state Advisory Committee performs a number of oversight functions, including:

- Recommend ways to ensure proper disclosure of scientific evidence, reports, and analytical documentation in criminal cases;
- Make recommendations regarding accreditation and quality assurance in compliance with ISO and other professional standards;
- Make recommendations about laboratory training procedures;
- Make recommendations regarding laboratory staffing and funding needs "to ensure resources to obtain accurate, timely, and complete analysis of all samples submitted for testing;"
- Make recommendations to ensure that private forensic laboratories meet the same quality standards required of government labs;
- Make recommendations "to ensure consistency among judicial orders and rulings as it relates to evidence and discovery;"
- Examine ways to make more efficient use of the state laboratories, including facilities, personnel, and equipment;
- Examine ways to reduce laboratory backlogs;

- Plan for future state laboratory needs, and review and assess major facility expenditures;
- Take any necessary action to provide for the safe and efficient operation of state laboratories;
- Examine ways to enhance Illinois Homeland Security through coordination of laboratory services with the Illinois Terrorism Task Force;
- Ensure that analysts are provided all necessary tools and information needed to draw all relevant scientific conclusions, and consider methods to guarantee that observations and conclusions are not inadvertently influenced by extraneous information;
- Make annual recommendations in a report filed with the governor, General Assembly, and Illinois Supreme Court to facilitate any of the responsibilities of the Committee.

The Committee is comprised of 15 members serving staggered terms, appointed as follows:

- A scientist from the Department of Agriculture, appointed by the director of Agriculture;
- A scientist from the Department of Natural Resources, appointed by the director of Natural Resources;
- A scientist from the Department of Public Health, appointed by the director of Public Health;
- A scientist from the Department of State Police, appointed by the director of State Police;
- A scientist from the Environmental Protection Agency, appointed by the director of the Environmental Protection Agency;
- A scientist from the Illinois Emergency Management Agency, appointed by the director of the Illinois Emergency Management Agency;
- A scientist from the Department of Transportation, appointed by the secretary of Transportation;
- A licensed attorney, with expertise in scientific evidence, appointed by the Cook County public defender;
- A licensed attorney, with expertise in scientific evidence, appointed by the Cook County state's attorney;
- A licensed attorney, with expertise in scientific evidence, appointed by the state appellate defender;
- A licensed attorney, with expertise in scientific evidence, appointed by the director of the Office of the State's attorneys appellate prosecutor;
- A licensed attorney, with expertise in scientific evidence, appointed by the attorney general;
- An academic scientist with an advanced degree in life, physical, or medical sciences appointed by the attorney general;
- A scientist employed by the DuPage County Sheriff's crime laboratory appointed by the DuPage County Sheriff's crime laboratory director; and
- An academic forensic scientist with an advanced degree in the life, physical, criminalistic, or medical sciences appointed by the president of the University of Illinois.

In addition, the Committee chair may appoint one ex officio member representing private laboratories, and one ex officio member who is a scientist representing the Northern Illinois Police Crime Laboratory. The president of the University of Illinois may appoint one ex officio member to the Committee representing social scientists.

Indiana Commission on Forensic Sciences

(Burns Ind. Code Ann. § 4-23-6-1 et seq.)

The Indiana Commission on Forensic Sciences is a scientific research organization that conducts fee-based research in the various forensic science disciplines and acts as a clearinghouse for forensic science research and information. The commission's executive director is a medical pathologist and its five members are appointed to staggered terms by the governor, as follows:

- One pathologist;
- One law enforcement professional;
- One coroner;
- One attorney; and
- The state health commissioner.

The Commission meets at least once every two months, and is tasked with promoting "scientific information and services" in the various forensic science disciplines. To this end, the Commission has the power to establish a research laboratory and contract with experts to conduct scientific research into particular topics of concern. It is authorized to use the services and facilities of the state department of health, state educational institutions, and hospitals and other public agencies in conducting its research. The Commission also establishes minimum standards and best practices for medical examiners. The Commission has no enforcement powers, however.

Maryland Forensic Laboratory Advisory Committee

(Md. Code Ann., Health-Gen §§ 17-2A-12; 17-2A-01 et seq.)

The Advisory Committee advises the secretary of Health and Mental Hygiene who licenses public and private forensic laboratories. As of 2011, all laboratories offering forensic science services must be licensed by the secretary in order to operate. The authorizing legislation sets forth licensing requirements and procedures, including the circumstances under which the secretary can suspend, revoke, or limit a laboratory's license.

The secretary also adopts regulations that set standards and requirements for forensic laboratories. The regulations address the following areas: quality assurance and proficiency testing programs, document retention, criminalist qualifications, criminalist background and education checks, and "any additional standards that the secretary considers necessary to assure that forensic laboratories provide accurate and reliable services."

The secretary is granted the authority to inspect those laboratories applying for a license as well as those which have been granted a license to operate. In addition, the secretary may investigate complaints and conduct a "validation survey" of accredited laboratories.

The Advisory Committee is comprised of ten members serving staggered three-year terms. Two are:

- The director of Laboratories Administration in the Department of Health and Mental Hygiene;
- The director of the Office of Health Care Quality in the Department of Health and Mental Hygiene.

The remaining eight, appointed by the governor, are:

- A representative of the American Society for Clinical Laboratory Science;
- A representative of the University of Maryland School of Medicine, Department of Medical Research and Technology;
- A representative of the American Association for Laboratory Accreditation;
- A representative of the American Academy of Forensic Sciences;
- A representative of ASCLD/LAB;
- A state forensic laboratory director;
- A county forensic laboratory director;
- A municipal forensic laboratory director.

Massachusetts Inspector General

(See <http://www.mass.gov/ig>)

The State of Massachusetts relies upon its Office of the Inspector General to conduct investigations into allegations of misconduct at the State Police Crime Laboratory. The mandate of the inspector general is to “prevent and detect fraud, waste, and abuse in the expenditure of public funds.” The inspector general possesses the authority to retain subject-matter experts as consultants in its investigations. It makes recommendations in its reports, which are equally accessible by the state’s legislative and executive branches, as well as the public.

Minnesota Forensic Laboratory Advisory Board

(Minn. Stat. § 299C.156)

The Forensic Laboratory Advisory Board performs three primary functions:

First, the Board is responsible for developing a system by which professional misconduct or negligence in the state’s forensic science laboratories is reported, and it encourages all laboratories to report such events. When misconduct or negligence is reported, the Board assumes an investigatory role. Investigative procedures, including preparation of a written and publicly-available report, corrective actions, retroactive review of laboratory operations, and follow-up evaluations of the laboratory are set forth in the authorizing legislation.

Second, the Board encourages laboratories to become accredited by the ASCLD/LAB or another appropriate accrediting body, and monitors accreditation status.

Third, the Board is charged with collecting data on and monitoring evidence analysis turn-around times in forensic science laboratories. It must also recommend to the legislature

case processing guidelines for forensic science laboratories to follow, and proposals for improvement of turnaround times.

The Forensic Laboratory Advisory Board consists of 12 members, as follows:

- The superintendent of the Bureau of Criminal Apprehension or the superintendent's designee;
- The commissioner of public safety or the commissioner's designee;
- The commissioner of corrections or the commissioner's designee;
- An individual with expertise in the field of forensic science, selected by the governor;
- An individual with expertise in the field of forensic science, selected by the attorney general;
- A faculty member of the University of Minnesota, selected by the president of the university;
- The state public defender or a designee;
- A prosecutor, selected by the Minnesota County Attorneys Association;
- A sheriff, selected by the Minnesota Sheriffs Association;
- A police chief, selected by the Minnesota Chiefs of Police Association;
- A judge or court administrator, selected by the chief justice of the Supreme Court; and
- A criminal defense attorney, selected by the Minnesota State Bar Association.

Missouri Crime Laboratory Review Commission

(Exec. Order 07-16 (June 2007) [Complementary legislation pending: SB 8 (2009)])

In 2007, by executive order, the governor created the "Crime Laboratory Review Commission" to independently review the operations of crime laboratories in Missouri that receive state-administered funding. It also acts as an independent investigatory body pursuant to federal Coverdell grant requirements.

The Commission assesses the capabilities and needs of crime labs and their ability to deliver timely forensic science services, and makes recommendations for improvement. It authorizes independent external investigations into allegations of misconduct or negligence affecting the integrity of scientific results, using outside experts on contract as necessary. It issues reprimands to crime labs and their employees or contractors found to be negligent or engaging in misconduct, makes recommendations for crime lab procedure when labs are found to be negligent, and issues reports to the Department of Public Safety summarizing findings of negligence or misconduct and making recommendations regarding revocation or suspension of grant funding.

The Commission submits an annual report to the Department of Public Safety and to the governor making recommendations to improve quality management systems within the state's crime laboratories. [Note: The proposed legislation includes a provision precluding the Commission from making recommendations related to relocation or consolidation of crime laboratories.]

The Missouri Department of Public Safety has the authority to revoke grant money from a crime lab if it does not cooperate with the commission or if allegations of serious negligence or misconduct are substantiated by the Commission.

The Commission is composed of six members appointed by the governor, as follows:

- A senior manager of an ASCLD/LAB accredited crime lab;
- A prosecuting attorney;
- A criminal defense attorney;
- A crime victim's advocate;
- A sworn law enforcement officer employed in a management position; and
- A representative of the Missouri Department of Public Safety or a designee.

Montana Forensic Science Laboratory Advisory Board

(See www.doj.mt.gov/enforcement/crimelab/default.asp#advisoryboard)

The nine-member Montana Forensic Science Laboratory Advisory Board advises the attorney general and crime lab administrators on state lab operations. It seeks to facilitate communication between user agencies and the laboratory, and suggests improvements to laboratory policies and procedures. The Advisory Board also acts as the designated body to provide independent external investigations into any allegations of negligence or misconduct that might affect the integrity of the lab's forensic results.

New Mexico DNA Oversight Committee

(N.M. Stat. § 29-16-5)

The state's DNA Oversight Committee adopts rules and procedures regarding the administration and operation of the state's DNA identification system, including the missing persons DNA identification program, and the sex offender DNA identification system. The Committee is comprised of nine members, as follows:

- A scientific representative from the department crime laboratory appointed by the secretary of public safety;
- A scientific representative from the crime laboratory of the police department for the largest municipality in a class A county having a population of more than two hundred fifty thousand at the most recent federal decennial census;
- The secretary of corrections or designee;
- The state medical investigator or designee;
- The attorney general or designee;
- The president of the district attorneys association or designee;
- The chief public defender or designee;
- The president of the New Mexico criminal defense lawyers association or designee;
- The head of the administrative center or designee.

New York Commission on Forensic Science

(NY CLS Exec § 995 et seq.)

This Commission is charged with setting minimum standards and developing an accreditation program for public forensic laboratories operating in New York State. It issues accreditations, and may review, revoke, suspend, or otherwise limit existing accreditations. The Commission is authorized to establish minimum qualifications for lab directors and other staff, and approves scientific methodologies before they are used in a laboratory setting. It sets standards for quality and maintenance of equipment.

A “DNA Subcommittee” oversees and accredits DNA laboratories, and may issue “binding recommendations” to the Committee concerning DNA labs. The chair of the DNA Subcommittee is appointed by the chair of the Commission, and the remaining six members of the DNA Subcommittee are appointed by the chair of the Subcommittee. The Commission, in conjunction with the DNA Subcommittee, sets policy for New York’s DNA Identification Index, including standards for determination of a match. It also evaluates all DNA methodologies used for forensic identification purposes.

The Commission may obtain personnel from other state agencies on a temporary basis to assist in the performance of its duties, and may establish advisory bodies to provide expertise on new forensic technologies. The Commission itself is comprised of 14 members. Two are designated as follows:

- The commissioner of the division of criminal justice services (chair);
- The commissioner of the department of health;

The remaining 12 are appointed by the governor, as follows:

- The chair of the New York state crime laboratory advisory committee;
- The director of a forensic laboratory located in New York state;
- The director of the office of forensic services within the division of criminal justice services;
- Two scientists having experience in the areas of laboratory standards or quality assurance regulation and monitoring;
- A law enforcement agency representative;
- A prosecutor;
- A public-sector criminal defense attorney;
- A private-sector criminal defense attorney;
- Two members-at-large recommended by state legislators;
- An attorney or judge with a background in privacy issues and biomedical ethics.

Rhode Island Crime Laboratory Commission

(R.I. Gen. Laws § 12-1.1-1 et seq.)

This state’s Commission acts as a board of directors for the state crime lab. It establishes goals, priorities, standards, policies, plans, programs, and budgets for operation of the laboratory, and monitors the effectiveness of lab operations. It oversees grant and state

funding for the lab and approves lab expenditures. The Commission has the authority to approve or disapprove of laboratory personnel appointments.

The Commission advises the governor and the legislature on matters of scientific criminal investigation, and submits an annual report detailing its activities and the state of the state's forensic science services. It may use the facilities, resources, and personnel of the University of Rhode Island and other state departments to carry out its mandates.

The Commission is composed of five members, as follows:

- The attorney general (chair);
- The superintendent of state police;
- A representative of the Rhode Island Police Chiefs Association (appointed by the governor); and
- Two public members (appointed by the governor).

Texas Forensic Science Commission

(Tex. Code Crim. Proc. art. 38.01)

Akin to an inspector general, the Texas Forensic Science Commission is tasked with developing and implementing a reporting system designed to address professional negligence or misconduct in public forensic laboratories. The Commission requires all laboratories, facilities, or entities that conduct forensic analyses to report professional negligence or misconduct to the Commission, and it conducts follow-up investigations of those reports. The authorizing legislation details the procedures to be followed in those investigations, and specifies the format of any resulting report.

The Commission is comprised of nine members serving staggered terms. Four are appointed by the governor as follows:

- Two people who have expertise in the field of forensic science;
- One prosecutor;
- One criminal defense attorney.

Three members are appointed by the lieutenant governor, as follows:

- One faculty member or staff member of the University of Texas who specializes in clinical laboratory medicine;
- One faculty member or staff member of Texas A&M University who specializes in clinical laboratory medicine;
- One faculty member or staff member of Texas Southern University who has expertise in pharmaceutical laboratory research.

Two members are appointed by the attorney general as follows:

- One director or division head of the University of North Texas Health Science Center at Fort Worth Missing Persons DNA Database;
- One faculty or staff member of the Sam Houston State University College of Criminal Justice and have expertise in the field of forensic science or statistical analyses.

Virginia Forensic Science Board

(Va. Code Ann. § 9.1-1109 et seq.)

The Board occupies a role similar to a “board of directors” for the Virginia Department of Forensic Science (DFS). It monitors DFS operations for effectiveness and compliance with standards and goals. It enacts regulations to facilitate all statutory duties of DFS, including the security, privacy, and confidentiality of criminal justice information possessed by governmental entities in the state. The Board establishes fiscal standards and goals for DFS, and reviews and comments on budgets, grant applications, and appropriations requests. It conducts long-range planning for the implementation of new scientific techniques, and advises key state officials in the executive and legislative branches on forensic science and DFS matters.

The Board is comprised of 13 members (or their designees). Ten are as follows:

- The superintendent of the state police;
- The director of the Department of Criminal Justice Services;
- The chief medical examiner;
- The executive director of the Virginia Board of Pharmacy;
- The attorney general;
- The executive secretary of the Supreme Court of Virginia;
- The chair of the Virginia State Crime Commission;
- The chair of the Board of the Virginia Institute of Forensic Science and Medicine;
- Two members of the Scientific Advisory Committee.

Three members are appointed by the governor, as follows:

- A law enforcement professional;
- A Virginia attorney;
- A criminal defense attorney having specialized knowledge of forensic sciences.

Virginia Scientific Advisory Committee

(Va. Code Ann. § 9.1-1111)

As a corollary to the Forensic Science Board, the Virginia Scientific Advisory Committee reviews and makes recommendations concerning scientific protocols, methodologies, and programs used in the state’s crime laboratories. It monitors and reports on the quality and timeliness of forensic science services to user agencies.

The Advisory Committee also reviews allegations of misidentification or other error occurring in the state’s laboratories.

The 13 members of the Advisory Committee serve staggered four-year terms, and are appointed as follows:

- The director of the department;
- A director of a private or federal forensic laboratory located in the commonwealth;

- A forensic scientist or any other person, with an advanced degree, who has received substantial education, training, or experience in the subject of laboratory standards or quality assurance regulation and monitoring;
- A forensic scientist with an advanced degree who has received substantial education, training, or experience in the discipline of molecular biology;
- A forensic scientist with an advanced degree and having experience in the discipline of population genetics;
- A scientist with an advanced degree and having experience in the discipline of forensic chemistry;
- A scientist with an advanced degree and having experience in the discipline of forensic biology;
- A forensic scientist or any other person, with an advanced degree who has received substantial education, training, or experience in the discipline of trace evidence;
- A scientist with a doctoral degree and having experience in the discipline of forensic toxicology, who is certified by the American Board of Forensic Toxicologists;
- A member of the Board of the International Association for Identification;
- A member of the Board of the Association of Firearms and Toolmark Examiners;
- A member of the International Association of Chemical Testing; and
- A member of the American Society of Crime Laboratory Directors.

Washington State Forensic Investigations Council

(Rev. Code Wash. § 43.103.010 et seq.)

The Council is an oversight and policy body for the state's Forensic Laboratory Services Bureau (FLSB). Its concerns focus on the efficiency of the state's death investigation system and forensic pathology practices, but the Council also has responsibility for assisting in the preparation of, and approving, FLSB's annual budget. In addition, the Council can require reports from the chief of the Washington State Patrol on matters involving FLSB, and assists with the selection of state laboratory management.

The Council is comprised of 12 members serving staggered terms, as follows:

- One county coroner;
- One county prosecutor;
- One county prosecutor who also serves as ex officio county coroner;
- One county medical examiner;
- One county sheriff;
- One chief of police;
- The chief of the state patrol;
- Two members of a county legislative authority;
- One pathologist who is currently in private practice; and
- Two members of a city legislative authority.