ABA Standards for Criminal Justice
Third Edition

DNA Evidence
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Third Edition*

DNA Evidence

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DNA Evidence, ©2007
Electronic Surveillance of Private Communications, ©2002
Fair Trial and Free Press, ©1992
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CURRENT STANDARDS DRAFTING PROJECTS

Diversion and Special Courts (new)
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ABA Criminal Justice Standards on DNA Evidence

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ABA CRIMINAL JUSTICE STANDARDS
ON
DNA EVIDENCE

BLACK LETTER

PART I: GENERAL PROVISIONS

STANDARD 16-1.1 SCOPE OF STANDARDS

(a) For purposes of these standards, DNA evidence is biological material from which DNA is or can be extracted.

(b) These standards are applicable to DNA evidence used for genetic identification in criminal cases.

STANDARD 16-1.2 GENERAL PRINCIPLES

(a) Consistent with rights of privacy and due process, DNA evidence should be collected, preserved, tested, and used when it may advance the determination of guilt or innocence.

(b) DNA evidence should be collected, preserved and tested, and the test results interpreted, in a manner designed to ensure the highest degree of accuracy and reliability.

(c) The policies and procedures employed for testing DNA evidence should be available for public inspection.

(d) Test results and their interpretation should be reported and presented in an accurate, fair, complete, and clear manner.

(e) A person charged with or convicted of a crime should be provided reasonable access to relevant DNA evidence and, if it has been tested, to the test results and their interpretation.

(f) The collection and preservation of, access to, and use of DNA evidence should be regulated to prevent inappropriate intrusion on privacy rights.

(g) Funding necessary to achieve these principles should be provided.
PART II: COLLECTING, PRESERVING AND USE OF DNA EVIDENCE

STANDARD 16-2.1 COLLECTING DNA EVIDENCE FROM A CRIME SCENE OR OTHER LOCATION

(a) Whenever a serious crime appears to have been committed and there is reason to believe that DNA evidence relevant to the crime may be present at the crime scene or other location, that evidence should be collected promptly.

(b) Whenever DNA evidence is to be collected by law enforcement, a law enforcement officer or other official forensic investigator properly trained in the identification, collection, and preservation of DNA evidence should be dispatched to the location and, following written guidelines, should identify, collect, and preserve that evidence, taking reasonable care to ensure that the collection is representative of all relevant DNA evidence present; and

(c) If a defendant has been charged with the crime under investigation and the defendant’s attorney or investigator is denied access to a crime scene or other location after completion of law enforcement’s investigation at the scene or location, the defendant should be permitted to seek a court order to allow the defendant’s attorney or investigator reasonable access to the location and permit a representative of the defendant’s attorney properly trained in the identification, collection, and preservation of DNA evidence to collect DNA evidence.

STANDARD 16-2.2 JUDICIAL ORDER FOR COLLECTING DNA SAMPLES FROM A PERSON

(a) A DNA sample should not be collected from the body of a person without that person’s consent, unless authorized by a search warrant or by a judicial order as provided in subdivision (b) of this standard.

(b) Except in exigent circumstances, a judicial order for collecting a DNA sample from the body of a person should be issued only upon notice and after an opportunity for a hearing at which the
person has a right to counsel, including the right to appointed counsel if the person is indigent.

(i) If the person from whom the sample is to be collected is suspected of committing a crime, an order should issue only upon an application demonstrating:

(A) probable cause that a serious crime has been committed, and

(B) if the sample is to be collected from a person is:

1. a sample collected by a physically noninvasive means, reasonable suspicion that the person committed the crime charged; and

2. a sample collected by physically invasive means, probable cause that the person committed the crime charged; and

(C) that the sample will assist in determining whether the person committed the crime.

(ii) If the person from whom the sample is to be collected is not suspected of committing a crime, an order should issue only upon an application demonstrating:

(A) probable cause that a serious crime has been committed; and

(B) that a sample is necessary to establish or eliminate that person as a contributor to or source of the DNA evidence or otherwise establishes the profile of a person who may have committed the crime, either because there is reason to believe that the person has contributed to or been the source of the DNA evidence, or for other good cause shown that the sample of that particular person is necessary for that purpose.

STANDARD 16-2.3 JUDICIAL ORDER FOR DNA SAMPLES COLLECTED BY NON-LAW ENFORCEMENT ENTITIES

When a hospital, clinic, laboratory, or other non-law enforcement entity has collected a DNA sample from a person for a purpose other than a criminal investigation, law enforcement should not obtain or otherwise have access to that sample without the consent of the person who is the source of the sample, unless authorized by a judicial order under the conditions provided in Standard 16-2.2, or by search warrant.
**STANDARD 16-2.4  COLLECTING DNA SAMPLES FROM PERSONS IN A GROUP BY CONSENT**

A law enforcement officer should be permitted to obtain a DNA sample from a person by consent, except that:

(a) consent should not be sought from persons based primarily upon their membership in a constitutionally protected class;

(b) consent should not be sought from a large number of persons based on grounds other than individualized suspicion that each committed the crime under investigation unless seeking such consent has been authorized by the head of a law enforcement agency or the chief prosecutor in that jurisdiction; and

(c) when consent is sought as provided in subdivision (b) of this standard, each person should be informed of the reason for the request and of the right to refuse it, and the consent should be obtained in writing.

**STANDARD 16-2.5  MANNER OF COLLECTING AND PRESERVING DNA EVIDENCE**

(a) DNA evidence should be collected and preserved in a manner designed to document its identity, ensure its integrity, and, whenever possible, ensure its availability for testing and retesting. Specifically:

(i) the evidence should be properly handled, packaged, labeled, and stored; and

(ii) the location where and the place or thing from which the evidence was collected or the person from whom or the entity from which it was collected, the date and time it was collected, the identity of the person who collected it, and the manner in which it was collected and preserved should be documented.

(b) Whenever DNA evidence is collected from a person, it should be collected by a method that is medically safe and no more intrusive than reasonably necessary. When it is collected from a person by court order, the order should so specify.
STANDARD 16-2.6 RETENTION OF DNA EVIDENCE

(a) Property containing DNA evidence obtained in the investigation of an unsolved homicide, rape or other serious offense, and the extract from such evidence, if any has been obtained, should be retained in a manner that will preserve the DNA evidence. A jurisdiction should promulgate written rules in all cases, which should require authorization of the prosecutor before the property or extract is destroyed or discarded.

(b) Property containing DNA evidence obtained in an investigation which has resulted in the prosecution of a person or persons for homicide, rape or other serious offense, and the extract from such evidence, if any has been obtained, should be retained in a manner that will preserve the DNA evidence until all persons charged have been convicted of an offense, or adjudicated as having engaged in conduct constituting such an offense, and have exhausted their appeals and served their sentences or commitments. If retention of a particular piece of property containing DNA evidence is impractical, reasonable care should be taken to retain representative samples of those portions of the property that contain DNA evidence.

PART III: TESTING OF DNA EVIDENCE

STANDARD 16-3.1 TESTING LABORATORIES

(a) A laboratory testing DNA evidence should:
   (i) be accredited every two years under rigorous accreditation standards by a nonprofit professional association actively involved in forensic science and nationally recognized;
   (ii) be governed by written policies and procedures, including protocols for testing and interpreting test results, and permit deviation from protocols only by a technical leader or other appropriate supervisor;
   (iii) use quality assurance and quality control procedures, including audits, proficiency testing, and corrective action protocols, that are consistent with generally accepted practices and in writing;
(iv) use protocols for testing and interpreting DNA evidence that are scientifically validated through studies that are described in writing;

(v) follow procedures designed to minimize bias when interpreting test results;

(vi) timely report credible evidence of laboratory misconduct or serious negligence to the accrediting body; and

(vii) make available to the public the written material required by this standard.

(b) A laboratory testing DNA evidence should make available to the prosecution the information and material that the prosecutor must disclose to the defense pursuant to Standard 16-4.1, and to defense counsel the information and material that the defense must disclose to the prosecutor pursuant to that standard.

(c) When an accrediting body receives notice of credible evidence of laboratory misconduct or serious negligence concerning DNA evidence at the testing laboratory, either as provided in subdivision (a)(vi) of this standard or through other means, it should audit laboratory procedures and cases that may have been affected by the misconduct or serious negligence and issue a written report.

STANDARD 16-3.2 TESTING AND INTERPRETATION OF DNA EVIDENCE

(a) DNA evidence should be tested and interpreted in a timely manner by qualified personnel using the policies and procedures adopted by the laboratory as provided in Standard 16-3.1.

(b) Each step in the testing of DNA evidence and in the interpretation of the test results should be recorded contemporaneously in case notes.

(c) The case notes should document all information necessary to allow an independent expert to evaluate the process used and the conclusions reached.

(d) All case notes made and raw electronic data produced during testing should be preserved.
STANDARD 16-3.3 LABORATORY REPORTS

(a) A summary of all DNA testing and data interpretation should be recorded promptly in a report.

(b) The report should be sufficiently comprehensive so that an independent expert can identify the process used and the conclusions reached. Specifically, the report should include:
   (i) what was tested,
   (ii) who conducted the testing,
   (iii) identification of the protocol used in the testing and any deviation from the protocol,
   (iv) the data and results produced by the testing or data interpretation,
   (v) the examiner's interpretation of the results and conclusions therefrom,
   (vi) the method and results of any statistical computation, and
   (vii) any additional information that could bear on the validity of the test results, interpretation or opinion.

(c) A separate section of the report should explain the test results, interpretation and opinion in language comprehensible to a layperson.

STANDARD 16-3.4 CONSUMPTIVE TESTING

(a) When possible, a portion of the DNA evidence tested and, when possible, a portion of any extract from the DNA evidence should be preserved for further testing.

(b) A laboratory should not undertake testing that entirely consumes DNA evidence or the extract from it without the prior approval of the prosecutor if a law enforcement officer is requesting the testing, or of defense counsel if the testing is requested by defense counsel or defense counsel's agent.

(c) Before approving a test that entirely consumes DNA evidence or the extract from it, the prosecutor should provide any defendant against whom an accusatorial instrument has been filed, or any suspect who has requested prior notice, an opportunity to object and move for an appropriate court order.

(d) Before approving a test that entirely consumes DNA evidence or the extract from it, the attorney for any defendant against whom an accusatorial instrument has been filed, or for any
other person who intends to conduct such a test, should provide the prosecutor an opportunity to object and move for an appropriate court order.

(e) If a motion objecting to consumptive testing is filed, the court should consider ordering procedures that would permit an independent evaluation of the analysis, including but not limited to the presence of an expert representing the moving party during evidence preparation and testing, and videotaping or photographing the preparation and testing.

PART IV: PRETRIAL PROCEEDINGS

STANDARD 16-4.1 DISCLOSURE

(a) The prosecutor should be required, within a specified and reasonable time prior to trial, to make available to the defense the following information and material relating to DNA evidence:

(i) laboratory reports as provided in Standard 16-3.3;

(ii) if different from or not contained in any laboratory report, a written description of the substance of the proposed testimony of each expert, the expert’s opinion, and the underlying basis of that opinion;

(iii) the laboratory case file and case notes;

(iv) a curriculum vitae for each testifying expert and for each person involved in the testing;

(v) the written material specified in Standard 16-3.1(a);

(vi) reports of all proficiency examinations of each testifying expert and each person involved in the testing, with further information on proficiency testing discoverable on a showing of particularized need;

(vii) the chain of custody documents specified in Standard 16-2.5;

(viii) all raw electronic data produced during testing;

(ix) reports of laboratory contamination and other laboratory problems affecting testing procedures or results relevant to the evaluation of the procedures and test results obtained in the case and corrective actions taken in response; and
(x) a list of collected items that there is reason to believe contained DNA evidence but have been destroyed or lost, or have otherwise become unavailable;

(xi) material or information within the prosecutor's possession or control, including laboratory information or material, that would tend to negate the guilt of the defendant or reduce the punishment of the defendant.

(b) The defense should be required, within a specified and reasonable time prior to trial, to make available to the prosecution the information and material in subdivision (a)(i) through (ix) of this standard for each expert whose testimony the defense intends to offer.

STANDARD 16-4.2 Defense Testing and Retesting

(a) Upon motion, made with notice to the prosecution, a court should permit the defense to inspect and test DNA evidence in the prosecution's possession or control. An affidavit in support of the motion may be presented to the court ex parte.

(b) The motion should specify the nature of any test to be conducted, the name and qualifications of the expert designated to conduct the test, the place of testing, and the evidence upon which the test will be conducted.

(c) The court should issue any orders necessary to make the evidence to be inspected or tested available to the designated expert and condition its order so as to preserve the integrity of the material to be tested or inspected.

(d) Prosecution monitoring of the preparation and testing should not be permitted unless consumptive testing is involved as described in Standard 16-3.4.

STANDARD 16-4.3 Defense Experts

(a) Expert assistance should be provided to an indigent defendant at government expense prior to and during trial if there is reason to believe that the prosecution will present DNA evidence or if expert assistance may lead to the discovery of relevant evidence.

(b) The defendant should be permitted to make an application for expert assistance ex parte.
(c) If the expert will not testify as a defense witness at trial, the prosecution should not be permitted to interview or call the defense expert as a prosecution witness unless the court determines that the prosecution has no alternative means to obtain equivalent evidence that the expert possesses.

PART V: TRIAL

STANDARD 16-5.1 ADMISSIBILITY OF DNA EVIDENCE

(a) Expert testimony concerning DNA evidence, including statistical estimates, should be admissible if based on a valid scientific theory, a valid technique implementing that theory, and testing and interpretation properly applying that theory and technique.

(b) A court should be permitted to take judicial notice of facts relating to DNA evidence that are not subject to reasonable dispute.

(c) A witness testifying about DNA evidence should be qualified by knowledge, skill, training, or education in those matters about which that witness testifies.

(d) Whenever feasible, issues involving the admissibility of DNA evidence should be determined prior to trial.

STANDARD 16-5.2 TRADE SECRETS PRIVILEGE

(a) The successful assertion of the trade secrets privilege should not relieve the proponent of DNA evidence of the obligation to satisfy the admissibility criteria of Standard 16-5.1.

(b) A trade secrets privilege should be recognized if the allowance of the privilege would not tend to conceal fraud, prevent the proponent of DNA evidence from satisfying Standard 16-5.1, unduly interfere with the ability of a party to challenge the admissibility of the evidence or its reliability, or otherwise work an injustice. When disclosure is directed, the judge should prescribe such protective measures as the furtherance of justice may require.
STANDARD 16-5.3 PRESENTATION OF EXPERT TESTIMONY

(a) An expert giving testimony concerning DNA evidence should be asked to identify and explain the theoretical and factual basis for any opinion given and the reasoning upon which the opinion is based.

(b) Expert testimony should be presented to the trier of fact in a manner that accurately and fairly conveys the significance of the expert’s conclusions.

(c) Valid statistical estimates of population frequencies should be admissible.

(d) When DNA evidence is offered at trial, evidence relevant to the reliability of that evidence, including relevant evidence of laboratory error, contamination, or sample mishandling, should also be admissible.

(e) An attorney intending to call an expert witness concerning DNA evidence should confer with that expert in preparing for trial in order to permit an informed and appropriate presentation consistent with this standard.

STANDARD 16-5.4 PROSECUTION COMMENT ON DEFENSE RESPONSE TO TESTS

(a) A prosecutor should not be permitted to argue or imply that a defendant's failure to test or retest DNA evidence, or the defendant's failure to offer evidence of such a test or retest conducted on the defendant's behalf, constitutes an admission of guilt.

(b) A prosecutor should be permitted to offer evidence or make argument concerning the defendant's failure to test or retest DNA evidence, or the defendant's failure to offer evidence of such a test or retest conducted on the defendant's behalf, only for a purpose other than an admission of guilt and only in fair response to evidence or argument of the defense. The court should instruct the jury that it may consider that evidence only for that other purpose.
PART VI: POST-CONVICTION

STANDARD 16-6.1 POST-CONVICTION TESTING

(a) A person who has been convicted of a serious crime, including a person convicted based on a guilty plea, should be permitted to have DNA evidence in the possession of the prosecution or one of its agents tested or retested after conviction if:

(i) the testing requested was not available at the time of trial and currently is available from a laboratory meeting the requirements of Standard 16-3.1, there is credible evidence that prior test results or interpretation were unreliable, or the interests of justice require testing or retesting; and

(ii) the results of testing or retesting could create a reasonable probability that the person:
   (A) is innocent of the offense,
   (B) in a capital case, did not have the culpability necessary to subject the person to the death penalty, or
   (C) did not engage in aggravating conduct that caused a mandatory sentence or sentence enhancement.

(b) When a person files an application for testing or retesting:

(i) the prosecution should be notified and, if the person is indigent and does not have counsel, counsel should be appointed;

(ii) the application should be denied unless the person, after consultation with counsel, files a sworn statement declaring that he or she is innocent of the crime, did not have the culpability necessary to be subjected to the death penalty, or did not engage in the aggravating conduct that caused a mandatory sentence or sentence enhancement;

(iii) if the person files the statement, a hearing should be held to determine whether the person has met the requirements of subdivision (a) of this standard, and if there is a determination that the requirements of subdivision (a) of this standard have been met, the request for testing or retesting should be granted;

(iv) after the results of any testing are reported to the parties, an applicant should be permitted to seek a second hearing to determine what relief, if any, is appropriate; and
(v) If either hearing is to be held, the prosecutor should be required to give prior notice of the hearing to the victim of the crime to which the hearing relates.

(c) If the application for testing or retesting is granted, and the court determines the result is inculpatory, the applicant’s profile should be entered into the database authorized in Standard 16-8.1(b)(i), if it is not already present there.

(d) An applicant should have the right to appeal or seek leave to appeal any adverse decision made pursuant to this standard.

PART VII: CHARGING BY DNA PROFILE

STANDARD 16-7.1 CHARGING PERSONS BY DNA PROFILE

When DNA evidence that may have been left by the perpetrator of a serious crime is collected and preserved, and a DNA profile of the person who left the evidence is established from it but the person’s identity is unknown, a grand jury or the prosecutor should be permitted to charge the person, as identified by the profile, with the crime by indictment or other instrument requiring a judicial probable cause determination.

PART VIII: DNA DATABASES

STANDARD 16-8.1 AUTHORIZED AND PROHIBITED DNA DATABASES

(a) The legislature should authorize the establishment, maintenance, and operation of DNA databases used for criminal identification, and proscribe DNA databases that are not statutorily authorized. The legislation should include significant criminal and civil penalties for unauthorized databases and for unauthorized use or dissemination of information from any database.

(b) The only databases permitted to be maintained for criminal identification purposes should be those including profiles:
(i) of persons convicted of crimes designated by the legislature as appropriate for inclusion in the database, of persons found not guilty by reason of insanity for such crimes, and of persons adjudicated for conduct that, but for their age, constituted the commission of such crimes [or of persons arrested for crimes designated by the legislature as appropriate for inclusion in the database, if there has been a judicial determination of probable cause or an indictment or information has been filed];

(ii) derived from evidence collected from crime scenes or other locations as provided in Standard 16-2.1; and

(iii) maintained for quality assurance at a laboratory.

(c) A genetic profile should be included in a database only if developed by testing conducted as provided in Standard 16-3.2.

(d) Whenever a matching profile is declared, confirmatory retesting of a new sample should be conducted, if possible.

(e) Databases should be developed and maintained in a manner that protects privacy to the fullest extent possible. Specifically:

(i) To the extent feasible, DNA markers valued only for individual identification and not known to be associated with behavioral propensities or susceptibility to disease should be used.

(ii) Each profile should be maintained by number or by other anonymous means, and the information identifying a profile as belonging to a particular person should be separately maintained and safeguarded.

(iii) Profiles should remain anonymous unless a matching profile is declared.

(iv) Reasonable steps should be taken to prevent unauthorized access to, tampering with or copying of the contents of the database.

(f) DNA samples used for the purpose of developing profiles from known individuals should be retained only for the purpose of confirmatory retesting or for upgrading the database to reflect new technologies.

(g) Databases should be expanded to other categories of persons as resources become available, privacy concerns are resolved, and the security of the information is assured.
STANDARD 16-8.2 USE RESTRICTIONS AND DESTRUCTION OF DNA EVIDENCE

(a) A profile developed from DNA evidence collected as provided in Standards 16-2.2 and 16-2.3 should not be entered into a database or compared with profiles in a database (for example, by keyboard search).

(b) If a profile developed from DNA evidence at a crime scene or other location as provided in Standard 16-2.1 has been identified as that of a person who is not a suspect, that profile should not be entered into a database or compared with profiles in a database (for example, by keyboard search).

(c) A profile developed from DNA evidence collected by consent as provided in Standard 16-2.4 should not be entered into a database or compared with profiles in a database (for example, by keyboard search) without the written consent of the person who is the source of the profile.

(d) A profile developed from a DNA sample collected from a location other than a crime scene solely for the purpose of obtaining the profile of a person should not be entered into a database.

(e) When the official investigation or prosecution is concluded and it is determined that a previously unknown source of DNA evidence was either (i) a victim of the crime that is under investigation or that is the subject of the prosecution or (ii) any other person not related to that crime as a perpetrator, the evidence should be destroyed and any profile developed from it should be expunged from any DNA database into which it had been entered.

(f) A profile developed from a DNA sample collected from the remains of an unidentified deceased person may, for purposes of identifying that person, be compared with profiles in the databases authorized in Standard 16-8.1(b), but should not be entered into a database.

(g) Notwithstanding the provisions of subdivisions (a) through (f), a laboratory conducting DNA testing should be permitted to enter in a quality assurance database maintained by the laboratory any profile developed from DNA extracted in the testing conducted in the laboratory, and should be permitted to retain the profile in that database as long as necessary for quality assurance purposes.
STANDARD 16-8.3  ACCESS TO DNA DATABASES

Information in a database should be provided only to criminal justice agencies and only for purposes of criminal identification, except:

(a) a defendant should have access to:
   (i) the results of all database searches and analyses performed in connection with the case;
   (ii) the search procedures used to identify profiles relevant to the case; and
   (iii) upon a showing of good cause, any other information related to the database that is relevant to the defense;

(b) upon a showing of good cause, a court should grant a defendant's request to order a comparison of profiles in the database with an unknown profile;

(c) a prosecutor should have access to the same information provided to the defense pursuant to subdivisions (a) and (b) of this standard;

(d) the agency maintaining a database should be permitted to disclose information about the database for the purpose of seeking advice on quality control and assurance;

(e) persons conducting scientific research on population genetics or related issues may be granted access to genetic profiles in a database for the purposes of that research, provided that the profiles are anonymous, privacy concerns are resolved, and the security of the information is assured; and

(f) as allowed by Standard 16-8.2(f).

STANDARD 16-8.4  EXPUNGEMENT

(a) If any person’s conviction is vacated, the person’s profile should be expunged from any database that includes the profiles of convicted offenders, unless the person’s profile is in that database based on another conviction.

(b) Methods should be devised to expunge routinely from databases any profile which should not have been entered or which should be expunged pursuant to these standards.

(c) A person should have the right to petition a court to have that person’s profile expunged from a database as required by these standards.
DNA Evidence

ABA CRIMINAL JUSTICE STANDARDS
ON
DNA EVIDENCE

BLACK LETTER WITH COMMENTARY

INTRODUCTION

DNA Evidence and Criminal Justice

When the ABA Criminal Justice Standards were first promulgated in the late 1960's and even when a second edition was issued in 1980, DNA was not a part of the criminal justice landscape. However, that changed dramatically, beginning in 1985, with the advent of DNA evidence, and thereafter, as one form after another of DNA technology was introduced at the trial level and was subsequently approved by the appellate court system. The impact on the criminal justice system was also dramatic. As early as 1988, one judge was calling DNA evidence the “single greatest advance in the ‘search for truth’ ... since the advent of cross-examination.” Less than a decade later, a National Research Council report stated that “DNA analysis is one of the greatest technical achievements for criminal investigation since the discovery of fingerprints.”

Every state has enacted legislation to obtain samples from convicted offenders for DNA databases, although the targeted offenses and other matters differ widely. The DNA Identification Act of 1994 authorized the FBI to establish the Combined DNA Index System (CODIS), a national database. DNA’s discriminatory power, combined with computer technology, has permitted comparison of DNA profiles derived

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1 See infra notes 255-65 and accompanying text (commentary to Standard 5.1(a)).


3 NATIONAL RESEARCH COUNCIL, THE EVALUATION OF FORENSIC DNA EVIDENCE 73 (1996) [hereinafter NRC II]. The Council is the research arm of the National Academies, formerly the National Academy of Sciences.

from samples taken from crime victims and crime scenes with profiles derived from samples taken from suspects stored in local, state and nationwide databases. The result has been to make DNA evidence an undeniably powerful tool for purposes of convicting the guilty and exonerating the innocent.

The capability to find a "cold hit" in a case without a suspect is a particularly important development. It means that DNA evidence can be used not only to construct a case after a suspect has been identified, but also to investigate a case by identifying a previously unknown suspect. The FBI reports that the total number of offender profiles included in the National DNA Index System ["NDIS"] is now more than three million seven hundred thousand, and the total number of forensic profiles (those obtained from crime scenes) is more than 150,000. According to the FBI, as of October 2006, CODIS has produced over 38,900 matches, or "hits," that have assisted in more than 40,200 investigations.

No less important is the power of DNA evidence to establish the innocence of a suspect or even a convicted offender. The Innocence Project of the Cardozo School of Law asserts that, "[s]ince 1989, there have been tens of thousands of cases where prime suspects were arrested or indicted - until DNA testing (prior to trial) proved that they were wrongly accused." The National Institute of Justice issued a report in 1996 that documented 28 cases in which DNA evidence exonerated convicted defendants and The Innocence Project reports that, as of January 2, 2007, DNA evidence has resulted in the exoneration of a total

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5 See Frederick R. Bieber, Turning Base Hits into Earned Runs: Improving the Effectiveness of Forensic DNA Data Bank Programs, 34 J. L. MED. & ETHICS 222 (2006) (noting the lack of systematic follow-up data on outcomes of DNA database hits by police and prosecutors).


9 EDWARD CONNORS ET AL., NAT’L INST. JUSTICE, CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL (1996).
of 192 convicted defendants who have served an average of 12 years in prison.\textsuperscript{10}

Indeed, in cases in which DNA evidence provides compelling evidence of guilt or innocence, legal concepts of "finality" seem fragile. Recognizing the reliability and durability of such evidence, many jurisdictions have extended their statutes of limitations or permitted "John Doe" indictments that permit a prosecution involving such evidence to go forward beyond the usual constraints of law.\textsuperscript{11} For the same reason, many states and the federal government have enacted statutes providing for post-conviction DNA testing, permitting defendants to challenge their convictions long after the appellate process has concluded.\textsuperscript{12} Similarly, in \textit{House v. Bell},\textsuperscript{13} the United States Supreme Court recently held that the defendant, by using DNA analysis, as well as other evidence, had established a compelling claim of actual innocence, thus falling within the exception to the traditional rule that a procedural default is a bar to federal habeas corpus review.

\textbf{Problems.} Despite the power of DNA evidence, problems have been exposed in its use.\textsuperscript{14} For example, the U. S. Department of Justice

\begin{itemize}
  \item \textsuperscript{10} "Innocence Project: Facts on Post Conviction DNA Exonerations," http://www.innocenceproject.org/docs/DNAExonerationFacts_WEB.pdf (last visited March 2, 2007). Last year alone there were 17 such exonerations. \textit{Id.}
  \item \textsuperscript{11} The Project also reports that "[t]he true suspects and/or perpetrators have been identified in more than a third of the DNA exoneration cases." \textit{Id.}
  \item \textsuperscript{12} The Project also asserts that since 1989, DNA evidence has proven the innocence of "tens of thousands" of other suspects before conviction. \textit{Id.}
  \item \textsuperscript{13} See Standard 7.1 (charging persons with DNA profiles).
  \item \textsuperscript{14} See Standard 6.1 (post-conviction testing).
  \item \textsuperscript{13} 547 U.S. ___, 126 S. Ct. 2064, 2078-79 (2006) ("[I]n direct contradiction of evidence presented at trial, DNA testing [not available at the time of trial] has established that the semen on Mrs. Muncey's nightgown and panties came from her husband, Mr. Muncey, not from House.").
  \item \textsuperscript{14} See Eric S. Lander & Bruce Budowle, \textit{DNA Fingerprinting Dispute Laid to Rest}, 371 \textit{Nature} 735, 735 (Oct. 27, 1994) ("The initial outcry over DNA typing standards concerned laboratory problems: poorly defined rules for declaring a match; experiments without controls; contaminated probes and samples; and sloppy interpretation of autoradiograms. Although there is no evidence that these technical failings resulted in any wrongful convictions, the lack of standards seemed to be a recipe for trouble."). See also JAMES D. WATSON & ANDREW BERRY, DNA: THE SECRET OF LIFE 273 (2004) ("Initially, when DNA fingerprinting was done in forensic laboratories without special expertise in handling and analyzing DNA, critical mistakes were not uncommon.").
\end{itemize}
Inspector General has released two reports relating to DNA, one involving misconduct by an FBI analyst in testing and the other on shortcomings in CODIS procedures. In addition, the Virginia DNA laboratory experienced problems originating from the Earl Washington case. In the most serious example to date, the Houston Police Department had to close its DNA operations due to major deficiencies, one of which had resulted in the wrongful conviction of Josiah Sutton based on DNA evidence. As described by a subsequent investigation, "the DNA Section was in shambles - plagued by a leaky roof, operating for years without a line supervisor, overseen by a technical leader who had no personal experience performing DNA analysis and who was lacking the qualifications required under the FBI standards, staffed by underpaid and undertrained analysts, and generating mistake-ridden and

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16 Office of Inspector General, U.S. Dep't of Justice, Audit Report, The Combined DNA Index System ii (2001) ("[T]he integrity of the data contained in CODIS is extremely important since the DNA matches provided by CODIS are frequently a key piece of evidence linking a suspect to a crime.").

17 The governor ordered an audit by ASCLD/LAB, which has released a report. See ASCLD/LAB, Limited Scope Interim Inspection Report, Commonwealth of Virginia, Division of Forensic Science, Central Laboratory (April 9, 2005).

18 See Quality Assurance Audit of Houston Police Dep't Crime Laboratory – DNA/Serology Section (Dec. 12-13, 2002). See also Nick Madigan, Houston's Troubled DNA Crime Lab Faces Growing Scrutiny, N.Y. Times, Feb. 9, 2003 (operations suspended in December after an audit found numerous problems including poor calibration and maintenance of equipment, improper record keeping, and a lack of safeguards against contamination; "Among other problems, a leak in the roof was found to be a potential contaminant of samples on tables below."). The city of Houston has authorized an independent investigation, and several preliminary reports have been issued.

19 See Adam Liptak & Ralph Blumenthal, New Doubt Cast on Crime Testing in Houston Cases, N.Y. Times, Aug. 5, 2004 ("[P]rosecutors in Mr. Sutton's case had used [DNA] to convict him, submitting false scientific evidence asserting that there was a solid match between Mr. Sutton's DNA and that found at the crime scene. In fact, 1 of every 8 black people, including Mr. Sutton, shared the relevant DNA profile. More refined retesting cleared him.").
poorly documented casework." Errors and misconduct can lead to inaccurate results, which can create injustice in particular cases and discredit DNA evidence as a whole. Consequently, accreditation, proficiency testing, extensive discovery, defense experts, post-conviction testing, and other procedures are vital to ensuring the exoneration of the innocent and the conviction of the guilty.

Prior consideration of DNA evidence, analysis and use. The ABA's DNA Standards have benefited from the prior work of a number of organizations which have looked at DNA evidence since its inception, commencing with the Office of Technology Assessment Report in 1990. This was followed by reports by the National Academies in 1992 and 1996 (NRC I and NRC II). Later, the National Commission on the Future of DNA Evidence, established by the Department of Justice, published a number of documents on DNA analysis.

During this same time, groups in the forensic science community promulgated standards for DNA testing. The first was the "Technical Working Group on DNA Analysis Methods" (TWGDAM). Next, the 1994 DNA Identification Act established the DNA Advisory Board (DAB), which promulgated quality assurance standards. TWGDAM was subsequently renamed "Scientific Working Group on DNA Analysis Methods" (SWGDAM) and replaced the DAB when the latter legislatively expired. Moreover, the American Society of Crime Lab Directors/Laboratory Accreditation Board (ASCLD/LAB) and other organizations operated voluntary accreditation programs for public and private crime laboratories. The "Justice for All" Act, enacted in 2004, contained several provisions involving DNA analysis, including the Innocence Protection Act. The ABA Standards on DNA Evidence build on this prior body of work.

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20 Third Report of the Independent Investigator for the Houston Police Dep't Crime Laboratory and Property Room (June 30, 2005).


24 18 U.S.C.A. § 3600 (West Supp. 2007). In addition, the DNA Identification Act of 1994 was amended to require accreditation "by a nonprofit professional association of persons actively involved in forensic science that is nationally recognized within the forensic science community" within two years.
**Background of the Standards**

In April 2000, the Criminal Justice Council of the American Bar Association passed the following resolution:

The Criminal Justice Section recognizes the need for national standards pertaining to the collection, packaging, storage, apportioning, testing analysis, report writing, and testimony with regard to the use of biological evidence in criminal cases. Accordingly, it directs the Section Chair to refer this task to the Criminal Justice Standards Committee for creation of appropriate standards.

In August of that year, the ABA House of Delegates passed a resolution urging federal, state, local, and territorial jurisdictions to adhere to the following principles concerning biological evidence collected during the investigation of criminal cases:

1. All biological evidence should be preserved.
2. All biological evidence should be made available to defendants and convicted persons upon request and, in regard to such evidence, such defendants and convicted persons may seek appropriate relief notwithstanding any other provision of law.
3. All necessary funding to accomplish these principles should be provided.
4. Appropriate scientific and privacy standards should be developed to guide the preservation of biological evidence.

In response, a three-person study group was appointed to identify appropriate issues for a Standards Task Force to address. Upon receiving the report of the study group, the Standards Committee appointed a Task Force, including prosecutors, defense attorneys, judges, and a DNA scientist. The Task Force met six times between the summer of 2003 and spring of 2005 to review and refine draft standards. In June 2005, it

and to "undergo external audits, not less than once every 2 years, that demonstrate compliance with standards established by the Director of the Federal Bureau of Investigation." 42 U.S.C.A. § 14132(b)(2) (West 2005). Moreover, the Omnibus Crime Control and Safe Streets Act of 1968 was amended by requiring a “certification that a government entity exists and an appropriate process is in place to conduct independent external investigations into allegations of serious negligence or misconduct substantially affecting the integrity of the forensic results committed by employees or contractors of any forensic laboratory system, medical examiner’s office, coroner’s office, law enforcement storage facility, or medical facility in the State that will receive a portion of the grant amount.” 42 U.S.C.A. § 3797k(4) (West Supp. 2007).
submitted its proposed Standards to the Standards Committee. That Committee further refined the proposed Standards at meetings in June and September 2005. The draft as approved by the Committee was submitted to the Section Council for a first reading at the fall 2005 meeting. Remands from the first meeting were considered by the Standards Committee, and the second reading took place before the Council in April 2006. As amended by the Council, the Standards were transmitted to the House of Delegates, which approved them without change in August 2006.

**Overview of Standards**

The Standards are organized into eight parts:

Part I sets out the scope of the Standards and the general principles that govern them. It announces the purpose of DNA evidence — to advance the fair and accurate determination of guilt or innocence, consistent with privacy and due process rights.

Parts II through VI address how DNA evidence should be handled throughout the various stages of the criminal justice process — investigation, testing, pretrial, trial, and post-conviction. More specifically, Part II addresses issues related to collecting DNA evidence from crime scenes and other locations as well as from individuals and groups and, once collected, preserving and retaining it. Testing laboratories, testing and interpretation, laboratory reports, and protocols for consumptive testing — all essential to maximize the accuracy and reliability of DNA profiling in exonerating the innocent and convicting the guilty — are dealt with in Part III. Part IV addresses pretrial due process issues and provides for “quality assurance” safeguards relating to pretrial discovery, defense testing and retesting, and the right to defense experts for indigents at the pretrial stage. Trial issues addressed in Part V include the admissibility of DNA evidence, limitations on the trade secrets privilege, the presentation of expert testimony, and prosecutorial comment on a defendant’s failure to retest. Part VI focuses on post-conviction matters, including requirements for testing and retesting, and procedural issues of notice, hearings, right to counsel and appeals.

By authorizing the prosecutor to charge by DNA profile, Part VII avoids statute of limitation issues that might otherwise arise when DNA is collected from a crime scene but the person who left the DNA is unknown. However, by limiting charging by profile to charging instruments for which a judicial probable cause determination is necessary, Part VII requires police and prosecutors to gather necessary
evidence when it is likely still available, rather than neglecting such cases until an identification is made.

Finally, Part VIII addresses databases – what databases should be authorized, what DNA profiles they should contain, how they should be maintained to protect privacy, and when data in them should be expunged.
PART I: GENERAL PROVISIONS

STANDARD 16-1.1  SCOPE OF STANDARDS

(a) For purposes of these standards, DNA evidence is biological material from which DNA is or can be extracted.

(b) These standards are applicable to DNA evidence used for genetic identification in criminal cases.

Commentary

Standard 16-1.1 limits the scope of the Standards.

Standard 16-1.1(a)

DNA evidence is found in all living things, including plants, animals, and viruses, the DNA of which have all been the subject of criminal litigation. Sources of DNA include blood, semen, hair, bones, saliva, sweat, and dandruff. DNA evidence may be obtained by taking a sample of such a source directly from a person, or by taking it from a place in or thing on which it has been deposited. Extraction of the DNA from the sample is the first step in analyzing DNA evidence.

Standard 16-1.1(b)

The decision to exclude from coverage other kinds of biological evidence, such as fingerprints or microscopic hair and fiber comparisons, was not based on the view that standards were not suitable or necessary in these other areas, but rather because the extraordinary capability of DNA evidence to inculpate and exonerate, and the particularized issues that arise in collecting, gathering, and testing DNA evidence, made a set of standards devoted exclusively to DNA appropriate. Nonetheless, the

principles embodied in the Standards might well also be applied to other types of biological evidence, as well as to evidence derived from other forensic sciences, such as firearms identification.

**STANDARD 16-1.2  GENERAL PRINCIPLES**

(a) Consistent with rights of privacy and due process, DNA evidence should be collected, preserved, tested, and used when it may advance the determination of guilt or innocence.

(b) DNA evidence should be collected, preserved and tested, and the test results interpreted, in a manner designed to ensure the highest degree of accuracy and reliability.

(c) The policies and procedures employed for testing DNA evidence should be available for public inspection.

(d) Test results and their interpretation should be reported and presented in an accurate, fair, complete, and clear manner.

(e) A person charged with or convicted of a crime should be provided reasonable access to relevant DNA evidence and, if it has been tested, to the test results and their interpretation.

(f) The collection and preservation of, access to, and use of DNA evidence should be regulated to prevent inappropriate intrusion on privacy rights.

(g) Funding necessary to achieve these principles should be provided.

**Commentary**

Standard 1.2 sets forth general principles, which are generally directed to assuring the reliability in the testing and interpretation of DNA evidence, providing transparency in the process (from research to trial), protecting privacy to the extent practicable, and affording due process.

*Truth-seeking.* As a guiding principle, the criminal justice system should take advantage of the power of DNA evidence to advance the truth-determining function of criminal trials. Other types of evidence – eyewitness identifications, testimony from accomplices and jailhouse informants, and even some confessions – have led to the conviction of

26 See Julia Preece, *Rape Victims’ Eyes Were Covered, but a Key Clue Survived*, N.Y. TIMES, April 28, 2005, at A23 (reporting the linking of a man by DNA to 25 rapes over more than 30 years).
In cases in which identification is the key issue, DNA evidence, when properly obtained, analyzed and used, can provide more trustworthy evidence of guilt or innocence.28

Reliability. To take advantage of DNA's capabilities, biological evidence must be collected, preserved, tested, and interpreted in a manner designed to ensure the highest degree of accuracy and reliability. For the same reason, test results should be reported and presented in an accurate, fair, complete, and clear manner.

Although courts use the terms "validity" and "reliability" interchangeably, the terms have distinct meanings in scientific disciplines. "Validity" refers to the ability of a test to measure what it is supposed to measure – its accuracy. "Reliability" refers to whether the same results are obtained in each instance in which the test is performed – its consistency. Validity includes reliability, but the converse is not necessarily true. The Supreme Court acknowledged this distinction in Daubert v. Merrell Dow Pharmaceuticals, Inc.,29 declaring that its concern was "evidentiary reliability – that is, trustworthiness."

Transparency. Public confidence in DNA technology is greatly increased if the policies and procedures governing DNA testing are open to inspection by the public, the press, the scientific community, and the legal profession.30 According to the National Academies 1992 DNA Report, "Because the application of DNA typing in forensic science is to


28 See supra notes 5-10 and accompanying text (Introduction).


30 See State v. Schwartz, 447 N.W.2d 422, 427-28 (Minn. 1989) ("The validity of testing procedures and principles is assessed in the scientific community by publishing the data in peer review journals. The TWGDAM, FBI and CACLD standards stress that publication of a laboratory's work product and data used in DNA analysis, as well as independent replication and validation studies, are essential prerequisites to reliability. Efforts to assess the reliability of the commercial laboratories' methodology consequently have been hindered because this information has not yet been made fully available. For example, Cellmark has not yet published data regarding its methodology and its probes are only selectively available."); State v. Alt, 504 N.W.2d 38, 48-49 (Minn. Ct. App. 1993) ("Alt argues the FBI DNA test results are inadmissible because the FBI does not allow members of the scientific community general access to its data bases. . . We are troubled by Alt's allegations of denial of access to the FBI data bases.").
be used in the service of justice, it is especially important for society to establish mechanisms for accountability and to ensure appropriate public scrutiny.\textsuperscript{31} Moreover, the DNA Identification Act requires "publicly available standards."\textsuperscript{32}

**Due Process.** The use of DNA as evidence presents numerous issues of fundamental fairness. Pretrial discovery,\textsuperscript{33} the right to retest evidence,\textsuperscript{34} and access to defense experts\textsuperscript{35} are but a few of them. While some of these issues have been considered in prior ABA standards, their application in this context often raises new issues.

**Privacy.** Because DNA contains a person's genetic code, privacy rights are a primary concern.\textsuperscript{36} The National Academies' 1992 DNA Report noted these concerns, citing developments in both molecular biology and computer technology.\textsuperscript{37} James Watson, one of the discoverers of the double helix structure of DNA, commented:

> A DNA sample taken for fingerprinting purposes can, in principle, be used for a lot more than merely proving identity: it can tell you a lot about me — whether I carry mutations for disorders like cystic fibrosis, sickle-cell disease, or Tay-Sachs disease. Some time in the not so distant future, it may even tell you whether I carry the genetic variations predisposing me to

\textsuperscript{31} NRC I, supra note 22, 162.

\textsuperscript{32} 42 U.S.C.A. § 14132(b)(1) (West 2005).

\textsuperscript{33} See Standard 16-4.1.

\textsuperscript{34} See Standard 16-4.2.

\textsuperscript{35} See Standard 16-4.3.

\textsuperscript{36} See ABA House Delegate Resolution No. 115 (August 2000) ("appropriate scientific and privacy standards should be developed to guide the preservation of biological evidence"). For a comprehensive discussion of privacy interests, see DNA AND THE CRIMINAL JUSTICE SYSTEM (David Lazer ed., 2004) (providing a wide range of views on the subject).

\textsuperscript{37} NRC I, supra note 22, at 114:

Molecular geneticists are rapidly developing the ability to diagnose a wide variety of inherited traits and medical conditions. The list already includes simply inherited traits, such as cystic fibrosis, Huntington's disease, and some inherited cancers. In the future, the list might grow to include more common medical conditions, such as heart disease, diabetes, hypertension, and Alzheimer's disease. Some observers even suggest that the list could include such traits as predispositions to alcoholism, learning disabilities, and other behavioral traits (although the degree of genetic influence on these traits remains uncertain).
schizophrenia or alcoholism — or traits even more likely to disturb the peace. Might the authorities, for instance, one day subject me to a more intensive scrutiny than would otherwise be the case simply because I have a mutation in the monoamine oxidase gene that reduces the activity of the enzyme? Some research suggests that this mutation may predispose me to antisocial behavior under certain circumstances. Could genetic profiling indeed become a new tool for preemptive action in law enforcement? Philip K. Dick’s 1956 story (which inspired the 2002 movie) “The Minority Report” may not be such far-fetched science fiction as we like to imagine.38

Moreover, “familial” searching of databases may lead to the identification of persons who are not in any database (e.g., relatives).39 Some commentators have argued that DNA resembles medical records and deserves the same type of protection.40 The initial seizure or collection of a DNA sample from a person raises personal privacy issues, and the later use of that DNA raises informational privacy issues. A balancing of interests is required.

The Fourth Amendment sets only the baseline in this context. In Skinner v. Railway Labor Executives’ Ass’n,41 which involved a drug testing program, the Supreme Court wrote that “it is obvious that this physical intrusion, penetrating beneath the skin, infringes an expectation

40 See George J. Annas, Genetic Privacy, in DNA AND THE CRIMINAL JUSTICE SYSTEM 135, 136 (David Lazer ed., 2004) (“The DNA molecule itself can be viewed as a new form of medical record. . . . But DNA sequence information contains information beyond an individual’s medical history and current health status. DNA also contains information about the individual’s future health risks and in this sense is analogous to a probabilistic, coded ‘future diary.’”).
of privacy that society is prepared to recognize as reasonable. Similarly, in Ferguson v. City of Charleston, the Court wrote that the "reasonable expectation of privacy enjoyed by the typical patient undergoing diagnostic tests in a hospital is that the results of those tests will not be shared with nonmedical personnel without her consent. Nevertheless, other decisions by the Court do not support broad claims of informational privacy.

Some of the most difficult problems that arise with DNA evidence are new. For example, it may be impossible to function in a free society without inadvertently leaving behind trace amounts of DNA in public places: "[W]ithout giving it a thought, we all leave trails of DNA behind as we move through the world. New York police have taken a DNA sample from a suspect's 'abandoned' coffee cup and from saliva that a homeless man spit on the street. . . . In Chicago, police pocketed the butt of a cigarette they supplied to a suspect during an interrogation."
Describing such DNA as "abandoned," as some courts have done, is misleading both as a matter of constitutional law and as a matter of language; indeed, one scholar has argued that the recovery of such "abandoned" DNA is more accurately described as "covert involuntary DNA sampling." Under Fourth Amendment jurisprudence, the issue is whether people have a reasonable expectation of privacy in their DNA in this context, and this question cannot be resolved simply by asserting that people "abandon" their DNA. No one can leave home without shedding DNA; a DNA profile can be developed from dandruff. The question becomes: "What privacy expectations should people in a free society have in their genetic profiles?" While the Standards do not address the collection of such DNA evidence, Standard 16-8.2(d) prohibits including profiles derived from this type of collection in databases.

**Funding.** The underfunding of crime labs in this country is chronic. A USA Today survey concluded: "Evidence that could imprison the guilty or free the innocent is languishing on shelves and piling up in refrigerators of the nation's overwhelmed and underfunded crime labs."

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47 See, e.g., People v. LaGuerre, 815 N.Y.S.2d 211 (App. Div. 2006) ("The police did not violate the defendant’s rights under the 14th Amendment to the United States Constitution when they lawfully retained the piece of chewing gum, because the defendant freely discarded and abandoned it inside a cup that he handed to a police detective during the supposed taste test.").


49 In California v. Greenwood, 486 U.S. 35 (1988), the Supreme Court held that people do not have a reasonable expectation of privacy in garbage placed on a tree lawn. Some state supreme courts have disagreed as a matter of state constitutional law. See also 3 WAYNE R. LAFAVE, SEARCH AND SEIZURE § 2.6(c) (4th ed. 2004).

50 See JAMES D. WATSON & ANDREW BERRY, DNA: THE SECRET OF LIFE 231 (2004) ("Every day each of us sloughs off a vast number of dead skin cells, showering our DNA into the environment to wind up we know not where. [One procedure] is so sensitive that it can act upon a single molecule . . . .").

51 See NATIONAL ADVISORY COMM’N ON CRIMINAL JUSTICE STANDARDS AND GOALS, REPORT ON POLICE 304 (1974) ("Too many police crime laboratories have been set up on budgets that preclude the recruitment of qualified, professional personnel."); PRESIDENT’S COMM’N ON LAW ENFORCEMENT AND ADMINISTRATION OF JUSTICE, THE CHALLENGE OF CRIME IN A FREE SOCIETY 255 (1967) ("The great majority of police department laboratories have only minimal equipment and lack highly skilled personnel able to use the modern equipment now being developed.").
In one case, a suspected serial rapist was released "because it was going to take months to get the DNA results needed to prove the [ ] case. Weeks later, [the suspect] raped victim No. 4 as she slept in her home. When the DNA tests finally came back – 18 months after samples first went to the lab – a jury convicted [the suspect] of all four rapes."

The Office of Technology Assessment 1990 Report on DNA contained the following statement: "Most agree that crime laboratories and forensic sciences research that supports technology transfer to crime laboratories are underfunded. Increasingly, indications are that crime laboratories are experiencing difficulties managing the steadily rising influx of casework." The 1992 National Academies report noted: "The National Institute of Justice (NIJ) does not appear to receive adequate funds to support proper education, training, and research in the field of forensic DNA typing. The level of funding should be re-evaluated and increased appropriately." Subsequently, the federal government increased funding. The validity of forensic evidence depends on funding for facilities, equipment, and personnel as well as for the accreditation, certification, and standardization recommendations made in this report. While funding has improved, it still remains a concern.


NRC I, supra note 22, at 17.

On March 11, 2003, the Attorney General of the United States announced the President's DNA initiative, entitled "Advancing Justice Through DNA Technology." This initiative proposes over $1 billion in funding for FY '04 through FY '08 to reduce casework and database backlogs in DNA laboratories, to improve the DNA analysis capacity of public laboratories, to support training, and to assist research and development. The Justice for All Act appropriated additional funds.
PART II: COLLECTING, PRESERVING AND USE OF DNA EVIDENCE

STANDARD 16-2.1 COLLECTING DNA EVIDENCE FROM A CRIME SCENE OR OTHER LOCATION

(a) Whenever a serious crime appears to have been committed and there is reason to believe that DNA evidence relevant to the crime may be present at the crime scene or other location, that evidence should be collected promptly.

(b) Whenever DNA evidence is to be collected by law enforcement, a law enforcement officer or other official forensic investigator properly trained in the identification, collection, and preservation of DNA evidence should be dispatched to the location and, following written guidelines, should identify, collect, and preserve that evidence, taking reasonable care to ensure that the collection is representative of all relevant DNA evidence present; and

(c) If a defendant has been charged with the crime under investigation and the defendant’s attorney or investigator is denied access to a crime scene or other location after completion of law enforcement’s investigation at the scene or location, the defendant should be permitted to seek a court order to allow the defendant’s attorney or investigator reasonable access to the location and permit a representative of the defendant’s attorney properly trained in the identification, collection, and preservation of DNA evidence to collect DNA evidence.

Commentary

Finding biological evidence and then properly collecting and preserving it are the critical first steps in the use of DNA profiling.

Standard 16-2.1(a)

DNA evidence might be left behind in crimes ranging in seriousness from spitting on the sidewalk to homicide, but exhaustive collection in all cases is neither feasible nor affordable. As DNA databases become more extensive and collection becomes easier, the collection of biological samples in property crimes, such as car theft, may become
commonplace. For example, "low-copy" testing (which requires as few as six cells to develop a profile) is in the pipeline. Therefore, while the Standard calls for DNA evidence to be collected in "serious" crimes, it leaves it to individual jurisdictions to determine which crimes fall in this category, and does not preclude collection in crimes that fall outside this category, should resources permit.

Standard 16-2.1(b)

All the sophisticated scientific procedures and instrumentation associated with DNA profiling will be of no avail if biological evidence is not collected, and the police will frequently have only one opportunity to collect it. Similarly, the power of DNA evidence will be undercut if it is not collected properly. In addition, a defendant's due process rights are implicated when potentially exculpatory evidence is not recovered.

The Standard assumes that law enforcement officers are lawfully present at the location where the evidence is collected and have


57 See generally Ray A. Wichelen, Trace DNA: A Review, Discussion of Theory, and Application of the Transfer of Trace Quantities of DNA Through Skin Contact, 47 J. FORENSIC SCI. 442 (2002).

58 Bashinski & Peterson, supra note 56, at 568 ("Obviously, the laboratory cannot work on samples that have not been recognized as significant at the scene and therefore have been irretrievably lost.

59 See Arizona v. Youngblood, 488 U.S. 51 (1988); California v. Trombetta, 467 U.S. 479, 489 (1984) ("To meet this standard of constitutional materiality, ... [the] evidence must both possess an exculpatory value that was apparent before the evidence was destroyed, and be of such a nature that the defendant would be unable to obtain comparable evidence by other reasonably available means."). See also Barbara Whiteaker, DNA Frees Inmate Years After Justices Rejected Plea, N.Y. TIMES, Aug. 11, 2000, at A12 (discussing Youngblood's release from prison due to DNA testing). See generally 1 PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, SCIENTIFIC EVIDENCE ch. 3 (4th ed. 2007) (discussing the right to the preservation of evidence).

60 See Michigan v. Tyler, 436 U.S. 499, 508, 510 (1978) ("As a general matter, ... official entries to investigate the cause of a fire must adhere to the
lawfully seized the evidence.\textsuperscript{61} Three important requirements appear in the Standard. First, persons collecting the evidence need to be properly trained.\textsuperscript{62} Second, since all evidence cannot be collected, a representative sample of the evidence should be. Third, collection should be accomplished pursuant to written guidelines.\textsuperscript{63} The proper processing of a crime scene is not something that can be done without advanced planning.\textsuperscript{64} The phrase "other official forensic investigator" covers non-law enforcement personnel, including medical examiner, coroner, and emergency medical service personnel, as well as hospital nurses collecting evidence for rape kits.

In addition to authorizing the collection of biological evidence that appears relevant to the offense from crime scenes, the Standard


\textsuperscript{62} See Bashinski & Peterson, supra note 56, at 568 ("Managing a crime scene search is a challenging task. Most crimes produce some type of physical evidence, but it is neither practical nor desirable for the police to attempt to collect and store all of it. (Nor is it necessary or possible for the crime laboratory to examine all of the evidence the police collect.) The task of the police department is to maximize its resources by gathering (and analyzing) physical evidence that will be most useful in solving crimes and in assisting with successful prosecution of offenses having the highest priority.").

\textsuperscript{63} See ABA STANDARDS FOR CRIMINAL JUSTICE, URBAN POLICE FUNCTION (2d ed. 1979) (discussing written guidelines).

\textsuperscript{64} See Dep’t of Justice, CRIME SCENE INVESTIGATION: A GUIDE FOR LAW ENFORCEMENT 28 (2000) ("Evidence at crime scenes that is in the process of documentation, collection, preservation, or packaging should be handled with attention to scene integrity and protection from contamination or deleterious change. During the processing of the scene, and following documentation, evidence should be appropriately packaged, labeled, and maintained in a secure, temporary manner until final packaging and submission to a secured evidence storage facility or the crime laboratory."); Dep’t of Justice, NATIONAL GUIDELINES FOR DEATH INVESTIGATIONS 20 (1997) ("It is essential to maintain a proper chain of custody for evidence. Through proper documentation, collection, and preservation, the integrity of the evidence can be assured. A properly maintained chain of custody and prompt transfer will reduce the likelihood of a challenge to the integrity of the evidence.").
authorizes its collection from other locations – for example, a bloody shirt found at a suspect’s residence.65

Standard 16-2.1(c)

Standard 16-2.1(c) recognizes a defendant’s right of access to a crime scene or other location. ABA Discovery Standards presently authorize such access,66 as do many procedural rules.67 The same requirements apply when defense investigators collect and preserve biological samples – i.e., that the evidence be collected by qualified personnel, according to written guidelines, and in a manner designed to obtain representative samples.

Once a crime scene involving private property has been released by law enforcement, the privacy rights of the owners are implicated, and a court order is the appropriate vehicle for balancing conflicting rights.68 Standard 16-2.1(c) does not imply that a crime scene should be preserved until someone is arrested.

STANDARD 16-2.2 JUDICIAL ORDER FOR COLLECTING DNA SAMPLES FROM A PERSON

(a) A DNA sample should not be collected from the body of a person without that person’s consent, unless authorized by a search warrant or by a judicial order as provided in subdivision (b) of this standard.

(b) Except in exigent circumstances, a judicial order for collecting a DNA sample from the body of a person should be issued only upon notice and after an opportunity for a hearing at which the person has a right to counsel, including the right to appointed counsel if the person is indigent.

65 This Standard does not deal with so-called “abandoned” samples. See supra notes 46-50 and accompanying text.
66 See ABA STANDARDS FOR CRIMINAL JUSTICE, DISCOVERY, Standard 11-2.1(a)(v) (3d ed. 1996) (prosecution disclosure; right of inspection of “buildings” and “places” which “pertain” to the case); id. Standard 11-3.1(a)(ii) (entry upon property owned or controlled by person not parties to the case).
67 E.g., FED. R. CRIM. P. 16(a)(1)(E) (inspection of objects, buildings, and places).
(i) If the person from whom the sample is to be collected is suspected of committing a crime, an order should issue only upon an application demonstrating:

(A) probable cause that a serious crime has been committed, and

(B) if the sample is to be collected from a person is:

(1) a sample collected by a physically noninvasive means, reasonable suspicion that the person committed the crime charged; and

(2) a sample collected by physically invasive means, probable cause that the person committed the crime charged; and

(C) that the sample will assist in determining whether the person committed the crime.

(ii) If the person from whom the sample is to be collected is not suspected of committing a crime, an order should issue only upon an application demonstrating:

(A) probable cause that a serious crime has been committed; and

(B) that a sample is necessary to establish or eliminate that person as a contributor to or source of the DNA evidence or otherwise establishes the profile of a person who may have committed the crime, either because there is reason to believe that the person has contributed to or been the source of the DNA evidence, or for other good cause shown that the sample of that particular person is necessary for that purpose.

Commentary

Standard 16-2.2(a)

As an alternative to using a search warrant to obtain a DNA sample from a suspect, Standard 16-2.2 authorizes the issuance of a judicial order upon notice to the suspect, unless exigent circumstances require otherwise. The Standard also provides that at the hearing, "the person has a right to counsel, including the right to appointed counsel if the person is indigent." Under certain circumstances, the Standard also contemplates issuing court orders to someone who is not a suspect.
The judicial-order approach is superior to alternative procedures, such as dragnets and the surreptitious collection of so-called “abandoned” DNA, because the decision whether to issue the order is made on notice (absent exigent circumstances), on the record, in open court, and by a neutral and detached magistrate. Counsel is provided as another safeguard, both to explain the proceedings to the person subject to the order and to assert that person’s rights. The Standard explicitly recognizes the availability of search warrants for the purpose of obtaining biological evidence. However, the issuance of a judicial order on notice and after a hearing is also superior to the usual ex parte procedure applicable to the issuance of a search warrant. In this context, an ex parte procedure is generally not required because genetic markers, unlike blood-alcohol content, remain constant. Examples of exigent circumstances that would excuse the notice requirement include situations where there is a risk of flight or where a child is missing.

Standard 16-2.2(b)(i)

Standard 16-2.2 permits the issuance of a judicial order to obtain biological samples such as blood or saliva from a suspect — with several

69 Dragnets are discussed under Standard 2.4 (Collecting DNA Samples from Persons in a Group by Consent).

70 Concerning so-called “abandoned” samples, see supra notes 46-50 and accompanying text.

71 The constitutional right to counsel may not have attached at this point. See Fellers v. United States, 540 U.S. 519, 523 (2004); Kirby v. Illinois, 406 U.S. 682, 689 (1972) (right to counsel attaches only after the “initiation of adversary judicial criminal proceedings — whether by way of formal charge, preliminary hearing, indictment, information, or arraignment”).

72 See Schmerber v. California, 384 U.S. 757 (1966) (because the alcohol content of blood diminishes with the passage of time, the Court recognized an “emergency” exception to the warrant requirement, which was necessary to preclude the destruction of evidence).

73 Cf. Cupp v. Murphy, 412 U.S. 291, 296 (1973) (circumstances “justified the police insubjecting him to the very limited search necessary to preserve the highly evanescent evidence they found under his fingernails”).

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safeguards. DNA may be collected from a suspect in a non-invasive manner (e.g., saliva samples\textsuperscript{74}) if there is “reasonable suspicion” that the suspect committed the crime, and in an invasive manner (e.g., blood samples) if there is “probable cause” that the suspect did so. In either instance there must be probable cause that a serious crime has been committed.\textsuperscript{75} In contrast, of course, a search warrant directing the collection of a DNA sample must be issued based upon a showing of probable cause both: (1) that a crime was committed; and (2) that the suspect committed it, regardless of the intrusiveness of the means by which the sample is obtained.\textsuperscript{76} In sum, Standard 2.2 applies a lesser standard for non-invasive procedures (i.e., reasonable suspicion) only to the requisite showing that the suspect committed the crime.

A number of jurisdictions have enacted or adopted comparable provisions, known as “nontestimonial orders,”\textsuperscript{77} based on dicta

\textsuperscript{74} A saliva sample is obtained by means of a buccal swab, that is, by simply swabbing the interior of the person’s cheek. Another non-invasive means of collecting a sample is by placing an adhesive pad on the surface of a person’s skin and then pulling it away. Other comparably non-invasive means may yet be developed.

\textsuperscript{75} The rules of evidence would not apply and thus hearsay would be admissible, as in the case of search warrants.

\textsuperscript{76} See Paul C. Giannelli & Edward J. Imwinkelried, Scientific Evidence § 2-4(B) (4th ed. 2007).

\textsuperscript{77} The named derives from Fifth Amendment jurisprudence. The privilege against self-incrimination is limited to testimonial statements and thus does not extend to biological evidence. See Schmerber v. California, 384 U.S. 757, 764 (1966) (“The distinction which has emerged, often expressed in different ways, is that the privilege is a bar against compelling ‘communications’ or ‘testimony,’ but that compulsion which makes a suspect or accused the source of ‘real or physical evidence’ does not violate it.”). See generally Charles H. Whitebread & Christopher Sloboedin, Criminal Procedure ch. 15 (4th ed. 2000).
in *Davis v. Mississippi*\(^7^8\) and *Hayes v. Florida*,\(^7^9\) both of which involved fingerprints: Alaska,\(^8^0\) Arizona,\(^8^1\) Colorado,\(^8^2\)

\(^7^8\) 394 U.S. 721 (1969). The Court wrote:

> Detentions for the sole purpose of obtaining fingerprints are no less subject to the constraints of the Fourth Amendment. It is arguable, however, that, because of the unique nature of the fingerprinting process, such detentions might, under narrowly defined circumstances, be found to comply with the Fourth Amendment even though there is no probable cause in the traditional sense. . . .

Detention for fingerprinting may constitute a much less serious intrusion upon personal security than other types of police searches and detentions. Fingerprinting involves none of the probing into an individual's private life and thoughts that marks an interrogation or search. Nor can fingerprint detention be employed repeatedly to harass any individual, since the police need only one set of each person's prints. Furthermore, fingerprinting is an inherently more reliable and effective crime solving tool than eyewitness identifications or confessions and is not subject to such abuses as the improper lineup and the "third degree." Finally, because there is no danger of destruction of fingerprints, the limited detention need not come unexpectedly or at an inconvenient time. For this same reason, the general requirement that the authorization of a judicial officer be obtained in advance of detention would seem not to admit of any exception in the fingerprinting context.

We have no occasion in this case, however, to determine whether the requirements of the Fourth Amendment could be met by narrowly circumscribed procedures for obtaining, during the course of a criminal investigation, the fingerprints of individuals for whom there is no probable cause to arrest. . . .

\(^7^9\) 470 U.S. 811, 817 (1985) (noting that it had "not abandon[ed] the suggestion in Davis ... that under circumscribed procedures, the Fourth Amendment might permit the judiciary to authorize the seizure of a person on less than probable cause and his removal to the police station for the purpose of fingerprinting"). See also *Kaupp v. Texas*, 538 U.S. 626, 630 n.2 (2003) ("We have ... left open the possibility that, 'under circumscribed procedures,' a court might validly authorize a seizure on less than probable cause when the object is fingerprinting") (quoting *Hayes*).

\(^8^0\) *Alaska R. Crim. P.* 16(c)(2) (discovery rule).


\(^8^2\) *Colo. R. Crim. P.* 41.1. See also *Colo. R. Crim. P.* 41.1(c)(2) ("reasonable grounds, not amounting to probable cause to arrest, to suspect that the person ... committed the offense").
Idaho, Iowa, Nebraska, North Carolina, Utah, and Vermont. With one exception, these provisions do not require probable cause. In addition, the American Law Institute and the Commissioners on Uniform State Laws have promulgated comparable provisions. ABA

83 Idaho Code § 19-625 (2004). See also Idaho Code § 19-625(B) (2004) ("[r]easonable grounds exist, which may or may not amount to probable cause, to believe that the ... individual committed the criminal offense").


88 Vt. R. Crim. P. 41.1. See also Vt. R. Crim. P. 41.1(c)(2) ("reasonable grounds ... to suspect").

89 See supra note 85. One of the statutes is limited to lineups. See supra note 87.

90 Model Code of Pre-Arraignment Procedure art. 170 (Official Draft 1975). The ALI commentary states:

A strict adherence to the standard of probable cause for detentions to conduct identification procedures not only hinders the police in their efforts to gather evidence, but also encourages them to use arrests in cases where there may not be reasonable [probable] cause. In many cases the police have sufficient evidence to justify a lawful arrest, yet further investigation is called for before a decision to institute criminal proceedings is warranted. Since, under generally prevailing law, sufficient grounds to arrest are required to obtain identification evidence, the police may arrest before conducting such procedures and then determine whether to charge the suspect with the crime. If, as a result of the evidence obtained from such post-arrest procedures, the suspect is found to be innocent of the crime under investigation and released without further judicial proceedings, he still has an arrest on his record.

Id., cmt. at 462.


92 A federal rule was proposed in 1971 but never adopted. Fed. R. Crim. P. 41.1 (Proposed Draft), 52 F.R.D. 462 (1971). "[T]he committee believes that before a procedural rule on this subject is recommended to the Supreme Court, the committees and the Conference should have the benefit of more experience with such procedure in the states and in the District of Columbia and of judicial consideration of the Constitutional questions involved." United States v. Holland, 552 F.2d 667, 674 (5th Cir. 1977) (quoting Report of the Proceedings
Discovery Standard 3.1 is sometimes cited as also providing for nontestimonial orders.\footnote{of the Judicial Conference), mandate aff’d, opinion withdrawn, 565 F.2d 383 (5th Cir. 1978). Federal legislation on the subject was also introduced but not enacted.}

\footnote{The issue, however, appears more complex. ABA Discovery Standard 3.1 is a discovery standard, not a general investigatory rule, as are most of the state provisions. Nevertheless, it permits a prosecutor or defendant to obtain blood and saliva samples from third parties. It does not, however, specify a standard other than “reasonableness.” The Commentary provides: “To grant such a request, the court must first find that the proposed procedure is reasonable and will not involve an undue intrusion of the body or affront to the person’s dignity. For example, requiring persons to provide fingerprints, photos, handwriting or voice exemplars, or other evidence of outward appearance are procedures which are held to be reasonable and non-intrusive. Other procedures may involve greater intrusions, but may nonetheless be considered reasonable if the evidence sought is highly material.” ABA STANDARDS FOR CRIMINAL JUSTICE, DISCOVERY AND TRIAL BY JURY 57 (3d ed. 1996). The Commentary cites Winston v. Lee, 470 U.S. 753, 760 (1985), noting that “[a] finding of ‘reasonableness’ for such bodily searches may be required by the Fourth Amendment.” Winston v. Lee involved the surgical removal of a bullet from a suspect for the purpose of firearms (ballistics) identification. According to the Court:

The reasonableness of surgical intrusions beneath the skin depends on a case-by-case approach, in which the individual’s interests in privacy and security are weighed against society’s interests in conducting the procedure. In a given case, the question whether the community’s need for evidence outweighs the substantial privacy interests at stake is a delicate one admitting of few categorical answers.

The Court relied principally on two factors to determine that surgery would be unconstitutional in Winston v. Lee. First, the Court referred to the risk to the defendant’s health as a “crucial factor.” For example, “a search for evidence of a crime may be unjustifiable if it endangers the life or health of the suspect.” The Court later noted that the record showed uncertainty about the medical risks involved. Second, the Court found that the prosecution’s need for the evidence was not compelling. There was substantial additional evidence that could be introduced to establish the defendant’s guilt; the victim had made a positive and spontaneous identification of the accused, and the accused had been found near the scene of the crime, with a bullet wound, soon after its commission.}
State courts have generally upheld the constitutionality of these statutes under the Fourth Amendment — for example, Arizona, Colorado, Iowa, and Vermont. A number of law review

94 However, the Nebraska Supreme Court construed its statute to require probable cause in order to avoid any constitutional issues. State v. Evans, 338 N.W.2d 788, 794 (Neb. 1983) (probable cause required for fingerprints and palmprints).

95 See State v. Grijalva, 533 P.2d 533, 536 (Ariz. 1975) (en banc) ("The degree of intrusion into the person's privacy is relatively slight. Photographs, more so than fingerprints, involve none of the probing that the Davis court found to mark a search of an unreasonable nature. Similarly, clipping several head hairs is only the slightest intrusion upon the body, if any at all, and does not constitute anything unreasonable."). See also State v. Via, 704 P.2d 238 (Ariz. 1985); Long v. Garrett, 527 P.2d 1240 (Ariz. Ct. App. 1974) (handwriting exemplar).

96 See People v. Madson, 638 P.2d 18, 37 (Colo. 1981) (en banc) (handwriting exemplars; "These cases suggest that limited intrusions into privacy on less than probable cause are reconcilable with Fourth Amendment guarantees when the following conditions exist. First, there must be an articulable and specific basis in fact for suspecting criminal activity at the outset. Second, the intrusion must be limited in scope, purpose and duration. Third, the intrusion must be justified by substantial law enforcement interests. Last, there must be an opportunity at some point to subject the intrusion to the neutral and detached scrutiny of a judicial officer before the evidence obtained therefrom may be admitted in a criminal proceeding against the accused."). See also People v. Davis, 669 P.2d 130, 133-35 (Colo. 1983) (nontestimonial order for photographs, fingerprints, and voice exemplar based on informant's tip upheld); People v. Harris, 729 P.2d 1000, 1002 (Colo. Ct. App. 1986), aff'd, 762 P.2d 651 (Colo. 1988).

97 See Bousman v. Iowa Dist. Court for Clinton County, 630 N.W.2d 789, 800 (Iowa 2001) ("A nontestimonial identification order issued pursuant to chapter 810 must be constitutionally reasonable. This requirement means that the order must be supported by reasonable grounds to suspect that the subject of the order committed the crime under investigation. Probable cause to believe that the subject of the order actually committed the crime is not necessary.").

98 See In re Non-Testimonial Identification Order Directed to R.H., 762 A.2d 1239, 1247 (Vt. 2000) ("We recognize that the decisions of the United States Supreme Court have involved the narrow question of obtaining fingerprints. We conclude that the basic elements of saliva sampling for DNA are similar to the characteristics of fingerprinting as described in Davis. Like fingerprinting, saliva sampling involves no intrusion into a person's life or thoughts; it can not be used repeatedly to harass; it is not subject to abuses like the improper line-up or the third degree. DNA comparison 'is an inherently
commentaries have addressed the subject, most before the advent of DNA evidence. Several scholars have looked at the issue, generally approving such procedures. One leading Fourth Amendment expert, Professor LaFave, has written: "As a general proposition, it may be said that the procedures contemplated by the Davis-Hayes dictum do not violate the Fourth Amendment." Similarly, the ALI drafters concluded that "it appears likely that the inclusion of such orders would be upheld."

Several courts have considered the use of grand jury subpoenas to obtain biological samples. Unlike handwriting and voice exemplars, more reliable and effective crime-solving tool than eyewitness identifications or confessions." (quoting Davis).


The DNA articles include: Angus J. Dodson, Comment, DNA "Line-Ups" Based on a Reasonable Suspicion Standard, 71 U. COLO. L. REV. 221, 253-54 (2000) (arguing that DNA sampling and profiling are "closely analogous to fingerprinting" and should be permitted under Davis standard); Clare M. Tande, Note, DNA Typing: A New Investigatory Tool, 1989 DUKE L.J. 474.


MODEL CODE, supra note 90, cmt. at 483.

both federal\textsuperscript{105} and state\textsuperscript{106} courts require a greater justification when a grand jury subpoena for blood and saliva samples is sought. This Standard should make resort to a grand jury subpoena or search warrant for the purpose of obtaining biological evidence often unnecessary. If a search warrant is sought, probable cause would be required.

\textsuperscript{105} See \textit{In re} Shabazz, 200 F. Supp. 2d 578, 584-85 (D.S.C. 2002) ("[A]lthough a showing of probable cause is not necessary, the grand jury subpoena duces tecum requiring a saliva swab must be based on reasonable individualized suspicion that Petitioner was engaged in criminal wrongdoing."); \textit{In re} Grand Jury Proceedings re Vickers, 38 F. Supp. 2d 159, 165-66 (D.N.H. 1998) ("[A] grand jury subpoena compelling a citizen to provide saliva samples does implicate his or her Fourth Amendment rights. Therefore, it is necessary to balance the grand jury's legitimate interest in conducting a thorough investigation and obtaining relevant evidence against respondents' constitutionally protected interests, to determine whether what is effectively a search and seizure is, nevertheless, reasonable."); \textit{In re} Grand Jury Proceedings (T.S.), 816 F. Supp. 1196, 1205 (W.D. Ky. 1993) (holding that the use of a subpoena for this purpose is improper; a warrant based upon probable cause is required. According to this court, "[t]o allow the United States to use a Rule 17(c) subpoena for this purpose would abrogate T.S.'s Fourth Amendment rights and, thus, transform the subpoena into an instrument by which an illegal search and seizure is effectuated."); Henry v. Ryan, 775 F. Supp. 247 (N.D. Ill. 1991) (grand jury subpoena for blood and saliva samples must be based on reasonable suspicion).

\textsuperscript{106} See \textit{In re} May 1991 Will County Grand Jury, 604 N.E.2d 929, 936 (Ill. 1992) (probable cause requirement applies to blood and pubic hair exemplars); Commonwealth v. Williams, 790 N.E.2d 662, 669 (Mass. 2003) ("Presented with a petition from the grand jury, the judge must hold a hearing before deciding whether to order the extraction of the samples, and, as noted above, must be satisfied that there is a 'reasonable basis for believing' that the blood sample will 'significantly aid' the grand jury's investigation."); \textit{In re} Grand Jury Invest., 692 N.E.2d 56, 60 (Mass. 1998) (grand jury subpoena for blood samples subject to the reasonableness requirement, though not necessarily the probable cause requirement); Woolverton v. Multi-County Grand Jury, 859 P.2d 1112 (Okla. Crim. App. 1993) (as a matter of state law, a grand subpoena for blood samples requires probable cause). \textit{See also} Floralynn Einesman, \textit{Vampires Among Us: Does a Grand Jury Subpoena For Blood Violate the Fourth Amendment?}, 22 AM. J. CRIM. L. 327 (1995).
Standard 16-2.2(b)(ii)

Standard 16-2.2(b)(ii) concerns obtaining biological samples from non-suspects. Typically, elimination samples are provided voluntarily. This provision covers the rare situation where they are not.

The Standard would permit the issuance of a court order to a non-suspect if there is probable cause that a serious crime has been committed, and “a sample is necessary to establish or eliminate that person as a contributor to or source of the DNA evidence or otherwise establishes the profile of a person who may have committed the crime.”

The requirements of (i) and (ii) are somewhat anomalous: non-suspects have the same Fourth Amendments rights as suspects but reasonable suspicion is not required for non-suspects, since there can be, by definition, no reason to suspect such a person. Instead, the Standard requires “necessity” for the sample. Courts have ordered blood tests to resolve civil paternity actions, a somewhat similar

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107 In In re Jansen, 826 N.E.2d 186 (Mass. 2005), the Court held that a trial judge was authorized to issue a subpoena for a buccal swab of a third party. The indicted defendant claimed that Jansen, not he, was the rapist. A defense investigator secured bottles from Jansen’s trash and had them tested; the DNA matched the crime scene evidence. The Court found that the proposed test had “significant relevance and evidentiary value” of an exculpatory nature. Interestingly, the Court found that the Fourth Amendment was not implicated because the search was “private.”

108 In rape cases, biological evidence typically involves a mixture of semen and epithelial vaginal cells. Consequently, elimination samples from the victim are required. Similarly, elimination samples from the victim’s husband or other consensual sexual partners may be needed.

109 Standard 16-2.2(b)(ii). This Standard could be met, for example, if the DNA evidence collected at a crime scene appeared to include DNA contributed by more than one person, and determining the DNA profile of a non-suspect (perhaps the victim of the crime, or, in the case of a rape, a person who recently had consensual sex with the victim) would assist in determining which alleles in the DNA profile developed from the crime scene evidence had been contributed by the perpetrator of the crime.


111 See Doe v. Senechal, 725 N.E.2d 225 (Mass. 2000) (holding that patient made necessary showing that staff person’s paternity was “in controversy,” made the requisite showing of “good cause,” and buccal swab paternity test met the Fourth Amendment’s standard of reasonableness).
situation. In *Commonwealth v. Draheim*, the Supreme Judicial Court of Massachusetts ruled that the prosecution could obtain buccal samples from two children in a rape case: "[W]here the third parties are not suspects, in order to respect the third parties' constitutional rights, the Commonwealth must show probable cause to believe a crime was committed, and that the sample will probably provide evidence relevant to the question of the defendant's guilt. . . . Additional factors concerning the seriousness of the crime, the importance of the evidence, and the unavailability of less intrusive means of obtaining it are germane."

Current ABA Discovery Standard 11-3.1(a) permits such a procedure; the commentary notes that this type of procedure, although intrusive, "may nonetheless be considered reasonable if the evidence sought is highly material."

This provision should not be abused in order to obtain a sample from someone who is, in fact, suspected of a crime, but for whom there is insufficient evidence to constitute 'reasonable suspicion' that the person committed the crime.

Note that, according to Standard 16-8.2(a), discussed infra, profiles obtained from suspects and non-suspects under this Standard may not be entered into a database or compared with profiles in a database (i.e., by means of a keyboard search).

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112 See Margaret A. Berger, *Lessons from DNA: Restriking the Balance between Finality and Justice*, in *DNA AND THE CRIMINAL JUSTICE SYSTEM* 110, 117 (David Lazer ed., 2004) ("As yet there is virtually no law on obtaining elimination samples from third persons, or on the consequences of such a sample's not being available."); Cynthia Bryant, *When One Man's DNA Is Another's Exonerating Evidence: Compelling Consensual Sexual Partners of Rape Victims to Provide DNA Samples to Post-Conviction Petitioners*, 33 *COLUM. J. L. & SOC. POL'Y* 113 (2000).

113 849 N.E.2d 823 (Mass. 2006). See also *State v. Register*, 419 S.E.2d 771, 773 (S.C. 1992) (holding State could compel blood, hair, and saliva samples from third-party non-suspect where state showed probable cause crime committed by particular suspect and "a clear indication that material evidence relevant to the question of the suspect's guilt will be found").

114 849 N.E.2d at 829 (citing *In re Lavigne*, 641 N.E.2d 1328 (Mass. 1994)).

115 ABA STANDARDS FOR CRIMINAL JUSTICE, DISCOVERY, *supra* note 93, cmt. at 61.
STANDARD 16-2.3  JUDICIAL ORDER FOR DNA SAMPLES COLLECTED BY NON-LAW ENFORCEMENT ENTITIES

When a hospital, clinic, laboratory, or other non-law enforcement entity has collected a DNA sample from a person for a purpose other than a criminal investigation, law enforcement should not obtain or otherwise have access to that sample without the consent of the person who is the source of the sample, unless authorized by a judicial order under the conditions provided in Standard 16-2.2, or by search warrant.

Commentary

Noting that "a hospital, clinic, laboratory, or other non-law enforcement entity" may possess a person's DNA sample, Standard 16-2.3 would permit law enforcement to obtain it either by search warrant or by a court order issued under the same conditions required if the sample was to be taken directly from the person.

There are millions of biological samples in hospitals, pathology laboratories, blood banks, and physician offices. Nearly 300 million DNA samples sit in tissue repositories in the United States.\(^\text{116}\) In addition, the military collects DNA from all service members for purposes of human-remains identification.\(^\text{117}\)

Legal protections for these samples vary considerably in scope; these include state genetic privacy laws,\(^\text{118}\) federal legislation,\(^\text{119}\) and the

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\(^{116}\) Kaye & Smith, supra note 46, at 436 (citing 1 NAT'L BIOETHICS ADVISORY COMM'N, RESEARCH INVOLVING HUMAN BIOLOGICAL MATERIALS: ETHICAL ISSUES AND POLICY GUIDANCE 13 (1999)).

\(^{117}\) The Department of Defense has announced that its database can be used for criminal enforcement purposes, although it is available only under limited circumstances. R.C. Scherer, Mandatory Genetic Dogtags and the Fourth Amendment: The Need for a New Post-Skinner Test, 85 GEO. L.J. 2007, 2016 (1997).

\(^{118}\) See generally Patricia A. Roche & George J. Annas, DNA Testing, Banking, and Genetic Privacy, 355 NEW ENGLAND J. MED. 545 (2006).

\(^{119}\) See generally Kristen B. Rosati, Human Genetic Sampling and the HIPAA Privacy Standards, 45 JURIMETRICS J. 251 (2005).
physician-patient privilege.120 These protections, however, may not apply in criminal investigations. While a search warrant requires probable cause, grand jury subpoenas require neither reasonable suspicion nor probable cause. In Ferguson v. City of Charleston,121 the Supreme Court wrote that the “reasonable expectation of privacy enjoyed by the typical patient undergoing diagnostic tests in a hospital is that the results of those tests will not be shared with non-medical personnel without her consent.”122 Yet, the Court’s Fourth Amendment jurisprudence indicates that citizens have no legitimate privacy expectations when they disclose information to third parties, such as in their bank records.123

By making the protective language in Standard 16-2.2 applicable to obtaining DNA samples from hospitals or other non-law enforcement entities, this Standard explicitly prohibits law enforcement from bypassing Standard 2.2 by going to such an entity.

Standard 16-2.3 does not apply where a crime is committed in a hospital or other location and evidence is collected for that case, since in that instance the location is a “crime scene” within the meaning of Standard 16-2.1. Neither does it cover the situation where a suspect’s DNA is sought from a place where it was not purposefully collected—for example, when a suspect stays at another person’s house for a week and uses a hairbrush there. In that situation, the evidence has not been “collected” within the meaning of this Standard and the householder is not an “entity” within the meaning of this Standard. The house is, instead, “[a]n[other location]” within the meaning of Standard 16-2.1.

Note that, according to Standard 16-8.2(a), discussed infra, profiles obtained from suspects and non-suspects under this Standard may not be

122 Id. at 78.
123 United States v. Miller, 425 U.S. 435 (1976). See also Whalen v. Roe, 429 U.S. 589 (1977) (upholding prescription reporting requirement); but see Douglas v. Dobbs, 419 F.3d 1097, 1102 (10th Cir. 2005) (“Although we have not extended the ‘zone of privacy’ to include a person’s prescription records, we have no difficulty concluding that protection of a right to privacy in a person’s prescription drug records, which contain intimate facts of a personal nature, is sufficiently similar to other areas already protected within the ambit of privacy.”).
entered into a database or compared with profiles in a database (i.e., by means of a keyboard search).

**STANDARD 16-2.4 COLLECTING DNA SAMPLES FROM PERSONS IN A GROUP BY CONSENT**

A law enforcement officer should be permitted to obtain a DNA sample from a person by consent, except that:

(a) consent should not be sought from persons based primarily upon their membership in a constitutionally protected class;

(b) consent should not be sought from a large number of persons based on grounds other than individualized suspicion that each committed the crime under investigation unless seeking such consent has been authorized by the head of a law enforcement agency or the chief prosecutor in that jurisdiction; and

(c) when consent is sought as provided in subdivision (b) of this standard, each person should be informed of the reason for the request and of the right to refuse it, and the consent should be obtained in writing.

**Commentary**

The Standards generally recognize that DNA samples can be collected by consent, as well as by court order\(^ {124} \) and, in most cases, leave to Fourth Amendment case law the requirements for consent. Under the Fourth Amendment, consent to search must be non-coercive.\(^ {125} \) A person need not be informed of the right to refuse consent as a matter of federal constitutional law – i.e., *Miranda*-type warnings are not required. Nor need consent be “informed” as that term is commonly used in healthcare law.\(^ {126} \)

Special rules apply, however, when consent is sought from a group of persons. Voluntarily providing a DNA elimination sample to assist the police in solving a crime should be encouraged. If the universe of possible suspects is relatively small, such a procedure may be effective. Although large dragnets have often proved both ineffective and

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\(^{124}\) Standards 16-2.2(a), 16-2.3 & 16-2.4.


\(^{126}\) *See Jessica W. Berg et al., Informed Consent: Legal Theory and Clinical Practice* (2d ed. 2001).
controversial, they continue to be used. In minority communities, dragnets have exacerbated racial tensions. This should not be surprising in light of racial profiling and other inappropriate investigative practices. Consequently, special care is required in this context, and this Standard attempts to strike a balance between legitimate law enforcement concerns and countervailing values.

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127 See Pam Belluck, To Try to Net Killer, Police Ask A Small Town’s Men for DNA, N.Y. TIMES, Jan. 10, 2005, at A1 (“Raising concerns among civil libertarians and prompting resistance from some men in Truro, the state and local police began collecting the genetic samples last week, visiting delicatessens, the post office and even the town dump to politely ask men to cooperate.”). The killer was later arrested but not as a result of the dragnet. As a trash collector, his DNA had been taken earlier but was not analyzed for several months, during which time the dragnet occurred.


130 See Roberto Iraola, DNA Dragnets—A Constitutional Catch?, 54 DRAKE L. REV. 15 (2005). Iraola reports that eighteen such “dragnets” or “sweeps” have been conducted thus far in the United States since 1990, id. at 18, and that “the first recorded DNA dragnet occurred in 1986 in Narborough, England, where the crimes occurred. The targeted pool comprised of 4,500 men in the area surrounding the village where the crimes [under investigation] occurred. The practice then moved to other parts of Europe, with the largest mass sweep taking place in 1998 when samples were taken from 16,400 persons in Stuecklingen, Germany, in connection with the murder and rape of an eleven-year-old girl.” Id. at 21–22 (footnotes omitted).

Standard 16-2.4(a)

Concerning "dragnet searches," Standard 2.4(a) provides that consent should not be sought "from persons based primarily upon their membership in a constitutionally protected class." While this Standard is directed to a procedure employed based primarily on a constitutionality suspect class, certain physical characteristics may nonetheless be used as an identifying feature—e.g., gender and/or race—so long as they are not the primary basis for seeking consent.

Standard 16-2.4(b)

Standard 16-2.4(b) provides that consent should not be sought "from a large number of persons unless seeking such consent has been authorized by the head of a law enforcement agency or the chief prosecutor in that jurisdiction." When suspicion is limited to a small group of persons (e.g., the three people who had access to the location where a crime was committed), this section is inapplicable. When it is a large group of people (e.g., all the residents of a neighborhood), the Standard does apply, and requires authorization by the head of a law enforcement agency or chief prosecutor in the jurisdiction. The inherent inability to specify the exact number of persons that would trigger this Standard should not result in the failure of such an official to address such a significant issue.

Standard 16-2.4(c)

Standard 16-2.4(c) provides that "when consent is sought as provided in subdivision (b) of this standard, each person should be informed of the reason for the request and of the right to refuse it, and the consent should be obtained in writing." Although these provisions are more demanding than the minimal constitutional requirements, it is difficult to argue that citizens should not know of their constitutional rights, particularly when their consent is being sought absent any particularized suspicion that they committed a crime. Informed and written consent in this context may ameliorate tensions to a certain

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131 In other ABA Standards, the term "politically accountable" is used. This term would include "the head of a police department or a district attorney, who will normally be politically accountable either through the election process or because his or her appointment is dependent upon a person who is elected." ABA Standards for Criminal Justice, Technologically-Assisted Physical Surveillance, cmt. at 62 (1999).
degree and may also lead to greater cooperation. The FBI uses written consent forms. \^{132}

Reports suggest that in some dragnet searches, "requests" for "consent" have been heavy handed, including, in particular, threats to release the name of non-consenting persons to the media. Such threats should be considered coercive.

Note that, according to Standard 16-8.2(c), profiles obtained from suspects and non-suspects under this Standard may not be entered into a database or compared with profiles in a database (i.e., by means of a keyboard search) without written consent.

**STANDARD 16-2.5  MANNE R OF COLLECTING AND PRESERVING DNA EVIDENCE**

(a) DNA evidence should be collected and preserved in a manner designed to document its identity, ensure its integrity, and, whenever possible, ensure its availability for testing and retesting. Specifically:

(i) the evidence should be properly handled, packaged, labeled, and stored; and

(ii) the location where and the place or thing from which the evidence was collected or the person from whom or the entity from which it was collected, the date and time it was collected, the identity of the person who collected it, and the manner in which it was collected and preserved should be documented.

(b) Whenever DNA evidence is collected from a person, it should be collected by a method that is medically safe and no more intrusive than reasonably necessary. When it is collected from a person by court order, the order should so specify.

\[^{132}\text{See Schneckloth v. Bustamonte, 412 U.S. 218, 287 (1973) (Marshall, J., dissenting) ("It is not without significance that for many years the agents of the Federal Bureau of Investigation have routinely informed subjects of their right to refuse consent, when they request consent to search.").}^\]
Commentary

Standard 16-2.5(a)

The collection and preservation of evidence from a crime scene or other location is the critical first step in the use of DNA. Once collected, biological evidence must be handled with care, properly labeled, and appropriately packaged. This requires expertise. For example, biological evidence should not be kept in plastic bags. In addition, records of the handling of the evidence should document whether the evidence was treated with a reagent, such as luminol, at the scene. Steps to prevent contamination are critical. The Standard

133 See NRC II, supra note 3, at 25 ("Even the strongest evidence will be worthless — or worse, might possibly lead to a false conviction — if the evidence sample did not originate in connection with the crime. Given the great individuating potential of DNA evidence and the relative ease with which it can be mishandled or manipulated by the careless or the unscrupulous, the integrity of the chain of custody is of paramount importance."); Dep't of Justice, National Guidelines for Death Investigations 20 (1999) ("It is essential to maintain a proper chain of custody for evidence. Through proper documentation, collection, and preservation, the integrity of the evidence can be assured. A properly maintained chain of custody and prompt transfer will reduce the likelihood of a challenge to the integrity of the evidence."). See generally Paul C. Giannelli, Chain of Custody and the Handling of Real Evidence, 20 Am. Crim. L. Rev. 527 (1983).

134 See Smith v. State, 702 N.E.2d 668, 673 (Ind. 1998) ("Two of the State's experts agreed that contamination can be a problem in some situations, for example if someone sneezed onto the sample. However, they also testified that simply breathing on or touching the sample is unlikely to have much of an impact because the DNA present in the sample will overpower the small amount of contamination."); State v. Morel, 676 A.2d 1347, 1356 (R.I. 1996) ("[T]he preservation and testing of DNA evidence, careful attention and proper handling of the crime sample by police and scientists are crucial in defending chain-of-custody issues and in ensuring that laboratory mislabeling and inadvertent contamination have not occurred.").

135 See State v. Scott, 33 S.W.3d 746, 761 (Tenn. 2000) ("[W]e can find no evidence whatsoever to show how the hairs [tested by mtDNA] came to be mounted on the slides. We also can find no evidence to show who mounted the hairs on the slides or whether the hairs were mounted in a manner sufficiently free of contamination or alteration. Although the hairs were apparently mounted on glass slides by someone with the FBI, no one was able to establish this important 'link' in the chain of custody.").

136 See John E. Smialek et al., The Microscopic Slide: A Potential DNA Reservoir, FBI Law Enforcement Bull. 18, 19 (Nov. 2000) ("Contamination
also applies to the evidence once it reaches the testing laboratory and its custody and storage afterwards. DAB and CODIS standards require documented evidence control procedures to ensure the integrity of the evidence.

**Standard 16-2.5(b)**

Fourth Amendment protections extend to the manner in which samples are obtained from a person. In the Standard, the requirement occurs when the evidence comes in contact with another individual’s body fluids through actions, such as sneezing, coughing, or touching. Contamination becomes a critical issue because today, laboratories use the polymerase chain reaction (PCR) technique to replicate DNA. But, the PCR process cannot distinguish between DNA from a suspect and another source. Therefore, any substantial contamination to the DNA material will result in a confusing result.

"It is especially important that the laboratory follow procedures for ensuring that the known sample is not mislabeled as, or mixed with, the crime sample. These errors can lead to false positive results that incriminate the wrong suspect." FEDERAL JUDICIAL CENTER, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE 293 (1994).

DAB Standard 7.1 requires that (1) evidence be marked for identification, (2) a chain of custody be maintained, (3) documented procedures to minimize loss, contamination, and deleterious change be followed, and (4) a secure area for evidence storage exist.

In *Schmerber*, the Court held that the scientific procedure chosen as well as the manner in which it is performed are both subject to the Fourth Amendment’s reasonableness requirement. With respect to the procedure, the Court commented, "we are satisfied that the test chosen to measure petitioner’s blood alcohol level was a reasonable one. Extraction of blood samples for testing is a highly effective means of determining the degree to which a person is under the influence of alcohol." 384 U.S. at 771. The Court also found that the "record shows that the test was performed in a reasonable manner. Petitioner’s blood was taken by a physician in a hospital environment according to accepted medical practices." *Id.* See also *Winston v. Lee*, 470 U.S. 753, 760 (1985) (involving surgical removal of a bullet from a suspect for the purpose of firearms [ballistics] identification).
of the least intrusive method is modified by the word "reasonable". There may be advantages to one method of obtaining samples (e.g., blood in lieu of buccal samples) that may affect the court's order regarding the method of collection. The court may also consider the wishes of the person providing the sample – e.g., whether there are religious objections to one method as opposed to another.

**STANDARD 16-2.6 RETENTION OF DNA EVIDENCE**

(a) Property containing DNA evidence obtained in the investigation of an unsolved homicide, rape or other serious offense, and the extract from such evidence, if any has been obtained, should be retained in a manner that will preserve the DNA evidence. A jurisdiction should promulgate written rules in all cases, which should require authorization of the prosecutor before the property or extract is destroyed or discarded.

(b) Property containing DNA evidence obtained in an investigation which has resulted in the prosecution of a person or persons for homicide, rape or other serious offense, and the extract from such evidence, if any has been obtained, should be retained in a manner that will preserve the DNA evidence until all persons charged have been convicted of an offense, or adjudicated as having engaged in conduct constituting such an offense, and have exhausted their appeals and served their sentences or commitments. If retention of a particular piece of property containing DNA evidence is impractical, reasonable care should be taken to retain representative samples of those portions of the property that contain DNA evidence.

**Commentary**

DNA evidence can be critical during an investigation, after charges are brought, and even after persons are convicted.

**Standard 16-2.6(a)**

Standard 16-2.6(a) provides for the retention of evidence for serious unsolved crimes. A crime remains "unsolved" until all perpetrators have been identified. If a defendant is acquitted (based on a failure to establish the defendant's identity, rather than on a defense like justification, which does not suggest that someone else committed the
crime), the crime should again be considered unsolved and the evidence retained. Dismissals should be treated the same way because continuing improvements in DNA technologies may make further testing possible in the future.

Many jurisdictions now have statutes that set forth written evidence-retention policies, which are critical because evidence may be under the control of several different governmental agencies – e.g., medical examiner offices, crime laboratories, police departments, and prosecutors' offices.

**Standard 16-2.6(b)**

As the exoneration cases have shown, biological evidence can be tested many years after it has been collected. Moreover, future technologies may be capable of testing samples that today's techniques cannot test. Standard 16-2.6(b) requires the retention of evidence until all persons charged have completed their sentences, including parole or

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140 *E.g.,* CAL. PENAL CODE § 1417.9(a) (West Supp. 2007) ("Notwithstanding any other provision of law and subject to subdivision (b), the appropriate governmental agency shall retain all biological material that is secured in connection with a criminal case for the period of time that any person remains incarcerated in connection with that case."); D.C. CODE § 22-4134(a) (2001) ("Law enforcement agencies shall preserve biological material that was seized or recovered as evidence in the investigation or prosecution that resulted in the conviction or adjudication as a delinquent for a crime of violence and not consumed in previous DNA testing for 5 years or as long as any person incarcerated in connection with that case or investigation remains in custody, whichever is longer."); TEX. CODE CRIM. PROC. ANN. art. 38.39(a) (Vernon 2005) ("In a criminal case in which a defendant is convicted, the attorney representing the state, a clerk, or any other officer in possession of evidence described by Subsection (b) shall ensure the preservation of the evidence."); TEX. CODE CRIM. PROC. ANN. art. 38.39(b) (Vernon 2005) (This requirement applies to evidence that (1) was in possession of the State during the prosecution of the case, and (2) at the time of conviction was known to contain biological material that, if subjected to scientific testing, would more likely than not establish the identity of the person committing the offense or exclude a person from the group of persons who could have committed the offense.).
other post-sentencing supervision. This is in accord with most evidence-retention statutes. This Standard sets forth an affirmative obligation that cannot be waived. There is a societal interest in preserving such evidence that transcends the narrow interests of a particular defendant who might be required to waive an evidence-retention provision during plea bargaining. There have been cases where inspection of evidence, such as a rape victim's clothing, revealed the presence of semen that had been overlooked at the time of trial.

The last sentence of subdivision (b) addresses situations where bulky items, such as automobiles and couches, may have contained DNA evidence. Standard 16-2.1(b) requires the collection of representative samples, and Standard 16-2.1(c) gives the defense a right of access to a crime scene after the police have terminated their investigation. Consequently, by the time of trial, the scene and the evidence should have been scrutinized by the prosecution and, perhaps, by the defense as well. Nevertheless, new and more sophisticated technologies may subsequently develop that would permit better testing, or a defendant's representation may have been inadequate. Thus, Standard 16-4.2

141 House of Delegates Resolution No. 115 ("All biological evidence should be preserved.").
143 The California statute specifically prohibits waiver. CAL. PENAL CODE § 1417.9(c) (West Supp. 2007) ("Notwithstanding any other provision of law, the right to receive notice pursuant to this section is absolute and shall not be waived. This prohibition applies to, but is not limited to, a waiver that is given as part of an agreement resulting in a plea of guilty or nolo contendre.").
144 Several statutes provide for sanctions. See ARIZ. REV. STAT. ANN. § 13-4240(H) (2001) ("If evidence is intentionally destroyed after the court orders its preservation, the court may impose appropriate sanctions, including criminal contempt, for a knowing violation."); D.C. CODE ANN. § 22-4134(d) (LexisNexis Supp. 2007) ("Whoever willfully or maliciously destroys, alters, conceals, or tampers with evidence that is required to be preserved under this section with the intent to (1) impair the integrity of that evidence, (2) prevent that evidence from being subjected to DNA testing, or (3) prevent the production or use of that evidence in an official proceeding, shall be subject to a fine of $100,000 or imprisoned for not more than 5 years or both."). See also Nathan T. Kipp, Comment, Preserving Due Process: Violations of the Wisconsin DNA Evidence Preservation Statutes as Per Se Violations of the Fourteenth Amendment, 2004 WIS. L. REV. 1245.
recognizes the right of the defense to test and retest evidence. Such inevitable developments suggest caution before evidence is discarded and, yet, some judgments as to the amount of evidence retained will have to be made.
PART III: TESTING OF DNA EVIDENCE

STANDARD 16-3.1 TESTING LABORATORIES

(a) A laboratory testing DNA evidence should:
   (i) be accredited every two years under rigorous accreditation standards by a nonprofit professional association actively involved in forensic science and nationally recognized;
   (ii) be governed by written policies and procedures, including protocols for testing and interpreting test results, and permit deviation from protocols only by a technical leader or other appropriate supervisor;
   (iii) use quality assurance and quality control procedures, including audits, proficiency testing, and corrective action protocols, that are consistent with generally accepted practices and in writing;
   (iv) use protocols for testing and interpreting DNA evidence that are scientifically validated through studies that are described in writing;
   (v) follow procedures designed to minimize bias when interpreting test results;
   (vi) timely report credible evidence of laboratory misconduct or serious negligence to the accrediting body; and
   (vii) make available to the public the written material required by this standard.

(b) A laboratory testing DNA evidence should make available to the prosecution the information and material that the prosecutor must disclose to the defense pursuant to Standard 16-4.1, and to defense counsel the information and material that the defense must disclose to the prosecutor pursuant to that standard.

(c) When an accrediting body receives notice of credible evidence of laboratory misconduct or serious negligence concerning DNA evidence at the testing laboratory, either as provided in subdivision (a)(vi) of this standard or through other means, it should audit laboratory procedures and cases that may have been affected by the misconduct or serious negligence and issue a written report.
Commentary

Standard 16-3.1, which governs testing laboratories, provides for (1) the accreditation of laboratories, (2) the use of written policies and procedures, (3) the implementation of quality assurance and quality control procedures, (4) the use of protocols for testing and interpreting DNA evidence that are scientifically validated through studies that are described in writing, (5) the minimization of bias when interpreting test results, (6) the timely reporting of credible evidence of laboratory misconduct or serious negligence, and (7) the public availability of this material.

DNA procedures are regulated under the DNA Identification Act of 1994 (DNA Act)\textsuperscript{145} for laboratories participating in CODIS or receiving federal funding.\textsuperscript{146} These procedures developed over time as forensic scientists grappled with creating a rigorous and yet efficient system of testing.\textsuperscript{147}

Standard 16-3.1(a)(i)

Accreditation. Clinical laboratories are regulated under the Clinical Laboratory Improvements Act of 1988,\textsuperscript{148} and some commentators have argued that crime laboratories should be similarly regulated.\textsuperscript{149} The DNA

\textsuperscript{145} 42 U.S.C.A. § 14131-33 (West 2005).
\textsuperscript{146} 42 U.S.C.A. § 14131 governs quality assurance and proficiency testing standards, and section (a) deals with the publication of such standards.
\textsuperscript{147} See JAMES D. WATSON & ANDREW BERRY, DNA: THE SECRET OF LIFE 273 (2004) ("Initially, when DNA fingerprinting was done in forensic laboratories without special expertise in handling and analyzing DNA, critical mistakes were not uncommon.").
\textsuperscript{148} 42 U.S.C.A. § 263a (West 2003).
\textsuperscript{149} See Eric S. Lander, DNA Fingerprinting On Trial, 339 NATURE 501, 505 (1989) ("At present, forensic science is virtually unregulated — with the paradoxical result that clinical laboratories must meet higher standards to be allowed to diagnose strep throat than forensic labs must meet to put a defendant on death row."); Randolph N. Jonakait, Forensic Science: The Need for Regulation, 4 HARV. J. L. & TECH. 109, 191 (1991) ("Current regulation of clinical labs indicates that a regulatory system can improve crime laboratories.").
Act initially did not, however, require accreditation, and only a few jurisdictions do.\textsuperscript{150} This changed in 2004, when the Act was amended to require (within two years) accreditation "by a nonprofit professional association of persons actively involved in forensic science that is nationally recognized within the forensic science community."\textsuperscript{151}

The American Society of Crime Lab Directors/Laboratory Accreditation Board (ASCLD/LAB) operates a voluntary accreditation program for public and private crime laboratories.\textsuperscript{152} In addition, Forensic Quality Services accredits laboratories, including those conducting DNA profiling, to standards defined by the International Organization for Standardization (ISO) ISO/IEC17025:2005; it is recognized by the National Cooperation for Laboratory Accreditation as conducting its accreditations in accordance with ISO Guide 58.\textsuperscript{153}

The Standards do not endorse any particular accrediting organization. Ideally, accrediting bodies will have (1) broad representation, including non-forensic scientists, (2) transparent procedures, and (3) mechanisms for permitting outsiders to comment on standards and procedures. Accreditation, of course, is not a panacea; accredited laboratories have made mistakes.

The accreditation requirement may cause problems for a laboratory that is not routinely involved in forensic work but is able to provide specialized testing in a particular case. For example, evidence of

\textsuperscript{150} See CAL. PENAL CODE § 297(a) (West 1999) (requiring accreditation for DNA testing); N.Y. EXEC. § 995-b (McKinney 1996) (requiring accreditation by state Forensic Science Commission); OKLA. STAT. ANN. tit. 74 § 150.37 (West Supp. 2007) (requiring accreditation by the American Society of Crime Laboratory Directors/Laboratory Accreditation Board or the American Board of Forensic Toxicology); TEX. CRIM. PROC. CODE art. 38.35 (Vernon 2005) (requiring accreditation by the state Department of Public Safety).

\textsuperscript{151} 42 U.S.C. A.§ 14132(b)(2)(A) (West 2005).

\textsuperscript{152} ASCLD/LAB is moving toward ISO accreditation standards.

\textsuperscript{153} The National Cooperation for Laboratory Accreditation (NACLA - see www.nacla.net) accredits the accreditors.
animal,\textsuperscript{154} plant,\textsuperscript{155} and virus DNA\textsuperscript{156} has been admitted at trial. A laboratory with extensive background in testing these materials may be able to make a significant contribution and yet have little incentive to become accredited for forensic work because it does so little of it. Means should be found to accredit them in a manner that is not as onerous or expensive as it is for laboratories whose primary purpose is forensic DNA analysis, and for whom such effort and expense is justified and affordable.

\textbf{Standard 16-3.1(a)(ii)}

\textit{Policies and Procedures.} In \textit{Daubert v. Merrell Dow Pharmaceuticals, Inc.},\textsuperscript{157} the Supreme Court cited the existence and maintenance of standards as a relevant criterion in determining a scientific technique’s reliability. Moreover, current DAB and CODIS standards require: (1) analytical protocols; (2) equipment calibration and maintenance procedures; and (3) administrative and technical reviews of test results.\textsuperscript{158} Among other things, labs are required to review their procedures annually and whenever substantial changes are made to protocols.

Deviations from a protocol may sometimes be appropriate – i.e., indicating peaks that are below the laboratory’s cutoff markers or in the


\textsuperscript{155} See State v. Bogan, 905 P.2d 515 (Ariz. Ct. App. 1995) (in murder case, DNA of seed pods from palo verde trees at scene compared to those found in Bogan’s truck).

\textsuperscript{156} See State v. Schmidt, 699 So. 2d 448 (La. Ct. App. 1997) (in attempted murder by injection of HIV virus, expert testified that HIV from two persons were “closely related”).

\textsuperscript{157} 509 U.S. 579, 594 (1993).

\textsuperscript{158} DAB Standards 9, 10 & 12 (1998); CODIS Standards for Forensic DNA Testing Laboratories Standards 9, 10 & 12.
interpretation of partial profiles (e.g., those with less than 13 loci). Any deviation should be approved by the technical leader and not made solely by the examiner.

**Standard 16-3.1(a)(iii)**

*Quality assurance.* The DNA Identification Act created a DNA Advisory Board on quality assurance, which was tasked with the promulgation of quality assurance standards.\(^{159}\) When the Board expired, the Scientific Working Group on DNA Analysis Methods (SWGDAM) replaced it.\(^{160}\) DAB and CODIS standards mandate a quality control program (Standard 3), annual internal audits and biennial external audits (Standard 15), and procedures governing corrective actions (Standard 14).

In addition, both National Academies reports recommended proficiency testing,\(^{161}\) and the DNA Act required it for examiners in the FBI Laboratory and those in labs participating in CODIS or receiving federal funding.\(^{162}\) DAB and CODIS Standard 13 implements these requirements.\(^{163}\)

\(^{159}\) 42 U.S.C.A. § 14131(a) (West 2005).

\(^{160}\) The 1994 Act specified that the Director of the FBI appoint an Advisory Board from among nominations of the National Academy of Sciences and professional societies of crime laboratory officials. 42 U.S.C. § 14131(a)(1)(A). The Board's composition had to include scientists from crime labs, molecular geneticists and population geneticists not affiliated with a forensic lab, and a representative of the National Institute of Standards and Technology (NIST). 42 U.S.C. § 14131(a)(1)(B). The legislation contained a sunset provision; the DAB would expire after five years unless extended by the Director of the FBI. The Board was extended for several months and then ceased to exist. In 1989, TWGDAM was formed within the FBI to devise standards. It operated under DAB while the latter was in existence. It was subsequently renamed SWGDAM.

\(^{161}\) NRC II, supra note 3, at 37, Recommendation 3.2 (“Laboratories should participate regularly in proficiency tests, and the results should be available for court proceedings.”).


\(^{163}\) There are different types of proficiency testing: (1) internal and external, and (2) blind and non-blind. See generally Joseph L. Peterson et al., The Feasibility of External Blind DNA Proficiency Testing. 1. Background and Findings, 48 J. FORENSIC SCI. 21, 30 (2003).
Standard 16-3.1(a)(iv)

Validation. In Daubert v. Merrell Dow Pharmaceuticals, Inc.,164 the Supreme Court cited peer review and publication as indicia of scientific reliability. "Good science" requires publication, replication, and verification.165 The role of peer review "is to promote the publication of well-conceived articles so that the most important review, the consideration of the reported results by the scientific community, may occur after publication."166 Similarly, the National Academies 1992 Report commented: "According to long-standing and wise scientific tradition, the data underlying an important scientific conclusion must be freely available, so that others can evaluate the results and publish their own findings, whether in support or in disagreement."167 In sum, access to the research underlying test protocols is a critical aspect of the scientific method.168 Moreover, DAB and CODIS standards require validation.169


165 See Brief of the New England Journal of Medicine et al. as Amici Curiae in Support of Respondent at 2, Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579 (1993) (No. 92-102) ("'Good science' is a commonly accepted term used to describe the scientific community's system of quality control which protects the community and those who rely upon it from unsubstantiated scientific analysis. It mandates that each proposition undergo a rigorous trilogy of publication, replication and verification before it is relied upon.").

166 Id. at 3.

167 NRC I, supra note 22, at 93.

168 See State v. Schwartz, 447 N.W.2d 422, 427-28 (Minn. 1989) ("The validity of testing procedures and principles is assessed in the scientific community by publishing the data in peer review journals. The TWGDAM, FBI and CACLD standards stress that publication of a laboratory's work product and data used in DNA analysis, as well as independent replication and validation studies, are essential prerequisites to reliability. Efforts to assess the reliability of the commercial laboratories' methodology consequently have been hindered because this information has not yet been made fully available. For example, Cellmark has not yet published data regarding its methodology and its probes are only selectively available."); State v. Alt, 504 N.W.2d 38, 48-49 (Minn. Ct. App. 1993) ("Alt argues the FBI DNA test results are inadmissible because the FBI does not allow members of the scientific community general access to its data bases. . . . We are troubled by Alt's allegations of denial of access to the FBI data bases.").

169 DAB Standard 2 (ff) ("Validation is a process by which a procedure is evaluated to determine its efficacy and reliability for forensic casework analysis and includes: (1) Developmental validation is the acquisition of test data and
Standard 16-3.1(a)(v)  
Minimization of Bias. Commentators have identified both motivational and cognitive bias as a concern in the forensic setting,170 and the 1996 National Academies Report noted that “[l]aboratory procedures should be designed with safeguards to detect bias and to identify cases of true ambiguity. Potential ambiguities should be documented . . . .”171 Cognitive bias (e.g., observer effects) occurs because people tend to see what they expect to see, and this typically affects their decisions in cases of ambiguity.172 Motivational bias arises when lab personnel’s often close association with the police subconsciously influences their conclusions.

Accordingly, case information from the investigation that is not germane to testing should not be given to the analyst interpreting the results — i.e., the analyst should be “blind” to case circumstances and other evidence. Moreover, whenever possible, testing should be sequenced in a blinded manner — i.e., interpretation of the evidence sample should precede comparison with the suspect’s sample.173

determination of conditions and limitations of a new or novel DNA methodology for use on forensic samples; (2) Internal validation is an accumulation of test data within the laboratory to demonstrate that established methods and procedures perform as expected in the laboratory.”).  


171 NRC II, supra note 3, at 84-85. The Report adds: “Bias in forensic science usually leads to sins of omission rather than commission. Possibly exculpatory evidence might be ignored or rejected.” Id. at 84-85. Ways to counter bias also include internal review and outside review by a defense expert.


173 See MIKE REDMAYNE, EXPERT EVIDENCE AND CRIMINAL JUSTICE 16 (2001) (“To the extent that we are aware of our vulnerability to bias, we may be able to control it. In fact, a feature of good scientific practice is the institution of processes — such as blind testing, the use of precise measurements, standardized procedures, statistical analysis — that control for bias.”).
Standard 16-3.1(a)(vi) Reporting misconduct or serious negligence. Credible evidence of laboratory misconduct or serious negligence should be reported to the accrediting body so that the accrediting body can carry out the investigation required by subdivision (c) of this standard, discussed infra. Any doubt should be resolved in favor of reporting.

Standard 16-3.1(a)(vii) Public inspection. This Standard requires transparency. Public confidence in DNA technology is greatly increased if the policies and procedures governing DNA testing are open to inspection by the public, the press, the scientific community, and the legal profession. The 1992 National Academies Report commented: "Because the application of DNA typing in forensic science is to be used in the service of justice, it is especially important for society to establish mechanisms for accountability and to ensure appropriate public scrutiny."\(^{174}\) Moreover, the DNA Identification Act requires "publicly available standards."\(^{175}\)

Standard 16-3.1(b) Discovery. This Standard is intended to reduce the burden on prosecutors and defense attorneys with respect to pretrial discovery as set forth in Standard 16-4.1. Much of the discovery material is in the possession of the laboratory, not the prosecutor.\(^{176}\)

Standard 16-3.1(c) Investigations. Mechanisms for investigating misconduct or serious negligence are lacking. In West Virginia, the state Supreme Court ordered a judicial inquiry, at the behest of a prosecutor, to investigate

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\(^{174}\) NRC I, supra note 22, at 162.

\(^{175}\) 42 U.S.C.A. § 14132(b)(1) (West 205).

\(^{176}\) See Cole v. State, 835 A.2d 600, 613 n.21 609 (Md. 2003) ("During oral argument, Cole's appellate counsel suggested an alternative where single copies of the lab's standard operating procedures and other such manuals even could be delivered to the public defender's office and/or the local Bar Library for examination by interested members of the private defense bar, as needed, thus eliminating the need to provide this information individually in each case where it might be sought. These master copies would need be annotated only as changes occur.").
problems in the state laboratory. In contrast, the Montana Supreme Court ruled that it lacked authority to make this type of appointment. The Inspector General of the U. S. Department of Justice has twice looked into problems at the FBI laboratory, including one involving a DNA analyst. The Governor of Virginia requested ASCLD/LAB to review a problem in the state lab and the Houston Police Department commissioned an independent investigation.

In 2004, Congress amended the Omnibus Crime Control and Safe Streets Act of 1968 to require "a certification that a government entity exists and an appropriate process is in place to conduct independent external investigations into allegations of serious negligence or misconduct substantially affecting the integrity of the forensic results committed by employees or contractors of any forensic laboratory system, medical examiner's office, coroner's office, law enforcement storage facility, or medical facility in the State that will receive a portion of the grant amount."

180 See ASCLD/LAB, Limited Scope Interim Inspection Report, Commonwealth of Virginia, Division of Forensic Science, Central Laboratory (April 9, 2005).
181 Third Report of the Independent Investigator for the Houston Police Dep't Crime Laboratory and Property Room (June 30, 2005).
STANDARD 16-3.2 TESTING AND INTERPRETATION OF DNA EVIDENCE

(a) DNA evidence should be tested and interpreted in a timely manner by qualified personnel using the policies and procedures adopted by the laboratory as provided in Standard 16-3.1.

(b) Each step in the testing of DNA evidence and in the interpretation of the test results should be recorded contemporaneously in case notes.

(c) The case notes should document all information necessary to allow an independent expert to evaluate the process used and the conclusions reached.

(d) All case notes made and raw electronic data produced during testing should be preserved.

Commentary

Standard 16-3.2, which covers testing and interpretation of DNA evidence, urges that DNA evidence "be tested and interpreted in a timely manner by qualified personnel," that each step in the process be recorded contemporaneously in case notes that "document all information necessary to allow an independent expert to evaluate the process used and the conclusions reached," and that the case notes and raw electronic data produced during testing be preserved.

Standard 16-3.2(a)

Timeliness. To achieve effectively the purpose for which DNA evidence is collected – the conviction of the guilty and the exoneration of the innocent – the evidence must be tested and analyzed in a timely manner after it is collected. Evidence has languished untested in crime laboratories while rapists continued to commit crimes that could have been prevented. Untimely analysis can also deny a defendant's speedy trial rights and delay the exoneration of innocent suspects and defendants. Standard 16-1.2(g) requires that funding be adequate for these purposes.

Standard 16-3.2(b) & (c)

Case notes. Case notes, also known as bench notes or examiner notes, typically contain test results. In contrast, the case file may contain

183 See ABA STANDARDS FOR CRIMINAL JUSTICE, SPEEDY TRIAL AND TIMELY RESOLUTION OF CRIMINAL CASES (3d ed. 2006).
other information, such as chain of custody documents and a summary of telephone calls from investigators. The nomenclature is not critical. Whatever the label, there should be a comprehensive record of the testing. DAB and CODIS Standards require laboratories to adopt and follow written procedures for taking and maintaining case notes sufficient to support the conclusions set forth in laboratory reports – in particular, a case record containing all documentation generated by examiners relating to case analysis is required.\textsuperscript{184} Similarly, ASCLD/LAB requires documentation “be such that a knowledgeable analyst or supervisor, in the absence of the primary analyst, would be able to evaluate and interpret the data.”\textsuperscript{185}

Contemporaneous recordation. The lack of contemporaneously prepared case notes can result in erroneous results: “If staff members are allowed to delay recording observations and test results until after they have examined all the items for a case or have completed all of their work for the day, their documentation may not be fully accurate. Also, staff members may be unduly influenced by protocol requirements when relying on memory, and document what they know should have occurred when their recollection is vague.”\textsuperscript{186}

\textit{Standard 16-3.2(d)}

Electronic data. With automated systems, much of the data produced during testing is computerized. This information should be preserved in its “raw” form – i.e., before it is processed through software programs.

\textsuperscript{184} DAB Standard 11.1. \textit{See also} Office of Inspector General U.S. Dep’t of Justice, The FBI Laboratory: An Investigation into Laboratory Practices and Alleged Misconduct in Explosives-Related and Other Cases (1997) (recommending the preparation of adequate case files to support reports).


\textsuperscript{186} Office of Inspector General, U.S. Dep’t of Justice, The FBI Laboratory: A Review of Protocol and Practice Vulnerabilities 107 (2004) (noting, in the context of the investigation of Jacqueline Blake’s failure to use negative controls in DNA testing, that “contemporaneous documentation is important to ensure that the case file accurately reflects the work performed on each evidence item that is tested”).
STANDARD 16-3.3 LABORATORY REPORTS

(a) A summary of all DNA testing and data interpretation should be recorded promptly in a report.

(b) The report should be sufficiently comprehensive so that an independent expert can identify the process used and the conclusions reached. Specifically, the report should include:
   (i) what was tested,
   (ii) who conducted the testing,
   (iii) identification of the protocol used in the testing and any deviation from the protocol,
   (iv) the data and results produced by the testing or data interpretation,
   (v) the examiner’s interpretation of the results and conclusions therefrom,
   (vi) the method and results of any statistical computation, and
   (vii) any additional information that could bear on the validity of the test results, interpretation or opinion.

(c) A separate section of the report should explain the test results, interpretation and opinion in language comprehensible to a layperson.

Commentary

Standard 16-3.3 explains when laboratory reports should be prepared and what they should contain, including, in a separate section, an explanation of the test results, their interpretation, and the resulting opinion of the examiner “in language comprehensible to a layperson.”

Standard 16-3.3(a)

Comprehensive lab reports serve several purposes.¹⁸⁷ First, by ensuring that the examiner has followed the prescribed procedure and by

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¹⁸⁷ The Journal of Forensic Sciences, the official publication of the American Academy of Forensic Sciences, published a symposium on the ethical responsibilities of forensic scientists in 1989. One article discussed a number of questionable laboratory reporting practices, including (1) “preparation of reports containing minimal information in order not to give the ‘other side’ ammunition for cross-examination,” (2) “reporting of findings without an interpretation on the assumption that if an interpretation is required it can be provided from the witness box,” and (3) “[o]mitting some significant point from a report to trap an
permitting external review, they are a quality control mechanism. Second, because the reports are discoverable, they assist attorneys in preparing for trial and thus render effective representation.\textsuperscript{188} Third, defense counsel's decision to seek appointment of a defense expert often requires a preliminary assessment by an expert.\textsuperscript{189} An expert might be willing to offer such an assessment, based upon the information contained in such reports, without compensation.

Every test should be memorialized in a laboratory report, and that report should be prepared promptly, before the examiner's memory fades or other matters interfere with accurate recording of the test results.

\textit{Standard 16-3.3(b)}

This Standard specifies the content of laboratory reports. In general, the report should be sufficiently comprehensive so that an independent expert can identify the process used and the conclusions reached. DAB and CODIS Standards require reports to include (1) a case identifier, (2) a description of evidence examined, (3) a description of the methodology, (4) the locus tested, (5) the results and/or conclusions, (6) an interpretative statement (either quantitative or qualitative), (7) the date issued, (8) the disposition of evidence, and (9) a signature and title, or equivalent identification, of the person(s) accepting responsibility of the content of the reports.\textsuperscript{190} ASCLD requires laboratory reports to include (1) an "accurate summary of significant material contained in the case notes," (2) "interpretive information as well as examination results wherever possible," and (3) identification of "the analyst(s) and, if appropriate, the testing methodology."\textsuperscript{191}

\textsuperscript{188} See Standard 16-4.1 (disclosure). Although the ABA Discovery Standards require the disclosure of laboratory reports, they do not specify the content of the report. ABA \textit{STANDARDS FOR CRIMINAL JUSTICE, DISCOVERY, Standard 11-2.1(a)(iv) (3d ed. 1996) ("Any reports or statements made by experts in connection with the case, including results of physical or mental examinations and of scientific tests, experiments, or comparisons.").

\textsuperscript{189} See Standard 16-4.3 (defense experts).

\textsuperscript{190} DAB Standard 11.1.2 (1998); CODIS Standards for Forensic DNA Testing Laboratories, Standard 11.1.2.

Protocols. Although the lab report needs to be complete, there is no need to repeat information readily available elsewhere. Identification of the protocol, including which STR kit was used, should be available under Standard 16-3.1(a)(vii).

Deviations from a protocol may sometimes be appropriate—i.e., indicating peaks that are below the laboratory's cutoff markers or in the interpretation of partial profiles (e.g., those with less than 13 loci). In short, it may be scientifically justifiable to deviate from a protocol, but that deviation needs to be prominently indicated in the report.

Statistics. The report should indicate which databases are used to generate the statistical estimates—e.g., Caucasian, Hispanic, etc.

Standard (b)(vii) requires disclosure of any additional information that could bear on the validity of the results or interpretation. “Problems” during testing include anything that would be required to be entered into a quality control file—e.g., failure of controls or contamination from someone in the lab or the janitorial staff. In contrast, other types of problems can be eliminated by retesting and need not be recorded in the laboratory report.

Results that are consistent with an alternative hypothesis should be reported. For example, amylase testing does not confirm the presence of saliva. Moreover, significant terms in the report should be defined, as well as the number of contributors. The conclusions in reports should clearly distinguish between scientific results and conclusions based on extraneous information.

Finally, experts should generally not testify beyond the scope of the report without issuing a supplemental report. Otherwise, trial by ambush results.

Once the raw data from the analysis has been produced, the data must be "edited"—i.e., spurious peaks, sutter, noise, instrumentation spikes, pullups, etc., must be deleted in order to better interpret the data. There should be a written protocol for such editing. The resulting data is still subject to interpretation—i.e., whether a "result" is a technical artifact or an allele (suggesting another person). Also, because of allelic dropout, the results may not meet the predetermined threshold requirements. An explanation should be given for an "inconclusive" determination—i.e., insufficient material for an examination. See generally DAVID J. BALDING, WEIGHT-OF-EVIDENCE FOR FORENSIC DNA PROFILES (2005); JOHN M. BUTLER, FORENSIC DNA TYPING: BIOLOGY, TECHNOLOGY, AND GENETICS OF STR MARKERS (2d ed. 2005); IAN W. EVETT & BRUCE S. WEIR, INTERPRETING DNA EVIDENCE: STATISTICAL GENETICS FOR FORENSIC SCIENTISTS (1998); FORENSIC DNA EVIDENCE INTERPRETATION (John Buckleton et al. eds., 2005).
Standard 16-3.3(c)

Comprehensibility. This Standard requires that a section of the laboratory report translate the scientific result into language that a nonscientist would understand. The purpose of forensic DNA testing is to assist the criminal justice system in fulfilling its function to convict the guilty and exonerate the innocent. Accordingly, participants in the system need to understand the significance of the test results. Overworked prosecutors and defense attorneys do not always have time to sort through data in order to appreciate the probative value of the lab analysis. They will, in any case, find a comprehensible summary useful in consulting with and questioning persons with greater expertise than they possess. Jurors may also welcome a written summary that they can understand without “translation” by an expert. Nobody is in a better position to summarize the results for the participants than the examiners themselves. 193

STANDARD 16-3.4 CONSUMPTIVE TESTING

(a) When possible, a portion of the DNA evidence tested and, when possible, a portion of any extract from the DNA evidence should be preserved for further testing.

(b) A laboratory should not undertake testing that entirely consumes DNA evidence or the extract from it without the prior approval of the prosecutor if a law enforcement officer is requesting the testing, or of defense counsel if the testing is requested by defense counsel or defense counsel’s agent.

(c) Before approving a test that entirely consumes DNA evidence or the extract from it, the prosecutor should provide any defendant against whom an accusatorial instrument has been filed,

193 See NATIONAL RESEARCH COUNCIL, FORENSIC ANALYSIS: WEIGHING BULLET LEAD EVIDENCE 110-11(2004) (“The conclusions in laboratory reports should be expanded to include the limitations of compositional analysis of bullet lead evidence. In particular, a further explanatory comment should accompany the laboratory conclusions to portray the limitations of the evidence. Moreover, a section of the laboratory report translating the technical conclusions into language that a jury could understand would greatly facilitate the proper use of this evidence in the criminal justice system. Finally, measurement data (means and standard deviations) for all of the crime scene bullets and those deemed to match should be included.”).
or any suspect who has requested prior notice, an opportunity to object and move for an appropriate court order.

(d) Before approving a test that entirely consumes DNA evidence or the extract from it, the attorney for any defendant against whom an accusatorial instrument has been filed, or for any other person who intends to conduct such a test, should provide the prosecutor an opportunity to object and move for an appropriate court order.

(e) If a motion objecting to consumptive testing is filed, the court should consider ordering procedures that would permit an independent evaluation of the analysis, including but not limited to the presence of an expert representing the moving party during evidence preparation and testing, and videotaping or photographing the preparation and testing.

Commentary

Standard 16-3.4(a) & (b)

In one sense, all testing is consumptive or destructive to some extent. Standard 16-3.4 is concerned with testing that prevents retesting by the other party. What is consumptive may require a practical decision depending on circumstances. There may be problems with mixtures — e.g., semen may be located on only one part of a stain and therefore might be inadvertently consumed even if the other half of the stain is preserved.

DAB and CODIS Standards require that a portion of the sample or extract be retained. Current ABA Discovery Standard 11-3.2(a) reads: “If either party intends to destroy or transfer out of its possession any objects or information otherwise discoverable under these standards, the party should give notice to the other party sufficiently in advance to afford that party an opportunity to object or take other appropriate action.”

194 DAB Standard 7.2 (“Where possible, the laboratory shall retain or return a portion of the evidence sample or extract.”). See also State v. Traylor, 656 N.W.2d 885, 898 (Minn. 2003) (“[T]he state points to the BCA’s policy, which requires that, when possible, a portion of the evidence sample be retained at the BCA laboratory. If the entire sample must be used, the BCA’s policy requires the scientist to notify the prosecuting attorney so that the defense has the opportunity to have its own expert observe the testing.”).

This procedure may be constitutionally required under certain circumstances. For example, in commenting on the due process issues raised by destructive testing, the Colorado Supreme Court wrote: "[I]t may be incumbent on the state to contact the defendant to determine whether he wishes his expert to be present during the tests." In a later case, People v. Garries, the Court suppressed bloodstain evidence because it was destroyed in testing. The state had neither photographed the test results nor provided the defense with the opportunity to have its own expert present during analysis. As Garries indicates, there may be other ways to satisfy due process in this context — in lieu of the presence of defense experts. In State v. Thomas, the West Virginia Supreme Court ruled that if the prosecution conducts complicated tests (there an electrophoretic blood test) that consume all the tested substance, the state must "preserve as much documentation [of the test] as is reasonably possible to allow for a full and fair examination of the results by a defendant and his experts."

The 1996 National Academies Report is in accord. That report noted that one solution would be to "give the defendant the right to have an expert present if prosecution testing will consume the available

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196 See Commonwealth v. Gliniewicz, 500 N.E.2d 1324, 1327 (Mass. 1986) ("[T]he defendants received no notice of the impending tests, and thus were not able to have their own expert present to observe and potentially to refute the subjective aspects of the [blood test]."); State v. Gaddis, 530 S.W.2d 64, 69 (Tenn. 1975) ("When such a situation arises, good faith demands that no test or analysis be made except by agreement between the District Attorney and defense counsel, or until such time as defense counsel may arrange to have his own expert present at the test."); State v. Wright, 557 P.2d 1, 7 (Wash. 1976) ("[B]efore any testing or disposition of evidence occurs, the defendant should be given notice of the type of evidence involved and its planned disposition.").

197 People v. Gomez, 596 P.2d 1192, 1197 (Colo. 1979) (heroin).

198 645 P.2d 1306, 1309-10 (Colo. 1982).

199 COLO. REv. STAT. § 16-3-309(2) (LexisNexis 2006) specifies the factors that a court should consider in determining whether the results of a laboratory test should be admitted when a sufficient quantity of the tested substance cannot be preserved for independent testing. These factors include, among other things, whether other testing methods were available, whether used test samples should have been preserved, whether quantitative testing was necessary, and whether it would have been reasonable to contact the defendant to determine if he wanted an expert present during the test.

sample." This, of course, requires the defendant be given notice. Where this procedure is not possible, the report comments: "our recommendation that all stages of the testing process be fully documented becomes particularly important."202

Defense Testing. The Standard applies to defense as well as prosecution testing. In State v. Cosey,203 the defense exhausted, during DNA testing, the remaining testable semen specimen that had been obtained from the crime scene, which precluded the prosecution from performing additional, more sophisticated DNA testing similar to that performed by the defense. The defendant neither intended to use the DNA tests at trial nor call the examiner as a witness. The Louisiana Supreme Court ruled that "fundamental fairness and the extraordinary circumstances presented by this case dictate that the prosecution be allowed to obtain copies of the test results in question."204

Standard 16-3.4(c) & (d)

Notice. At the time of testing, a suspect may not have been identified or, if identified, the suspect’s right to counsel may not have attached.205 Accordingly, the prosecutor’s obligation to give notice of a consumptive test is triggered when an accusatorial instrument has been filed206 or when requested by a possible suspect. The same obligation of notice applies to the defense when it intends to perform a consumptive test.

201 NRC II, supra note 3, at 88, Recommendation 3.3 ("Whenever feasible, forensic samples should be divided into two or more parts at the earliest practicable stage and the unused parts retained to permit additional tests. The used and saved portions should be used and handled separately. Any additional tests should be performed independently of the first by personnel not involved in the first test and preferable in a different laboratory.").

202 Id. at 184.

203 652 So. 2d 993 (La. 1995) (per curiam).

204 Id. at 994.

205 See Fellers v. United States, 540 U.S. 519, 523 (2004); Kirby v. Illinois, 406 U.S. 682, 689 (1972) (right to counsel attaches only after the "initiation of adversary judicial criminal proceedings – whether by way of formal charge, preliminary hearing, indictment, information, or arraignment").

206 See ABA STANDARDS FOR CRIMINAL JUSTICE, SPEEDY TRIAL AND TIMELY RESOLUTION OF CRIMINAL CASES, Standard 3.4 (2006) ("date of the defendant’s first appearance in court after either a charge is filed or a citation or summons is issued").
Standard 16-3.4(e)

*Judicial control.* The judge, of course, has the authority to control the conditions under which the evidence is tested, as discussed in Standard 4.2, which governs defense testing and retesting. In many laboratories, cameras and observation windows can provide suitable access for visiting observers, thereby minimizing the risk of contamination or interference with lab work.
PART IV: PRETRIAL PROCEEDINGS

STANDARD 16-4.1 DISCLOSURE

(a) The prosecutor should be required, within a specified and reasonable time prior to trial, to make available to the defense the following information and material relating to DNA evidence:
   (i) laboratory reports as provided in Standard 16-3.3;
   (ii) if different from or not contained in any laboratory report, a written description of the substance of the proposed testimony of each expert, the expert’s opinion, and the underlying basis of that opinion;
   (iii) the laboratory case file and case notes;
   (iv) a curriculum vitae for each testifying expert and for each person involved in the testing;
   (v) the written material specified in Standard 16-3.1(a);
   (vi) reports of all proficiency examinations of each testifying expert and each person involved in the testing, with further information on proficiency testing discoverable on a showing of particularized need;
   (vii) the chain of custody documents specified in Standard 1 6-2.5;
   (viii) all raw electronic data produced during testing;
   (ix) reports of laboratory contamination and other laboratory problems affecting testing procedures or results relevant to the evaluation of the procedures and test results obtained in the case and corrective actions taken in response; and
   (x) a list of collected items that there is reason to believe contained DNA evidence but have been destroyed or lost, or have otherwise become unavailable;
   (xi) material or information within the prosecutor’s possession or control, including laboratory information or material, that would tend to negate the guilt of the defendant or reduce the punishment of the defendant.

(b) The defense should be required, within a specified and reasonable time prior to trial, to make available to the prosecution the information and material in subdivision (a)(i) through (ix) of this standard for each expert whose testimony the defense intends to offer.
Commentary

Standard 16-4.1 provides for extensive discovery, both about the procedures used and the person conducting the testing and interpreting the results—e.g., laboratory reports, case files, case notes, proficiency examination reports, chain of custody documents, and raw electronic data. With two exceptions, prosecution discovery is coextensive with defense discovery.

Standard 16-4.1(a)

Comprehensive discovery is critical in scientific evidence cases, and DNA evidence is no exception.207 The National Academies 1992 Report recommended extensive discovery in DNA cases: “All data and laboratory records generated by analysis of DNA samples should be made freely available to all parties. Such access is essential for evaluating the analysis.”208 Current ABA Discovery Standards provide


208 See NRC I, supra note 22, at 146 (“The prosecutor has a strong responsibility to reveal fully to defense counsel and experts retained by the defendant all material that might be necessary in evaluating the evidence.”). See also id. at 105 (“Case records—such as notes, worksheets, autoradiographs, and population databanks—and other data or records that support examiners’ conclusions are prepared, retained by the laboratory, and made available for inspection on court order after review of the reasonableness of a request.”); NRC II, supra note 3, at 167-69 (“Certainly, there are no strictly scientific justifications for withholding information in the discovery process, and in Chapter 3 we discussed the importance of full, written documentation of all aspects of DNA laboratory operations. Such documentation would facilitate technical review of laboratory work, both within the laboratory and by outside experts... Our recommendation that all aspects of DNA testing be fully documented is most valuable when this documentation is discoverable in advance of trial.”).
for the discovery of expert testimony\textsuperscript{209} and the inspection of physical evidence.\textsuperscript{210} Subdivision 16-4.1(a)(xi) codifies and extends the \textit{Brady} obligation, and is consistent with current ABA Discovery Standards.\textsuperscript{211}

Early DNA cases recognized the need for extensive pretrial discovery, especially when compared to other forensic techniques. In \textit{United States v. Yee},\textsuperscript{212} the district court required disclosure of matching criteria, environmental insult studies, population data, and proficiency tests. \textit{People v. Castro},\textsuperscript{213} \textit{State v.}

\begin{itemize}
\item \textsuperscript{209} \textit{ABA Standards for Criminal Justice, Discovery}, Standard 11-2.1(a)(iv) (3d ed. 1996) ("With respect to each expert whom the prosecution intends to call as a witness at trial, the prosecutor should also furnish to the defense a curriculum vitae and a written description of the substance of the proposed testimony of the expert, the expert's opinion, and the underlying basis of that opinion.").
\item \textsuperscript{210} \textit{Id.}, Standard 11-2.1(a)(v) ("Any tangible objects, including books, papers, documents, photographs, buildings, places, or other objects which pertain to the case or which were obtained for or belong to the defendant. The prosecution should also identify which of these tangible objects it intends to offer as evidence at trial.").
\item \textsuperscript{211} \textit{Id.}, Standard 11-2.1(a)(viii).
\item \textsuperscript{212} \textit{United States v. Yee}, 129 F.R.D. 629, 635 (N.D. Ohio 1990). \textit{See also} \textit{State v. Schwartz}, 447 N.W.2d 422, 427 (Minn. 1989) ("[F]air trial and due process rights are implicated when data relied upon by a laboratory in performing tests are not available to the opposing party for review and cross examination.").
\item \textsuperscript{213} 545 N.Y.S.2d 985, 999 (Sup. Ct. 1989) ((1) Copies of autorads, with the opportunity to examine the originals. 2) Copies of laboratory books. 3) Copies of quality control tests run on material utilized. 4) Copies of reports by the testing laboratory issued to proponent. 5) A written report by the testing laboratory setting forth the method used to declare a match or non-match, with actual size measurements, and mean or average size measurement, if applicable, together with standard deviation used. 6) A statement by the testing lab, setting forth the method used to calculate the allele frequency in the relevant population. 7) A copy of the data pool for each loci examined. 8) A certification by the testing lab that the same rule used to declare a match was used to determine the allele frequency in the population. 9) A statement setting forth observed contaminants, the reasons therefore, and tests performed to determine the origin and the results thereof. 10) If the sample is degraded, a statement setting forth the tests performed and the results thereof. 11) A statement setting forth any other observed defects or laboratory errors, the reasons therefore and the results thereof. 12) Chain of custody documents.").
\end{itemize}
Charles, 214 and Ex parte Perry215 also recognized the need for extensive discovery. A number of state DNA admissibility statutes require pretrial notice and discovery.216 Illinois Supreme Court Rule 417 specifically

214 617 So. 2d 895, 896 (La. 1993) ((a) The computations which were performed in order to calculate the probability of a match; (b) The evidence on which the state’s laboratory relied to reach the following two assumptions (i) that the genotypes in each system are in Hardy-Weinberg equilibrium proportions; and (ii) all four systems are independently distributed in the populations; (c) How the tables used by the laboratory were obtained in order to reach its conclusion that the genotypes in each system are in Hardy-Weinberg equilibrium proportions and all four systems are independently distributed in the population; (d) How many individuals were used to calculate the frequencies in each column of the tables and how those individuals can be characterized demographically; and (e) What evidence was used to reach a conclusion that a bin width of 1/8% is reasonable including a scientific explanation of just what was analyzed and how it was analyzed.).

215 586 So. 2d 242, 255 (Ala. 1991) ((1) Copies of autorads, with the opportunity to examine the originals. (2) Copies of laboratory books. (3) Copies of quality control tests run on material utilized. (4) Copies of reports by the testing laboratory issued to the proponent. (5) A written report by the testing laboratory setting forth the method used to declare a match or non-match, with actual size measurements, and mean or average size measurement, if applicable, together with standard deviation used. (6) A statement setting forth observed contaminants, the reasons therefore, and tests performed to determine the origin and the effects thereof. (7) If the sample is degraded, a statement setting forth the tests performed and the results thereof. (8) A statement setting forth any other observed defects or laboratory errors, the reasons therefore and the effects thereof. (9) Chain of custody documents. (10) A statement by the testing lab, setting forth the method used to calculate the allele frequency in the relevant population. (11) A copy of the data pool for each loci examined. (12) A certification by the testing lab, that the same rule used to declare a match was used to determine the allele frequency in the population. (Note that the discovery provisions in (10), (11), and (12) specifically address evidence of DNA population frequency statistics.).

216 E.g., CONN. GEN. STAT. ANN § 54-86k(c) (West 2001) (21 day notice); MD. CODE ANN. CTS. & PROC. CODE § 10-915(C) (LexisNexis 2006) (“In any criminal proceeding, the evidence of a DNA profile is admissible to prove or disprove the identity of any person, if the party seeking to introduce the evidence of a DNA profile: (1) Notifies in writing the other party or parties by mail at least 45 days before any criminal proceeding; and (2) Provides, if applicable and requested in writing, the other party or parties at least 30 days before any criminal proceeding with: (i) First generation film copy or suitable reproductions of autoradiographs, dot blots, slot blots, silver stained gels, test strips, control strips, and any other results generated in the course of the
provides for discovery of DNA materials in all felony prosecutions, as well as in post-trial and post-conviction proceedings, including:

(i) Copies of the case file including all reports, memoranda, notes, phone logs, contamination records, and data relating to the testing performed in the case.

(ii) Copies of any autoradiographs, lumigraphs, DQ Alpha Polymarker strips, PCR gel photographs and electropherograms, tabular data, electronic files and other data needed for full evaluation of DNA profiles produced and an opportunity to examine the originals, if requested.

(iii) Copies of any records reflecting compliance with quality control guidelines or standards employed during the testing process utilized in the case.

(iv) Copies of DNA laboratory procedure manuals, DNA testing protocols, DNA quality assurance guidelines or standards, and DNA validation studies.

(v) Proficiency testing results, proof of continuing professional education, current curriculum vitae and job description for examiners, or analysts and technicians involved in the testing and analysis of DNA evidence in the case.

(vi) Reports explaining any discrepancies in the testing, observed defects or laboratory errors in the particular case, as well as the reasons for those and the effects thereof.

(vii) Copies of all chain of custody documents for each item of evidence subjected to DNA testing.

(viii) A statement by the testing laboratory setting forth the method used to calculate the statistical probabilities in the case.

(ix) Copies of the allele frequencies or database for each locus examined.

(x) A list of all commercial or in-house software programs used in the DNA testing, including the name of the software program, manufacturer and version used in the case.
(xi) Copies of all DNA laboratory audits relating to the laboratory performing the particular tests.\textsuperscript{217}

\textit{Laboratory reports.} Standard 16-3.3 requires laboratories to prepare written lab reports. Those reports are discoverable under Standard 16-4.1. Although laboratory reports are typically discoverable, most discovery statutes do not specify the content of the report. Thus, reports may not be sufficiently informative. If the report does not contain the information specified in Standard 16-3.3, that information is nevertheless discoverable. Moreover, a different standard (16-3.1) provides for public access to lab policy and procedures, including written protocols. To the extent that such material is not publicly available, it is discoverable.

\textit{Case files.} DAB and CODIS Standards require laboratories to maintain a case record in which all documentation generated by examiners relating to the case is retained.\textsuperscript{218} Typically, the case file will include electropherograms, chain of custody documents, case correspondence, lab notes, etc. ASCLD requires sufficient documentation so that an independent expert could evaluate whether the analysis was properly performed.

\textit{Proficiency tests.} The testifying examiner’s record of proficiency testing is relevant;\textsuperscript{219} the tests of other examiners generally are not. As the Maryland Court of Appeals commented: “Defense counsel cannot prepare to evaluate or challenge a State expert’s qualifications or testimony without an understanding of what tests the expert performed and how the expert performed them.”\textsuperscript{220} The court went on to note that the expert’s “qualifications, including her record in proficiency tests, also

\footnotesize{\textsuperscript{217} ILL. SUP. CT. R. 417(b).}
\footnotesize{\textsuperscript{218} DAB Standard 11.1.}
\footnotesize{\textsuperscript{219} See State v. Proctor, 559 S.E.2d 318, 322-23 (S.C. Ct. App. 2001) ("The proficiency test results could very well be material to the preparation of Proctor’s defense. All proficiency test results of the DNA analyst involved in the case must be produced. Defense counsel has the right to cross examine the DNA analyst regarding his or her performance on proficiency tests. A failing grade by the DNA analyst on his or her proficiency tests is clearly relevant in the judge’s evaluation of the expert’s competency and most probably reflects negatively on the reliability of the DNA evidence introduced at trial. The trial court abused its discretion in denying discovery of the proficiency test results pursuant to Rule 5.").}
\footnotesize{\textsuperscript{220} Cole v. State, 835 A.2d 600, 609 (Md. 2003).}
are relevant to the weight the fact-finder might give the test results based on its assessment of her competency."  

*Laboratory protocols.* Standard 16-3.1 provides for public access to lab policy and procedures, including written protocols. To the extent that such material is not publicly available, it is discoverable. As one court has commented: "Given that no outsider may observe testing within the laboratory, it is understandable that the defense would seek to obtain the lab’s standard operating procedures in order to evaluate the sufficiency of those procedures and determine if they were followed in the tests actually performed in a given case."  

*Calibration records.* Maintenance and calibration records for any instrumentation used in testing should be subject to discovery. As one court observed, "the defendant was entitled to challenge the accuracy of any test and to understand exactly how the test was performed. He was not required to demonstrate, before even gaining access to the desired information and documents, that the test results were inaccurate or the procedures faulty."  

*Standard 16-4.1(b)*  

*Defense discovery.* With two limitations, Standard 16-4.1(b) provides for prosecution discovery to the same extent as the defense discovery specified in subdivision (a). First, only materials associated with *testifying* defense experts are required to be disclosed, thereby excluding materials of an expert who serves only as a consultant. Second, the *Brady* obligation does not apply to the defense. Both exceptions are constitutionally based and consistent with the current ABA Discovery Standards.

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221 Id. at 610.
222 Id. at 609. *See also* State v. Dunn, 571 S.E.2d 650 (N.C. Ct. App. 2002) ("laboratory protocols, incidences of false positive results, quality control and quality assurance, and proficiency tests" are discoverable).
223 Cole v. State, 835 A.2d 600, 613 (Md. 2003). "Both the infrared spectrophotometer and the GCMS operate by comparing suspected CDS to a known calibration sample. For this reason, calibration records are essentially part of the test results." Id. at 610.
224 Compare Standard 4.1(a)(xi).
STANDARD 16-4.2  DEFENSE TESTING AND RETESTING

(a) Upon motion, made with notice to the prosecution, a court should permit the defense to inspect and test DNA evidence in the prosecution’s possession or control. An affidavit in support of the motion may be presented to the court ex parte.

(b) The motion should specify the nature of any test to be conducted, the name and qualifications of the expert designated to conduct the test, the place of testing, and the evidence upon which the test will be conducted.

(c) The court should issue any orders necessary to make the evidence to be inspected or tested available to the designated expert and condition its order so as to preserve the integrity of the material to be tested or inspected.

(d) Prosecution monitoring of the preparation and testing should not be permitted unless consumptive testing is involved as described in Standard 16-3.4.

Commentary

Standard 16-4.2 authorizes court-ordered defense inspection and testing of DNA evidence in the prosecution’s control. The Standard would permit an application for such an order to be made ex parte and would authorize the court to condition the order to preserve the integrity of the material to be inspected or tested, but would prohibit prosecution monitoring of the preparation and testing unless the testing is consumptive.

Standard 16-4.2(a) & (b)

ABA Discovery Standards provide for the right to retest evidence in the government’s possession, and ABA Resolution No. 115 reads: “All biological evidence should be made available to defendants and convicted persons upon request . . . .” In addition, the 1996 National

226 ABA STANDARDS FOR CRIMINAL JUSTICE, DISCOVERY, Standard 11-3.2(b) (3d ed. 1996) (“Upon motion, either party should be permitted to conduct evaluations or tests of physical evidence in the possession or control of the other party which is subject to disclosure. The motion should specify the nature of the test or evaluation to be conducted, the names and qualifications of the experts designated to conduct evaluations or tests, and the material upon which such tests will be conducted.”).

Academies Report noted that "[a] wrongly accused person's best insurance against the possibility of being falsely incriminated is the opportunity to have the testing repeated."228 Many discovery rules explicitly provide for defense retesting or have been so construed,229 and a number of cases have recognized a constitutional right to retest.230

*Ex parte affidavit.* The affidavit for retesting may be presented to the court ex parte. If the order is issued and the defense offers test results at trial, prosecution discovery is required pursuant to Standard 16-4.1(b)

Testing should be conducted and laboratory reports written as provided in Standards 16-3.2, 16-3.3, and 16-3.4. Standard 16-5.4 covers prosecution comment on defense testing or retesting.

**Standard 16-4.2(c)**

A court may impose reasonable safeguards on retesting.231 This accords with ABA Discovery Standards: "The Court should condition its order so as to preserve the integrity of the material to be tested or evaluated."232

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228 NRC II, *supra* note 3, at 87.
229 See 1 PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, *SCIENTIFIC EVIDENCE* ch. 3 (4th ed. 2007) (listing statutes and rules). The federal courts have read this right into the federal discovery rule: "In cases involving a controlled substance, courts have held a concomitant part of the examination or inspection to be the right of the accused to have an independent chemical analysis performed on the seized substance." United States v. Gaultney, 606 F.2d 540, 545 (5th Cir. 1979), *rev'd on other grounds sub nom.* Steagald v. United States, 451 U.S. 204 (1981).
230 "Fundamental fairness is violated when a criminal defendant ... is denied the opportunity to have an expert of his choosing, bound by appropriate safeguards imposed by the Court, examine a piece of critical evidence whose nature is subject to varying expert opinion." Barnard v. Henderson, 514 F.2d 744, 746 (5th Cir. 1975).
231 See United States v. Dukes, 139 F.3d 469, 477 (5th Cir. 1998) ("The Government does not dispute Dukes's right to inspect and test the evidence pursuant to Fed.R.Crim.P 16(a)(1)(c). Rather, it contends that Dukes could have had the cocaine base tested had he complied with the DEA procedures for doing so.").
STANDARD 16-4.3 DEFENSE EXPERTS

(a) Expert assistance should be provided to an indigent defendant at government expense prior to and during trial if there is reason to believe that the prosecution will present DNA evidence or if expert assistance may lead to the discovery of relevant evidence.

(b) The defendant should be permitted to make an application for expert assistance ex parte.

(c) If the expert will not testify as a defense witness at trial, the prosecution should not be permitted to interview or call the defense expert as a prosecution witness unless the court determines that the prosecution has no alternative means to obtain equivalent evidence that the expert possesses.

Commentary

Standard 16-4.3(a)

Standard 16-4.3(a) would permit expert assistance to be provided to an indigent defendant at government expense "if there is reason to believe that the prosecution will present DNA evidence or if expert assistance may lead to the discovery of relevant evidence." ABA Standards on Defense Services require access to defense experts,233 as do the ABA Mental Health Standards.234 In Ake v. Oklahoma,235 the Supreme Court recognized a due process right to a defense expert under

233 ABA STANDARDS FOR CRIMINAL JUSTICE, PROVIDING DEFENSE SERVICES, Standard 5-1.4 (3d ed. 1992) ("The legal representation plan should provide for investigatory, expert, and other services necessary to quality legal representation. These should include not only those services and facilities needed for an effective defense at trial but also those that are required for effective defense participation in every phase of the process. In addition, supporting services necessary for providing quality legal representation should be available to the clients of retained counsel who are financially unable to afford necessary supporting services.").

234 ABA STANDARDS FOR CRIMINAL JUSTICE, MENTAL HEALTH, Standard 7-3.3 (1989) (discussing differences between a consulting and testifying expert).

certain circumstances.\footnote{470 U.S. at 74.} \textit{Ake} has been applied to DNA evidence. In \textit{Ex parte Dubose},\footnote{662 So. 2d 1189 (Ala. 1995).} the court wrote: “Given the complexity of DNA technology, it is doubtful that a defense attorney will have the requisite knowledge to effectively [examine such evidence] without expert assistance.”\footnote{Id. at 1196.} Another court identified the “highly technical” nature of DNA evidence as a factor in the appointment decision.\footnote{Cade v. State, 658 So. 2d 550, 553 (Fla. Dist. Ct. App. 1995) (“whether the evidence is highly technical”). \textit{See also} Polk v. State, 612 So. 2d 381, 393-94 (Miss. 1992) (appendix guidelines for future DNA cases) (“It is also imperative that no defendant have [DNA] evidence admitted against him without the benefit of an independent expert witness to evaluate the data on his behalf.”); \textit{Ake} requires defendant “be allowed reasonable funds for access to an expert who can independently evaluate the evidence presented against him by the State, analyze it, and present that analysis at trial.”.}

The National Academies 1992 Report indicated that experts will be needed in most cases: “Defense counsel must have access to adequate expert assistance, even when the admissibility of the results of analytical techniques is not in question because there is still a need to review the quality of the laboratory work and the interpretation of results.”\footnote{NRC I, supra note 22, at 147, 149 (“Because of the potential power of DNA evidence, authorities must make funds available to pay for expert witnesses . . .”).} A British study came to the same conclusion: “Legal Aid should be granted automatically for one expert assessment of the prosecution work. DNA evidence should only be admissible where an appropriate expert is available to the defence.”\footnote{BEVERLEY STEVENTON, ROYAL COMM’N ON CRIMINAL JUSTICE, THE ABILITY TO CHALLENGE DNA EVIDENCE, RESEARCH STUDY No. 9, at 44 (1993).}

According to the \textit{President's DNA Initiative}, “Even if DNA evidence is admitted, there still may be disagreement about its interpretation—what do the DNA results \textit{mean} in a particular case?”\footnote{President’s DNA Initiative: Principles of Forensic DNA for Officers of the Court (CD).} Commentators have argued, that “[a]lthough current DNA tests rely heavily on computer-automated equipment, the interpretation of the results often requires subjective judgment.”\footnote{See William C. Thompson et al., \textit{Part I: Evaluating Forensic DNA Evidence}, \textit{The Champion} 16 (April 2003).}
degradation, allelic dropout, spurious peaks, and false peaks must be evaluated in interpreting some DNA electropherograms. Adequate representation, therefore, often requires expert assistance.

Moreover, despite the power of DNA evidence, problems have been exposed in its use. Misconduct in testing, shortcomings in procedures, and simple error can lead to inaccurate results, which, if not identified and challenged, can create injustice in particular cases.

**Pretrial.** Expertise is often needed in the early stages of trial preparation. There are times when an Ake request, of necessity, must be somewhat exploratory—i.e., an attorney may need an expert to determine if there is a meritorious scientific evidence issue in the case. In this circumstance, a court could award funds for a preliminary evaluation, with further funding based on the results of such an evaluation.

*Standard 16-4.3(b)*

**Ex parte procedures.** Under the Criminal Justice Act, both the application for defense services and the proceedings to determine whether to grant the request are ex parte. As one court has noted: "The manifest purpose of requiring that the inquiry be ex parte is to insure that the defendant will not have to make a premature disclosure of his case." Some, but not all, courts have ruled that Ake requires ex parte procedures as a matter of federal constitutional law: "[I]n making the requisite showing defendant could be placed in a position of revealing his theory of the case. He therefore has a legitimate interest in making that showing ex parte." Moreover, this is not an adversarial

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244 See DAVID J. BALDING, WEIGHT-OF-EVIDENCE FOR FORENSIC DNA PROFILES 1 (2005) ("However, the potential for crucial mistakes and misunderstandings remains. Although DNA evidence is typically very powerful, the circumstances under which it might not lead to satisfactory conclusions about identification or relatedness are not widely appreciated.").

245 See supra notes 15-20 and accompanying text (Introduction).

246 See Puett v. Superior Court, 158 Cal. Rptr. 266, 267 (Ct. App. 1979) ("In the nature of things it may be difficult, in advance of trial, for counsel representing an indigent defendant to demonstrate an undoubted need for such funds [for an expert]. However, he can at least advise the court as to the general lines of inquiry he wishes to pursue, being as specific as possible.").


249 Brooks v. State, 385 S.E.2d 81, 84 (Ga. 1989). Accord Ex parte Moody, 684 So. 2d 114, 120 (Ala. 1996) ("An indigent criminal defendant is entitled to an ex parte hearing on whether expert assistance is necessary, based
proceeding, and a prosecutor’s responsibility does not extend to protecting the public coffers. Further, the prosecutor’s presence intrudes into defense counsel’s ability to develop a defense.

**Standard 16-4.3(c)**

**Prosecution monitoring.** Standard 16-4.2(c) deals with the rare case where a test cannot be repeated or some unique event occurs during testing. If the test is consumptive, the court must be notified under Standard 16-3.4. For example, in *State v. Cosey*, the defense exhausted, during DNA testing, the remaining testable crime scene semen specimen, which precluded the prosecution from performing additional, more sophisticated DNA testing similar to that performed by the defense. The defendant did not intend to use the DNA tests at trial or call the analyst as a witness. The Louisiana Supreme Court ruled that “fundamental fairness and the extraordinary circumstances presented by

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250 On what basis could a prosecutor oppose appointment?

251 In United States v. Abreu, 202 F.3d 386 (1st Cir. 2000), when notified about the CJA application, the government filed in opposition. “Because the government was present, defense counsel declined to place on the record certain confidential matters that formed part of the basis for the application.” *Id.* at 388.

252 652 So. 2d 993 (La. 1995) (per curiam).
this case dictate that the prosecution be allowed to obtain copies of the test results in question."\textsuperscript{253}
PART V: TRIAL

Standard 16-5.1 Admissibility of DNA Evidence

(a) Expert testimony concerning DNA evidence, including statistical estimates, should be admissible if based on a valid scientific theory, a valid technique implementing that theory, and testing and interpretation properly applying that theory and technique.

(b) A court should be permitted to take judicial notice of facts relating to DNA evidence that are not subject to reasonable dispute.

(c) A witness testifying about DNA evidence should be qualified by knowledge, skill, training, or education in those matters about which that witness testifies.

(d) Whenever feasible, issues involving the admissibility of DNA evidence should be determined prior to trial.

Commentary

Standard 16-5.1, which governs the admissibility of DNA profiling, requires the proponent of DNA evidence to establish that the testimony, including statistical estimates, is based on a valid scientific theory, a valid technique implementing that theory, and testing and interpretation properly applying the theory and technique. The qualifications of experts, judicial notice, and in limine motions are also addressed.

Standard 16-5.1(a)

The reliability of evidence derived from a scientific theory or principle depends upon three factors: (1) the validity of the underlying theory; (2) the validity of the technique applying that theory; and (3) the proper application of the technique on a particular occasion. In short,

254 The first two factors – the validity of the underlying theory and validity of the technique – are distinct issues. One could accept, for example, the validity of the premise underlying DNA profiling – the uniqueness of every person’s DNA (except identical twins) – but still question whether a particular DNA technique can reliably identify that uniqueness. The third factor – the proper application of a scientific technique on a particular occasion – raises a number of additional issues: (a) the condition of any instrumentation used in the technique; (b) adherence to proper procedures; and (c) the qualifications of both
neither an invalid technique nor a valid technique improperly applied will produce reliable results.

Courts have confronted the admissibility of DNA evidence for two decades. The initial DNA skirmishes over laboratory protocols quickly metamorphosed into fights over statistical interpretation and population genetics. No other technique had been as complex or so subject to rapid change. New DNA technologies were introduced at the trial level as cases litigating the older procedures worked their way through the appellate court system. The initial technique, Restriction Fragment Length Polymorphism (RFLP) analysis by gel electrophoresis, was soon supplanted by Polymerase Chain Reaction (PCR)-based methods involving the DQ-alpha locus, "polymarkers," and the DIS80 locus. These, in turn, were replaced by PCR amplification and capillary

the person conducting the procedure and the person interpreting the results. See 1 PAUL C. GIANNELLI & EDWARD J. IMWINKELRIED, SCIENTIFIC EVIDENCE § 1-1 (4th ed. 2007).


256 See Eric S. Lander & Bruce Budowle, DNA Fingerprinting Dispute Laid to Rest, 371 NATURE 735, 735 (Oct. 27, 1994) ("The initial outcry over DNA typing standards concerned laboratory problems: poorly defined rules for declaring a match; experiments without controls; contaminated probes and samples; and sloppy interpretation of autoradiograms. Although there is no evidence that these technical failings resulted in any wrongful convictions, the lack of standards seemed to be a recipe for trouble."); William C. Thompson, Evaluating the Admissibility of New Genetic Identification Tests: Lessons From the "DNA War", 84 J. CRIM. L. & CRIMINOLOGY 22 (1993).

electrophoresis of Short Tandem Repeats (STRs), the current procedure.²⁵⁸

In addition to nuclear DNA, mitochondrial DNA (mtDNA)²⁵⁹ and Y-STR DNA²⁶⁰ have been introduced in criminal cases, as has animal²⁶¹ and plant DNA.²⁶² New issues are presented to the courts on a routine


²⁵⁹ E.g., United States v. Beverly, 369 F.3d 516 (6th Cir. 2004); United States v. Coleman, 202 F. Supp. 2d 962 (E.D. Mo. 2002); Magaletti v. State, 847 So. 2d 523, 528 (Fla. Dist. Ct. App. 2003); People v. Holtzer, 660 N.W.2d 405, 411 (Mich. Ct. App. 2003); State v. Underwood, 518 S.E.2d 231 (N.C. Ct. App. 1999); State v. Scott, 33 S.W.3d 746 (Tenn. 2000); State v. Council, 515 S.E.2d 508 (S.C. 1999). See generally Edward K. Cheng, Mitochondrial DNA: Emerging Legal Issues, 13 J. L. & Pol'y 99 (2005) (“Compared with traditional nuclear DNA (nDNA) analysis, mtDNA offers three primary benefits. First, its structure and location in the cell make mtDNA more stable, enabling investigators to test old or degraded samples. Second, mtDNA is available in larger quantities per cell, enabling the testing of smaller samples. Finally, and perhaps most importantly, mtDNA can be extracted from samples in which nDNA cannot, specifically bone fragments and hair shafts.”) (footnotes omitted); Mark Curriden, A New Evidence Tool: First Use of Mitochondrial DNA Test in a U.S. Criminal Trial, 82 A.B.A.J. 18, 18 (Nov. 1996) (the rape-murder of a 4-year-old girl was solved from a small red hair found in the victim’s throat).

²⁶⁰ Lindsay Fortado, Courts Accepting New Type of DNA Evidence, NAT’L L.J., May 23, 2005, at 7. Y-STR technology isolates the Y chromosome, which only men have.


bases\textsuperscript{263} — for example, the proper method for calculating statistical estimates in "cold hit" cases\textsuperscript{264} and the admissibility of DNA profiles derived from "low copy number" (LCN) DNA.\textsuperscript{265}

A number of states have enacted DNA admissibility statutes,\textsuperscript{266} but most provide little guidance. Standard 5.1 does not attempt to resolve the \textit{Daubert-Frye} debate.\textsuperscript{267} Over the last decade, \textit{Daubert} has developed

\textsuperscript{263} For text on DNA evidence, see DAVID J. BALDING, \textit{WEIGHT-OF-EVIDENCE FOR FORENSIC DNA PROFILES} (2005); JOHN M. BUTLER, \textit{FORENSIC DNA TYPING: BIOLOGY, TECHNOLOGY, AND GENETICS OF STR MARKERS} (2d ed. 2005); IAN W. EVETT & BRUCE S. WEIR, \textit{INTERPRETING DNA EVIDENCE: STATISTICAL GENETICS FOR FORENSIC SCIENTISTS} (1998); \textit{FORENSIC DNA EVIDENCE INTERPRETATION} (John Buckleton et al. eds., 2005).

\textsuperscript{264} See People v. Johnson, 43 Cal. Rptr. 3d 587, 600 (Cal. Ct. App. 2006) ("[T]he fact that many profiles have been searched increases the probability of finding a match, so that conceptually, the more populated the database, the less impressive the match. Appellant contends that there is broad scientific consensus concerning the need to determine differently the statistical significance of profile matches in a cold hit case versus a confirmation case, but says that the means of determining the statistical value of a cold hit 'is a matter of continuing and strident debate.' "); United States v. Jenkins, 887 A.2d 1013 (D.C. 2005).

\textsuperscript{265} See Shaila Dewan, \textit{As Police Extend Use of DNA, a Smudge Could Catch a Thief}, \textit{N.Y. TIMES}, May 26, 2004. Low copy DNA is obtained from genetic material taken from as few as six cells. In comparison, conventional DNA testing requires approximately one hundred and fifty cells. The Office of the New York City Medical Examiner, a pioneer in this technology, is applying it in the investigation of property crimes, using skin cells left, for example, "in a smudged fingerprint or a ski mask." \textit{Id.} A similar project is underway in the Miami-Dade Police Department, which, as reported in 2004, "ha[d] gotten hits on more than 50 percent of its DNA submissions from burglaries," and an earlier one began in the United Kingdom. \textit{Id.}

If the admissibility of such evidence becomes established, it must be used with caution. "Experts disagree as to the admissibility of low copy analysis as courtroom evidence. Mechthild Prinz, an assistant director in charge of the new lab, said that because the samples will be destroyed in testing, there will be no way to allow defense lawyers to conduct their own tests. Then there is secondary transfer: for example, a thief robs a house after shaking hands with a friend and leaves the friend's DNA signature at the scene." \textit{Id.}

\textsuperscript{266} E.g., \textit{CONN. GEN. STAT. ANN.} § 54-86k (West 2001); \textit{MD. CODE ANN. CTS. & PROC.} § 10-915(c) (LexisNexis 2006); \textit{VA. CODE ANN.} § 19.2-270.5 (2004).

\textsuperscript{267} \textit{Daubert v. Merrell Dow Pharma., Inc.}, 509 U.S. 579 (1993); \textit{Frye v. United States}, 293 F.1013 (D.C. Cir. 1923). \textit{See} Paul C. Giannelli, \textit{The
DNA Evidence

into a rigorous standard for judging the admissibility of expert testimony. In *Weisgram v. Marley Co.*, the Supreme Court referred to *Daubert* as imposing “exacting standards of reliability.” In response to *Daubert* and *Kumho Tire*, Federal Rule 702 was amended in 2000. Admissibility now requires that expert testimony (1) be “based upon sufficient facts or data;” (2) be “the product of reliable principles and methods;” and (3) be reliably applied “to the facts of the case.” Some states, however, continue to apply the *Frye* standard, and many of these are populous – those in which many, if not most, criminal cases are tried. Some of these jurisdictions believe *Frye* offers greater protection for defendants than *Daubert*. Thus, whether under an increasingly stringent *Daubert* standard or a reinvigorated *Frye* test, scientific proof is being scrutinized more closely than ever before. As for DNA evidence, DAB and CODIS Standards require validation, both developmental and internal. Such validation, if properly performed, would presumably satisfy both the *Daubert* and *Frye* tests.

**Statistical estimates.** DNA is a two-step process. If there is a “match” in the first step (no exclusion), then a statistical estimate is calculated. This step also must be validated because improperly

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269 “[I]n order to qualify as ‘scientific knowledge,’ an inference or assertion must be derived by the scientific method. Proposed testimony must be supported by appropriate validation – i.e., ‘good grounds,’ based on what is known. In short, the requirement that an expert’s testimony pertain to ‘scientific knowledge’ establishes a standard of evidentiary reliability.” 509 U.S. at 590.


272 See Ramirez v. State, 810 So. 2d 836, 843 (Fla. 2001); State v. Copeland, 922 P.2d 1304, 1314 (Wash. 1996) (en banc).

273 DAB Standard 8. See *Daubert*, 509 U.S. at 590 n.9 (“We note that scientists typically distinguish between ‘validity’ (does the principle support what it purports to show?) and ‘reliability’ (does application of the principle produce consistent results?). . . . In a case involving scientific evidence, *evidentiary reliability* will be based upon *scientific validity*."

274 DNA profiling involves two fields: molecular biology and population genetics. Thus, the process involves two corresponding steps – first, determining whether the genetic markers at different loci “match” (no
derived statistical estimates can lead to unreliable results. There appears to be general agreement on the calculation of estimates for STRs, but each new procedure needs to be validated.\(^{275}\)

**Proper application.** The 2000 federal amendment to Rule 702 requires a showing that the technique was properly applied in the particular case as a prerequisite to admissibility, and Standard 16-5.1(a) is in accord.

**Standard 16-5.1(b)**

**Judicial notice.** Once a scientific principle is sufficiently established, a court may take judicial notice of the validity of that principle.\(^ {276}\) The 1992 National Academies Report listed a number of facts concerning DNA that could be judicially noticed,\(^ {277}\) and courts have

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\(^{276}\) See Daubert v. Merrell Dow Pharm., Inc., 509 U.S. 579, 593 n.11 (1993) ("[T]heories that are so firmly established as to have attained the status of scientific law, such as the laws of thermodynamics, properly are subject to judicial notice under Fed. Rule Evid. 201.").

\(^{277}\) NRC I, *supra* note 22, at 149:

— The study of DNA polymorphisms can, in principle, provide a reliable method for comparing samples.

— Each person's DNA is unique (except that of identical twins), although the actual discriminatory power of any particular DNA test will depend on the sites of DNA variation examined.

— The current laboratory procedure [RFLP] for detecting DNA variation (specifically, single-locus probes analyzed on Southern blots without evidence of band shifting), is fundamentally sound, although the validity of any particular implementation of the basic procedure will depend on proper characterization of the
taken judicial notice in DNA cases. Nevertheless, care is required in describing exactly what facts are being noticed. If RFLP is judicially noticed as reliable, another method, such as Y-STR, should not automatically be assumed to be reliable.

**Standard 16-5.1(c)**

*Qualifications.* By providing that a witness may qualify as an expert by reason of "knowledge, skill, experience, training, or education," Standard 16-5.1(c) tracks Federal Rule 702 with one addition that is implicit in the federal rule. An expert’s testimony must relate to the subject matter on which the expert has been qualified. In other words, a witness may be qualified to express an opinion on one matter but not on another. The 1996 National Academies Report observed:

> Because DNA identification can involve testimony as to laboratory findings, statistical interpretation of these findings and the underlying principles of molecular biology, . . . expertise in several fields might be required. An expert who is qualified to testify about laboratory techniques might not be qualified to testify about molecular biology, to estimate population frequencies, or to establish that an estimation procedure is valid. Consequently, more than one expert might be needed. 279

A similar notion is also reflected in the DAB and CODIS standards which specify different qualifications for "examiners" and "technicians." 280

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278 E.g., United States v. Beasley, 102 F.3d 1440, 1448 (8th Cir. 1996) ("[T]he reliability of the PCR method of DNA analysis is sufficiently well established to permit the courts of this circuit to take judicial notice of it in future cases."); Hayes v. State, 660 So. 2d 257, 262, 264 (Fla. 1995) (courts may take judicial notice of some aspects of DNA; but correcting for band-shifting is not generally accepted, citing NRC I report); Fugate v. Commonwealth, 993 S.W.2d 931, 937-38 (Ky. 1999) ("DNA comparison analysis using the RFLP and PCR methods is admissible without being the subject of a pretrial Daubert hearing. However, the evidence in question is still subject to challenge at trial.").

279 NRC II, supra note 3, at 169.

280 DAB Standards 5.3 and 5.4.
Standard 16-5.1(d)

Motions in limine. The use of motions in limine to resolve evidentiary disputes before trial is now well established. Moreover, Federal Rule 103(c) requires that discussions involving the admissibility of evidence be held outside the hearing of the jury whenever practicable. Some early DNA cases involved several weeks of expert testimony before a decision on admissibility was made. Determining admissibility at an in limine hearing, at which time the trial court may consider offers of proof, affidavits, stipulations, or learned treatises, is often the most efficient procedure. Such a hearing, however, is discretionary.

STANDARD 16-5.2 TRADE SECRETS PRIVILEGE

(a) The successful assertion of the trade secrets privilege should not relieve the proponent of DNA evidence of the obligation to satisfy the admissibility criteria of Standard 16-5.1.

(b) A trade secrets privilege should be recognized if the allowance of the privilege would not tend to conceal fraud, prevent the proponent of DNA evidence from satisfying Standard 16-5.1, unduly interfere with the ability of a party to challenge the admissibility of the evidence or its reliability, or otherwise work an injustice. When disclosure is directed, the judge should prescribe such protective measures as the furtherance of justice may require.

Commentary

As the process of analyzing DNA evidence becomes more automated, the instrumentation used becomes more important. Standard

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281 See Ohler v. United States, 529 U.S. 753 (2000); Luce v. United States, 469 U.S. 38, 41 n.4 (1984) ("Although the Federal Rules of Evidence do not explicitly authorize in limine rulings, the practice has developed pursuant to the district court's inherent authority to manage the course of trials.").

282 See also Fed. R. Evid. 104(c) (containing a comparable provision).

283 See United States v. Yee, 134 F.R.D. 161, 168 (N.D. Ohio 1991) ("hearings were held for approximately six weeks"); People v. Castro, 545 N.Y.S.2d 985, 986 (Sup. Ct. 1989) ("This hearing took place over a twelve week period producing a transcript of approximately five thousand pages.").

284 United States v. Downing, 753 F.2d 1224, 1241 (3d Cir. 1985).
5.2 recognizes a trade secrets privilege. The privilege, however, is qualified, not absolute, and must give way in some instances to other interests as set forth in subdivision (b).

In any event, the privilege does not relieve the offering party of the responsibility of satisfying the admissibility requirements set forth in Standard 16-5.1. A party may be able to satisfy these requirements without the privileged material. DAB requires internal validation by each laboratory, and this may suffice over time with multiple validations in different laboratories. Some, but not all, courts have ruled DNA evidence inadmissible when manufacturers refused to disclose the underlying data.

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285 Proposed Federal Rule 508 (never adopted) recognized such a privilege. See PROPOSED FED. R. EVID. 508 advisory committee's note ("While sometimes said not to be a true privilege, a qualified right to protection against disclosure of trade secrets has found ample recognition, and indeed, a denial of it would be difficult to defend."). 56 F.R.D. 183, 250 (1972). See generally EDWARD J. IMWINKELRIED, THE NEW WIGMORE: A TREATISE ON EVIDENCE § 9.2 (2002) (discussing trade secret privilege).

286 The 1992 National Academies Report stated that "[p]rivate laboratories used for testing should not be permitted to withhold information from defendants on the ground that trade secrets are involved." NRC I, supra note 22, at 162. The Report elaborated:

Protective orders should not be used to prevent experts on either side from obtaining all relevant information, which can include original materials, data sheets, software protocols, and information about unpublished databanks. A protective order might be appropriate to limit disclosures by attorney and experts to third parties about proprietary information acquired in the course of a particular case; but as a general rule, any scientific information used in a case should be open to widespread scientific scrutiny.

Id. at 148.

287 See State v. Traylor, 656 N.W.2d 885, 899-900 (Minn. 2003) ("In this case, the BCA did not have Perkin-Elmer's validation studies or the primer sequences when it performed DNA analysis using the kits. Instead, through the use of its own testing of the kits, the BCA validated that the kits produce reliable results. Traylor likewise could have obtained the kits and performed the same type of validation testing as the BCA laboratory. Moreover, Traylor could have perused any number of publicly available validation studies that have been performed on these kits since their inception.").

While many jurisdictions recognize a trade secrets privilege, there is wide variation in its scope. Three points are noteworthy. First, the scope of the privilege must be defined. It may be that primer sequences should be protected but validation studies should not be covered. Second, the privilege is qualified. Upon a proper showing, the privilege should give way to the public interest. Third, protective orders are available.  

**STANDARD 16-5.3 PRESENTATION OF EXPERT TESTIMONY**

(a) An expert giving testimony concerning DNA evidence should be asked to identify and explain the theoretical and factual basis for any opinion given and the reasoning upon which the opinion is based.

(b) Expert testimony should be presented to the trier of fact in a manner that accurately and fairly conveys the significance of the expert’s conclusions.

(c) Valid statistical estimates of population frequencies should be admissible.

(d) When DNA evidence is offered at trial, evidence relevant to the reliability of that evidence, including relevant evidence of laboratory error, contamination, or sample mishandling, should also be admissible.

(e) An attorney intending to call an expert witness concerning DNA evidence should confer with that expert in preparing for trial in order to permit an informed and appropriate presentation consistent with this standard.

**Commentary**

**Standard 16-5.3(a)**

Jurors should not be expected to accept an expert witness’s opinion simply because the witness is permitted to testify as an expert. Expert

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289 See State v. Traylor, 656 N.W.2d 885, 899-900 (Minn. 2003) (“Dr. William Shields, an expert for Traylor, was allowed to view copies of Perkin-Elmer’s validation studies under a protective order.”); State v. Schwartz, 447 N.W.2d 422, 427 (Minn. 1989) (“The defense request for more specific information regarding its methodology and population data base was denied by Cellmark. Arguably, trade secrets may be at stake for the commercial laboratories. Protective measures could be pursued, however, before denial of discovery is appropriate.”).
testimony should be presented in a way that conveys the theoretical and factual basis for the expert’s findings and the reasons underlying the expert’s opinions.

**Standard 16-5.3(b)**

Experts should not offer their conclusions in a manner that is misleading to the jury.\(^\text{290}\) For this reason, it is often better to bring out the limitations of a technique on direct examination. Attorneys sometimes pressure experts to “push the envelope” – not a surprising occurrence in the adversary system. ABA Standards provide: “A prosecutor who engages an expert for an opinion should respect the independence of the expert and should not seek to dictate the formation of the expert’s opinion on the subject. To the extent necessary, the prosecutor should explain to the expert his or her role in the trial as an impartial expert called to aid the fact finders . . . .”\(^\text{291}\) A comparable Standard applies to defense counsel.\(^\text{292}\)

**Standard 16-5.3(c)**

Typically, DNA evidence includes a statistical estimate in the form of a “random match probability.” If properly presented, such an estimate gives the jury helpful information concerning the probative value of the evidence. If such an estimate is not available, a “match” is nevertheless relevant.\(^\text{293}\) However, use of the term “match” without further

\(^{290}\) NRC I, *supra* note 22, at 26 (“Prosecutors and defense counsel should not oversell DNA evidence. Presentations that suggest to a judge or jury that DNA typing is infallible are rarely justified and should be avoided.”).

\(^{291}\) ABA STANDARDS FOR CRIMINAL JUSTICE, PROSECUTION FUNCTION, Standard 3-3.3(a) (3d ed. 1993). The commentary to this Standard states: “Statements made by physicians, psychiatrists, and other experts about their experiences as witnesses in criminal cases indicate the need for circumspection on the part of prosecutors who engage experts. Nothing should be done by the prosecutor to cast suspicion on the process of justice by suggesting that the expert color an opinion to favor the interests of the prosecutor.” *Id.*, cmt. at 59.

\(^{292}\) ABA STANDARDS FOR CRIMINAL JUSTICE, DEFENSE FUNCTION, Standard 4-4.4(a) (3d ed. 1993).

\(^{293}\) Population-frequency statistics for a mixed sample may not be appropriate. Turner v. State, No. CR-99-1568, 2002 WL 31629839, at * 22 (Ala. Crim. App. 2002) (“[T]he defense expert testified that population-frequency statistical information was not usually calculated for mixed samples because, he testified, the information from such a sample was deceiving.”); Watts v. State, 733 So. 2d 214, 223 (Miss. 1999) (“because of the mixed sample on the shorts,
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explanation may be misleading. There is disagreement about how to report statistical estimates in cold hit cases.

Commentators have identified what is known as the "prosecution" and "defense" fallacies, both of which should be avoided. Although some courts and commentators have expressed concern about the risk of jurors overvaluing statistical estimates, the little research on the subject suggests the opposite may be more likely.

The 1996 National

Dr. Tracey could not generate any statistical data with the same certainty that he was able to achieve on the jacket.

The NRC I Report contained the following statement: "To say that two patterns match, without providing a scientifically valid estimate (or at least an upper bound) of the frequency with which such matches might occur by chance, is meaningless." NRC I, supra note 22, at 74. However, evidence of a "match" without a probability estimate is relevant under the definition of relevance in Federal Rule 401, which codifies the common law. See NRC II, supra note 3, at 192-93 (discussing issue).

See People v. Johnson, 43 Cal. Rptr. 3d 587, 660 (Cal. Ct. App. 2006) ("[T]he fact that many profiles have been searched increases the probability of finding a match, so that conceptually, the more populated the database, the less impressive the match. Appellant contends that there is broad scientific consensus concerning the need to determine differently the statistical significance of profile matches in a cold hit case versus a confirmation case, but says that the means of determining the statistical value of a cold hit "is a matter of continuing and strident debate."); United States v. Jenkins, 887 A.2d 1013 (D.C. 2005).

See William C. Thompson & Edward L. Schumann, *Interpretation of Statistical Evidence in Criminal Trials: The Prosecutor’s Fallacy and the Defense Attorney’s Fallacy*, 11 LAW & HUM. BEHAV. 167 (1987). For example, assume AB blood type is found at a murder scene, which is also the defendant’s type. (Assume the victim’s type was “O”.) In the ABO blood system, 3% of the population has type AB. It would be misleading for the prosecutor to argue that the chance of guilt was 97%, because in a population of one million, there would be 30,000 people with type AB. It would also be misleading for the defense to argue that the evidence was irrelevant or that the chance of guilt was only one in 30,000, when there is other evidence in the case pointing to the defendant (e.g., the victim was the defendant’s estranged wife). The defense attorney’s fallacy occurs when evidence is considered in isolation, rather than in totality.

NRC II, supra note 3, at 197 ("Empirical research does not support the common assertion that statistical evidence is overvalued. To the contrary, several studies with mock jurors suggest that decision-makers generally make smaller adjustments in their judgments in response to probability evidence than the statistical evidence warrants."); David H. Kaye & Jonathan Koehler, *Can
Academies Report recommended further research on jury understanding, and several studies since the Report was issued have looked at the issue. Some studies indicate that how the evidence is presented (e.g., as a frequency, probability, or odds) influences how jurors understand the evidence.

**Standard 16-5.3(d)**

As recent news reports demonstrate, the power of DNA evidence can be undermined if the evidence is improperly handled or tested. Laboratories can make errors, as can the police in the collection

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NRC II, supra note 3, at 42, Recommendation 6.1 (“Behavioral research should be carried out to identify any conditions that might cause a trier of fact to misinterpret evidence on DNA profiling and to assess how well various ways of presenting expert testimony on DNA can reduce such misunderstandings.”).


Two different statements may communicate the same information: (1) “The probability that the suspect would match the blood specimen if he were not the source is 0.1%”; and (2) “The frequency with which the suspect would match the blood specimen if he were not the source is one in one thousand.” However, jurors react differently to these statements. The first appears to favor the prosecution and the second the defense. See Jonathan J. Koehler, The Psychology of Numbers in the Courtroom: How to Make DNA-Match Statistics Seem Impress or Insufficient, 74 S. CAL. L. REV. 1275 (2001); Jonathan J. Koehler, When Are People Persuaded by DNA Match Statistics?, 25 LAW & HUM. BEHAV. 493 (2001). See also Samuel Lindsey et al., Communicating Statistical DNA Evidence, 43 JURIMETRICS J. 147 (2003).
process. Evidentiary rules recognize the right of parties to challenge the reliability of admitted evidence, a principle that has a constitutional basis.

**Standard 16-5.3(e)**

A common complaint of experts is that attorneys do not sufficiently consult with them before trial. The Mental Health Standards contain a provision on an attorney’s duty to prepare an expert for trial, and the Model Rules make competence the first principle of professional representation. Standard 5.3 cannot be implemented without pretrial discussion between the attorney and the expert.

**STANDARD 16-5.4 PROSECUTION COMMENT ON DEFENSE RESPONSE TO TESTS**

(a) A prosecutor should not be permitted to argue or imply that a defendant’s failure to test or retest DNA evidence, or the defendant’s failure to offer evidence of such a test or retest conducted on the defendant’s behalf, constitutes an admission of guilt.

(b) A prosecutor should be permitted to offer evidence or make argument concerning the defendant’s failure to test or retest DNA evidence without an admission of guilt.

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301 Cf. NRC I, supra note 22, at 94 (“Laboratory error rates should be measured with appropriate proficiency tests and should play a role in the interpretation of results of forensic DNA typing.”).

302 See FED. R. EVID. 104(e) (“Weight and credibility. This rule does not limit the right of a party to introduce before the jury evidence relevant to weight or credibility.”).

303 See Crane v. Kentucky, 476 U.S. 683, 690 (1986) (“Whether rooted directly in the Due Process Clause of the Fourteenth Amendment, or in the Compulsory Process or Confrontation clauses of the Sixth Amendment, the Constitution guarantees criminal defendants ‘a meaningful opportunity to present a complete defense.’”).

304 ABA STANDARDS FOR CRIMINAL JUSTICE, MENTAL HEALTH, Standard 7-3.14 (1989) (“An attorney intending to call an expert witness should assist the expert in preparing for trial.”).

305 See ABA MODEL RULES OF PROF’L CONDUCT R. 1.1 (5th ed. 2003) (“A lawyer shall provide competent representation to a client. Competent representation requires the legal knowledge, skill, thoroughness and preparation reasonably necessary for the representation.”).
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evidence, or the defendant's failure to offer evidence of such a test or retest conducted on the defendant's behalf, only for a purpose other than an admission of guilt and only in fair response to evidence or argument of the defense. The court should instruct the jury that it may consider that evidence only for that other purpose.

Commentary

Standard 16-5.4 recognizes both the constitutional principle that a criminal defendant has no obligation to test or retest evidence and the limited doctrine of fair response if the reliability of the government's testing is attacked.

Standard 16-5.4(a)

Standard 16-5.4(a) prohibits the prosecution from commenting on or eliciting testimony concerning a defendant's failure to test or retest evidence if offered as an admission of guilt because, under our constitutional system, the defense has no obligation to produce any evidence. In State v. Cloutier, the Maine Supreme Judicial Court indicated that a prosecutor may not elicit testimony that the prosecution chemist had given blood samples to the defense. Similarly, in Hays v. State, the Florida Supreme Court wrote: "The prosecutor's questions and statements in the instant case may have led the jury to believe that Hayes had an obligation to test the evidence found at the scene of the murder and to prove that the hair and blood samples did not match his own. Clearly, Hayes had no such obligation." 309

Standard 16-5.4(b)

Standard 16-5.4(b) recognizes that prosecution rebuttal and argument may nonetheless be permissible for a purpose other than the

306 In State v. Brewer, 505 A.2d 774, 777 (Me. 1985), the Maine Supreme Judicial Court observed: "To allow the missing-witness inference in a criminal case is particularly inappropriate since it distorts the allocation of the burden of proving the defendant's guilt." Federal courts, however, continue to recognize the doctrine. See United States v. Carreno, 363 F.3d 883, 888-89 (9th Cir. 2004) ("It is well settled that [a] 'missing witness' instruction is proper only if from all the circumstances an inference of unfavorable testimony from an absent witness is a natural and reasonable one.") (internal quotation marks omitted).

307 628 A.2d 1047, 1049 (Me. 1993).

308 660 So. 2d 257 (Fla. 1995).

309 Id. at 265.
“admission of guilt” rationale, but only in fair response to evidence or argument of the defense. Clearly, the prosecution should be able to rebut an incorrect claim by defense counsel that the defense had no opportunity to retest evidence. On the other hand, a general comment that DNA is “not infallible” is insufficient to trigger the right to rebut.\textsuperscript{310} In between these two poles, the Standard leaves this question to the law of the jurisdiction and the discretion of the court. For example, if a defense expert challenges the testing itself (rather than the statistics), cross-examination to the effect that retesting is the proper scientific procedure when reliability is questioned might be offered for impeachment.\textsuperscript{311}

\textit{Fair response.} An analogous situation arises with the no-comment rule when an accused exercises the right to remain silent.\textsuperscript{312} In \textit{Griffin v.}

\textsuperscript{310} See \textit{State v. Norton}, 949 S.W.2d 672, 676 (Mo. Ct. App. 1997) (“Essentially, the state posits that defense counsel’s argument which asserted the state’s DNA evidence was ‘not infallible’ opened the door to the state’s pointing out the absence of independent testing by the defense. This court is not persuaded. Defense counsel’s argument only promised to attack the state’s method and the results of testing and did not indicate the defense would produce its own test evidence. The doctrine of curative admissibility is inapplicable under these circumstances.”).

\textsuperscript{311} The 1996 National Academies Report noted that “[a] wrongly accused person’s best insurance against the possibility of being falsely incriminated is the opportunity to have the testing repeated.” NRC II, supra note 3, at 87. See also Edward J. Imwinkelried & David H. Kaye, \textit{DNA Typing: Emerging or Neglected Issues}, 76 WASH. L. REV. 413, 467-68 (2001) (“The prosecution could argue to the jury that an expert who fails to use a more definitive and readily available procedure for ascertaining whether the initial test results are correct has not been thorough in evaluating those results, and that such experts deserve little credence because the basis for the opinion is not as complete as it could be. Again, the inference may be debatable, but the standard of relevance, particularly on cross-examination, is lenient.”).

\textsuperscript{312} One court rejected the Fifth Amendment argument in this context. See \textit{State v. Peters}, 944 P.2d 896, 903 (N.M. Ct. App. 1997) (“Defendant argues that one of the State’s DNA experts, Dr. Hallick, commented on Defendant’s right to silence in violation of his constitutional rights under the Fifth Amendment and Article II of the New Mexico Constitution. Defendant’s argument is directed to the following comment of Dr. Hallick: ‘[Y]ou know, if I were a defendant, and I were falsely accused as being the source of biological evidence, I would want to continue testing until I found the probe that would prove the exclusion.’ Dr. Hallick testified that six different probes had failed to exclude Defendant as the source of the biological evidence found in the sexual assault evidence kits. In a discussion of how DNA testing might exclude a suspect, he noted that, in theory,
the Supreme Court held that the Fifth Amendment prohibits the use of an accused's failure to testify as evidence of guilt. "[S]olemnizing the silence of the accused into evidence against him," in the Court's view, unconstitutionally undercut the privilege "by making its assertion costly." However, the Court limited *Griffin* in *United States v. Robinson*, in which the prosecution introduced a number of out-of-court statements made by Robinson, who did not testify. In closing argument, Robinson's counsel tried to minimize the prior statements by suggesting that his client had not been provided an opportunity to explain his actions at the time the statements were given. In response, the prosecutor told the jury: "He could have taken the stand and explained it to you. The United States of America has given him, throughout, the opportunity to explain." The Supreme Court distinguished *Griffin*:

Where the prosecutor on his own initiative asks the jury to draw an adverse inference from a defendant's silence, *Griffin* holds that the privilege against compulsory self-incrimination is violated. But where as in this case the prosecutor's reference to the defendant's opportunity to testify is a *fair response* to a claim made by defendant or his counsel, we think there is no violation of the privilege.

*Continued testing might reveal a single probe that could be exclusionary. No objection was made at trial to this comment. We do not perceive Dr. Hallick's statement to be a comment upon Defendant's right to remain silent.")*. See also *State v. Aaron*, 692 P.2d 1336, 1341 (N.M. Ct. App. 1984) (comment on the defendant's failure to call an expert witness was not an improper comment on defendant's silence, but was rather a permissible comment on the evidence or lack thereof).

314 *Id.* at 614.
316 *Id.* at 28.
317 *Id.* at 32 (emphasis added). *Tennessee v. Street*, 471 U.S. 409 (1985), is another illustration of the "fair response" rule in a constitutional setting. In that case, an accomplice's confession was offered only to *rebut* the accused's testimony that his own confession was coercively derived from it. Admission of the accomplice's confession in the prosecution's case-in-chief would have violated the Confrontation Clause but admitting it in rebuttal did not. The Supreme Court cited *Street* approvingly in *Crawford v. Washington*, 541 U.S. 36, 59 n.9 (2004).
Cases. There is conflict in the cases.\(^{318}\) The Delaware Supreme Court ruled that a prosecutor may comment on a defendant’s failure to call a fingerprint expert after the defendant had attacked the prosecution’s expert.\(^{319}\) The Court ruled that such a comment does not infringe the privilege against self-incrimination, nor does it violate due process where an indigent fails to seek funds for a defense expert.

In *People v. Lane*,\(^{320}\) the defendant claimed he was prejudiced when the prosecutor asked the government expert whether any expert for the defense had examined the fibers at issue in this case. An objection to the question was sustained, but the defense argued that the jury would nevertheless assume that no defense expert examined the fibers. The record also indicated that the prosecutor asked the expert whether the fibers were available to the defense, which the expert answered in the affirmative. In a prior case involving prosecutorial comment, the Illinois Supreme Court had stated that

> though failure to call a witness or produce evidence may not be relied on as substantial proof of the charge, nonetheless, if other evidence tends to prove the guilt of a defendant and he fails to bring in evidence within his control in explanation or refutation, his omission to do so is a circumstance entitled to some weight in the minds of the jury, and, as such, is a legitimate subject of comment by the prosecution.\(^{321}\)

The court of appeals ruled: “Defendant has not demonstrated why the same logic would not apply to examination as well as comment. In this case, the record shows that the fibers were available to the defense. Thus, assuming *arguendo* that the jury would infer that defendant did not

\(^{318}\) NRC II, *supra* note 3, at 183 (“The law with regard to those questions is far from clear. Implicated are state and federal constitutional concerns emanating from due process and effective-assistance-to-counsel provisions, such evidentiary doctrines as the attorney-client and work-product privileges, and criminal-procedure issues related to discovery.”).


\(^{321}\) People v. Williams, 240 N.E.2d 645, 649 (Ill. 1968).
seek to refute [expert’s] analysis of the fibers through forensics, reversal
would not be warranted. The examination does not imply that defendant
had a burden to produce evidence; rather, it merely seeks to establish that
the fiber analysis will not be disputed by an opposing expert.\textsuperscript{322}

\textit{Instruction.} In fair response situations, an instruction limiting the
evidence to its proper purpose should be given.\textsuperscript{323}

\textsuperscript{322} 628 N.E.2d at 696.
\textsuperscript{323} See FED. R. EVID. 105.
PART VI: POST-CONVICTION

STANDARD 16-6.1 POST-CONVICTION TESTING

(a) A person who has been convicted of a serious crime, including a person convicted based on a guilty plea, should be permitted to have DNA evidence in the possession of the prosecution or one of its agents tested or retested after conviction if:

(i) the testing requested was not available at the time of trial and currently is available from a laboratory meeting the requirements of Standard 16-3.1, there is credible evidence that prior test results or interpretation were unreliable, or the interests of justice require testing or retesting; and

(ii) the results of testing or retesting could create a reasonable probability that the person:

(A) is innocent of the offense,

(B) in a capital case, did not have the culpability necessary to subject the person to the death penalty, or

(C) did not engage in aggravating conduct that caused a mandatory sentence or sentence enhancement.

(b) When a person files an application for testing or retesting:

(i) the prosecution should be notified and, if the person is indigent and does not have counsel, counsel should be appointed;

(ii) the application should be denied unless the person, after consultation with counsel, files a sworn statement declaring that he or she is innocent of the crime, did not have the culpability necessary to be subjected to the death penalty, or did not engage in the aggravating conduct that caused a mandatory sentence or sentence enhancement;

(iii) if the person files the statement, a hearing should be held to determine whether the person has met the requirements of subdivision (a) of this standard, and if there is a determination that the requirements of subdivision (a) of this standard have been met, the request for testing or retesting should be granted;

(iv) after the results of any testing are reported to the parties, an applicant should be permitted to seek a second hearing to determine what relief, if any, is appropriate; and
(v) if either hearing is to be held, the prosecutor should be required to give prior notice of the hearing to the victim of the crime to which the hearing relates.

(c) If the application for testing or retesting is granted, and the court determines the result is inculpatory, the applicant’s profile should be entered into the database authorized in Standard 16-8.1(b)(i), if it is not already present there.

(d) An applicant should have the right to appeal or seek leave to appeal any adverse decision made pursuant to this standard.

Commentary

ABA Resolution No. 115 states that “[a]ll biological evidence should be made available to defendants and convicted persons upon request and, in regard to such evidence, such defendants and convicted persons may seek appropriate relief notwithstanding any other provision of law.” In 1996, the Department of Justice published a study reviewing 28 cases in which DNA evidence had exonerated convicts. As a result of this study, the Attorney General created the National Commission on the Future of DNA Evidence, which in turn published a report recommending how prosecutors, defense attorneys, and courts should handle post-conviction requests for testing. New York and then Illinois had enacted post-conviction DNA testing statutes before this report was published. Numerous states have now enacted post-conviction DNA statutes, and Congress passed the Innocence

324 House of Delegates (August 2000).
325 EDWARD CONNORS ET AL., NAT’L INST. JUSTICE, CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL (1996).
327 See Margaret A. Berger, The Impact of DNA Exonerations on the Criminal Justice System, 34 J. L. MED. & ETHICS 320, 321 (2006) (“statutes governing post-conviction DNA procedures now exist in forty-one states, and bills are pending in others.”). Even without a statute, some courts have permitted testing. See Lambert v. State, 777 So. 2d 45, 49 (Miss. 2001) (“While we respect precedent, reason must prevail when serious questions lead open minds to doubt whether the system has reached a just result. We are constrained to doubt the guilt of this man who has been sentenced to life in prison and believe that further investigation into the facts of this case may shed more light
Protection Act in 2004. Given that DNA exonerations have continued to occur in significant numbers, the availability of post-conviction testing and re-testing is clearly warranted.

Standard 16-6.1 would permit a person convicted of a serious crime to seek post-conviction testing or retesting of evidence in the possession of the prosecution or one of its agents. The principal issue with post-conviction testing concerns what limitations should be placed on this type of testing. The Standard rejects placing time limitations on post-conviction testing or retesting and excluding from such testing or retesting defendants who pleaded guilty. It does, however, require: (1) a good reason for the defense’s failure to request DNA testing at the original trial (e.g., unavailability of new technology); and (2) a showing that the results of new testing will be indicative of innocence of the charged crime, of a mandatory aggravating factor in a capital case, or of conduct that caused a mandatory sentence or sentence enhancement. The Standards also seek to discourage unwarranted applications by requiring the applicant to submit an affidavit asserting “innocence” in these circumstances. In addition, if the test results are incriminating, the applicant’s profile is entered into the offender database, if it is not already included. This is a penalty for a frivolous application.

In addition, the Standard addresses a variety of procedural issues, including notice to parties, the standard of proof, opportunity for a

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329 See supra notes 8-10 and accompanying text (Introduction).
hearing, the right to counsel, the designation of what facilities may perform the testing, and who is responsible for paying for the testing.

**Standard 16-6.1(a)**

As in other parts of these Standards, this provision is limited to serious crimes. Because a number of those who have been exonerated by DNA evidence had pleaded guilty to the offenses of which they were convicted, the Standard permits persons whose conviction was based on a guilty plea to file an application for post-conviction testing. Moreover, there is no time limitation on the application. The opening of floodgates to retesting applications, which might have been expected, has apparently not developed.

There are two requirements in this subdivision, however. First, there must have been a valid reason for the defense not to have requested DNA testing at the time of trial. The requested test, for example, may not have been available at that time, which would include situations where improved technology has since been developed. Moreover, there may be credible evidence that undermines the reliability of the test results used to prosecute the applicant. In addition, a catch-all category—“interests of justice”—is included, which would cover, for example, situations where the defense counsel rendered ineffective assistance by not seeking a DNA test that was available at the time of trial.

The second requirement limits testing and retesting to situations where exculpatory results would raise a reasonable probability that the applicant was actually innocent. For example, where a rape victim testified that she was attacked by only one assailant and the DNA profile

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331 The case of David Vasquez is an example. EDWARD CONNORS ET AL., NAT'L INST. JUSTICE, CONVICTED BY JURIES, EXONERATED BY SCIENCE: CASE STUDIES IN THE USE OF DNA EVIDENCE TO ESTABLISH INNOCENCE AFTER TRIAL 73 (1996). See also Weeks v. State, 140 S.W.3d 39 (Mo. 2004) (guilty-pleading defendant has right to post-conviction testing under state statute); Eunyung Theresa Oh, Note, Innocence After "Guilt": Postconviction DNA Relief for Innocents who Pled Guilty, 55 SYRACUSE L. REV. 161 (2004).

332 See People v. Pitts, 828 N.E.2d 67 (N.Y. 2005) (holding that there is no time limit for a postconviction motion requesting DNA testing).

333 See Margaret A. Berger, Lessons from DNA: Restriking the Balance between Finality and Justice, in DNA AND THE CRIMINAL JUSTICE SYSTEM 110, 110, 115 (David Lazer ed., 2004) ("It has been estimated that no evidence can be found in about 75 percent of the cases in which inmates seek DNA postconviction testing."); "New York had a total of only about one hundred applications in the first seven years during which its statute has been in effect.").
detected in her vaginal smear was not from a consensual sex partner, the DNA must have come from the assailant. If the convict’s DNA profile does not match that derived from the vaginal smear, he did not commit the crime. The Standard also extends to situations where retesting could exonerate a convict of a mandatory aggravating factor in a capital case, or of conduct that caused a mandatory sentence or mandatory sentence enhancement.

Standard 16-6.1(b)

Standard 16-6.1(b) sets forth the procedures for dealing with a post-conviction application. It includes notification to the prosecutor and appointment of counsel for indigents. Two hearings are envisioned. In the first, the court determines whether the requirements for testing or retesting have been satisfied. If so, the court should order the test. This, of course, is possible only if biological material exists; the prosecutor may have determined this before the hearing. If not, the court can order a search.

The Standard requires an affidavit by the applicant asserting his or her actual innocence. Post-conviction testing has confirmed the guilt of a substantial number of applicants; such applications waste scarce resources and have the potential of upsetting victims.

The court has implicit authority to specify the agency or company that will do the testing as well the conditions under which testing will take place (e.g., chain of custody issues).

Standard 16-6.1(c)

Standard 6.1(c) is another possible deterrent to frivolous applications. It requires the entering of the applicant’s profile into offender databases, if it is not already there, when the test results are inculpatory. Inconclusive results are not “inculpatory.”

Standard 16-6.1(d)

Standard 6.1(d) provides for appellate review.
PART VII: CHARGING BY DNA PROFILE

STANDARD 16-7.1 CHARGING PERSONS BY DNA PROFILE

When DNA evidence that may have been left by the perpetrator of a serious crime is collected and preserved, and a DNA profile of the person who left the evidence is established from it but the person's identity is unknown, a grand jury or the prosecutor should be permitted to charge the person, as identified by the profile, with the crime by indictment or other instrument requiring a judicial probable cause determination.

Commentary

Because the identity of a person who left DNA evidence at the scene of a serious crime may remain unknown, various means have been employed or proposed to permit a prosecution to be brought even if the person is not identified until after the otherwise applicable statute of limitations has expired.334 Rather than extending the statute of limitations, Standard 16-7.1 would permit the unidentified person to be charged with the crime before the statute has run, identifying the person by the profile, but only if the prosecution is brought "by indictment or other instrument requiring a judicial probable cause determination." This requirement would compel a prosecutor to gather sufficient evidence to sustain the probable cause requirement before the statute had run, instead of attempting doing so only if and after an identification of the person was made.

Statutes of limitations are not constitutionally required. They serve a number of purposes. The Commentary to the Model Penal Code offers the following:

First, and foremost, is the desirability that prosecutions be based upon reasonably fresh evidence. With the passage of time memories fade, witnesses die or leave the area, and

334 See Scott Aheurst-Moore, An Appropriate Balance? – a Survey and Critique of State and Federal DNA Indictment and Tolling Statutes, 6 J. HIGH TECH. L. 213 (2006) ("[L]egislatures have enacted statutes that either allow DNA profiles as the basis for an indictment, create new limitation periods based on some form of connection of DNA evidence to a suspect, normally called 'identification,' or do a mixture of both.").
physical evidence becomes more difficult to obtain, identify, or preserve. In short, possibility of erroneous conviction is minimized when prosecution is prompt. Second, if the actor long refrains from further criminal activity, the likelihood increases that he has reformed, diminishing the necessity for imposition of the criminal sanction. If he has repeated his criminal behavior, he can be prosecuted for recent offenses committed within the period of limitation. Hence, the need for protecting society against the perpetrator of a particular offense becomes less compelling as the years pass. Third, after a protracted period the retributive impulse which may have existed in the community is likely to yield to a sense of compassion aroused by the prosecution for an offense long forgotten. Fourth, it is desirable to reduce the possibility of blackmail based on a threat to prosecute or to disclose evidence to enforcement officials. Finally, statutes of limitations "promote repose by giving security and stability to human affairs."

The strongest argument for a statute of limitations is staleness. For example, if a prosecution were begun long after the crime was committed, finding possible alibi witnesses could be a problem. However, DNA evidence does not become stale and, if properly

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335 AMERICAN LAW INSTITUTE, MODEL PENAL CODE AND COMMENTARIES § 1.06, at 86 (1985). The United States Supreme Court has stated it this way:

The purpose of a statute of limitations is to limit exposure to criminal prosecution to a certain fixed period of time following the occurrence of those acts the legislature has decided to punish by criminal sanctions. Such a limitation is designed to protect individuals from having to defend themselves against charges when the basic facts may have become obscured by the passage of time and to minimize the danger of official punishment because of acts in the far-distant past. Such a time limit may also have the salutary effect of encouraging law enforcement officials promptly to investigate suspected criminal activity. For these reasons and others, we have stated before "the principle that criminal limitations statutes are 'to be liberally interpreted in favor of repose.'"


preserved, can be retested. (Although even when DNA evidence is recovered, tested, and properly preserved, the unavailability of witnesses who might testify concerning mishandling or contamination may raise staleness concerns.) Moreover, repose for the defendant must be balanced against repose for the victims of crime. Rape victims often state that fear of another attack haunts them until the perpetrator is caught and tried.

Standard 16-7.1 sanctions the use of indictments by DNA profile (i.e., “John Doe” indictments) where the identity of the perpetrator is unknown and the statute of limitations is about to expire. John Doe indictments predated DNA evidence. Other charging mechanisms (i.e., the filing of an information) are also permitted, provided there is a judicial determination of probable cause. This approach is superior to

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337 See Scott Ahehurst-Moore, An Appropriate Balance? – A Survey and Critique of State and Federal DNA Indictment and Tolling Statutes, 6 J. HIGH TECH. L. REV. 213 (2006) (“Human memory is fallible by its nature and will often degrade and trick the mind of both the defendant and the witnesses during and after the crime. This fear of stale evidence encompasses the idea that physical evidence will also degrade over time. Proponents of the use of DNA evidence counter this criticism by claiming DNA will retain its evidentiary value over a long period of time.”) (footnotes omitted).

338 “For the first time in six and a half years, I could feel myself breathe. . . Finally, I could quit looking over my shoulder.” Testimony of Debbie Smith, quoted in David Lazer, Introduction, in DNA AND THE CRIMINAL JUSTICE SYSTEM 3, 6 (David Lazer ed., 2004).

339 See Frank B. Ulmer, Using DNA Profiles to Obtain “John Doe” Arrest Warrants and Indictments, 58 WASH. & LEE L. REV. 1585 (2001) (“This identifying information can be the defendant’s occupation, place of residence, physical appearance, or other specific information.”). See also Meredith A. Bieber, Comment, Meeting the Statute or Beating It: Using “John Doe” Indictments Based on DNA to Meet the Statute of Limitations, 150 U. PA. L. REV. 1079 (2002).

340 Depending on the jurisdiction, the statute of limitations may be tolled by an arrest warrant or indictment. Although warrants and indictments have different functions, the principal issue in this context is whether the warrant or indictment identifies the person with reasonable certainty. A DNA profile is sufficiently specific. However, it does not provide notice to the person, an alternative purpose at least for indictments. Nevertheless, some courts have upheld this practice. See State v. Dabney, 663 N.W.2d 366, 372 (Wis. Ct. App. 2003) (“As Dabney points out, an individual would not necessarily recognize the DNA profile as his own. Thus, although the DNA profile satisfies the particularity requirements in identifying a suspect whose name is not known, it would be helpful, for notice purposes, to also include any known physical
a blanket extension of the statute of limitations in cases involving DNA evidence because it requires the prosecutor to gather and marshal the evidence in the case and present it to a grand jury or judge prior to the expiration of the statute of limitations. As a result, non-DNA evidence otherwise available — whether ultimately inculpatory or exculpatory — would not be lost through the passage of time. This will ameliorate, at least to some extent, the problem of staleness of evidence.

There may be an issue with partial profiles, e.g., where alleles at only six of the thirteen loci can be developed. In order for the profile to suffice for purposes of this Standard, it must be sufficiently rare to constitute an identification.

Speedy trial and due process issues may arise due to the delay between the crime and the trial. The Supreme Court’s due process jurisprudence concerning pre-accusation delay is based on United States v. Marion and its progeny. The Court has stated that the judicial task in assessing an alleged due process violation is to determine whether

appearance characteristics. The lack of a more particular physical description in this case, however, does not defeat the State’s argument.”). In any event, a superseding indictment will be issued once the person is identified by name. See also Corey E. Delaney, Note, Seeking John Doe: The Provision and Propriety of DNA-based Warrants in the Wake of Wisconsin v. Dabney, 33 Hofstra L. Rev. 1091 (2005).

See Imwinkelried & Kaye, supra note 311, at 471 (“[D]evising a workable ‘DNA exception’ that would respect the interest of defendants and society in defining a point after which litigation can no longer be commenced is a formidable challenge.”). See also Jonathan W. Diehl, Note, Drafting a Fair DNA Exception to the Statute of Limitations in Sexual Assault Cases, 39 Jurimetrics J. 431 (1999); Amy Dunn, Note, Criminal Law — Statutes of Limitation on Sexual Assault Crimes: Has the Availability of DNA Evidence Rendered Them Obsolete?, 23 U. Ark. Little Rock L. Rev. 839 (2001).

The Speedy Trial Clause of the Sixth Amendment does not apply to the period before a defendant is indicted, arrested, or otherwise officially accused. See United States v Marion, 404 U.S. 307 (1971); 4 Wayne R. Lafave et al., Criminal Procedure § 18.1(c) (2d ed. 1999).


lengthy pre-indictment delay is contrary to those "fundamental conceptions of justice which lie at the base of our civil and political institutions" and define "the community's sense of fair play and decency." 345

PART VIII: DNA DATABASES

STANDARD 16-8.1 AUTHORIZED AND PROSCRIBED DNA DATABASES

(a) The legislature should authorize the establishment, maintenance, and operation of DNA databases used for criminal identification, and proscribe DNA databases that are not statutorily authorized. The legislation should include significant criminal and civil penalties for unauthorized databases and for unauthorized use or dissemination of information from any database.

(b) The only databases permitted to be maintained for criminal identification purposes should be those including profiles:

(i) of persons convicted of crimes designated by the legislature as appropriate for inclusion in the database, of persons found not guilty by reason of insanity for such crimes, and of persons adjudicated for conduct that, but for their age, constituted the commission of such crimes [or of persons arrested for crimes designated by the legislature as appropriate for inclusion in the database, if there has been a judicial determination of probable cause or an indictment or information has been filed];

(ii) derived from evidence collected from crime scenes or other locations as provided in Standard 16-2.1; and

(iii) maintained for quality assurance at a laboratory.

(c) A genetic profile should be included in a database only if developed by testing conducted as provided in Standard 16-3.2.

(d) Whenever a matching profile is declared, confirmatory retesting of a new sample should be conducted, if possible.

(e) Databases should be developed and maintained in a manner that protects privacy to the fullest extent possible. Specifically:

(i) To the extent feasible, DNA markers valued only for individual identification and not known to be associated with behavioral propensities or susceptibility to disease should be used.

(ii) Each profile should be maintained by number or by other anonymous means, and the information identifying a
profile as belonging to a particular person should be separately maintained and safeguarded.

(iii) Profiles should remain anonymous unless a matching profile is declared.

(iv) Reasonable steps should be taken to prevent unauthorized access to, tampering with or copying of the contents of the database.

(f) DNA samples used for the purpose of developing profiles from known individuals should be retained only for the purpose of confirmatory retesting or for upgrading the database to reflect new technologies.

(g) Databases should be expanded to other categories of persons as resources become available, privacy concerns are resolved, and the security of the information is assured.

Commentary

The controversy surrounding DNA databases has been sharp, with proposals ranging from an absolute ban to databases containing everyone’s profile (universal databases), and a myriad of positions in between. James Watson, one of the discoverers of the double helix structure of DNA, recently wrote that “the outcry from civil libertarians has been intense, and not without reason: DNA fingerprints are not like finger fingerprints.” But then he went on to conclude: “I think everyone should give a DNA sample ... provided our laws see to a strict

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346 See D.H. Kaye & Michael E. Smith, DNA Databases for Law Enforcement: The Coverage Question and the Case for a Population-Wide Database, in DNA AND THE CRIMINAL JUSTICE SYSTEM 247 (David Lazer ed., 2004). Such databases would, by their comprehensiveness, both maximize the ability to inculpate and exonerate, and avoid claims that databases comprised of those arrested for or convicted of crimes are inherently discriminatory. See also Akhil Reed Amar, Op-Ed., A Search for Justice in Our Genes, N.Y. TIMES, May 7, 2002, at A31.


and judicious control over access to databases. Privacy concerns are not limited to those in a database. Justice Breyer puts it this way: "Suppose a check of a convict DNA database reveals a near miss, thereby implicating a relative who has no record of conviction and was consequently not included in the bank. What kind of legal rules should apply?" Such "familial" database searching has already occurred.

The constitutionality of convicted offender databases has been challenged on numerous grounds, the most significant of which are based on the Fourth Amendment. Each federal circuit that has addressed the question has upheld the constitutionality of DNA database statutes, but they have disagreed on the theory. Some circuits engaged in balancing only after finding that the statute served a "special need" beyond general law enforcement. Other courts have applied the traditional balancing

349 Id. at 290.
352 See Kaye & Smith, supra note 46, at 413. In Johnson v. Quander, 440 F.3d 489 (D.C. Cir. 2006), the District of Columbia Circuit upheld an order issued pursuant to the DNA Analysis Backlog Elimination Act ("the DNA Act") that required a probationer to supply a DNA sample for inclusion in CODIS. In finding the Act constitutional, the court noted that the body of authority reaching this conclusion was unanimous. In Johnson, the court also held that storing the probationer’s profile in the CODIS database and “re-searching” it after his probation ended did not violate the Fourth Amendment, upheld the retention of his blood sample after his DNA profile was derived from it, and rejected his claim that application of the District of Columbia’s implementing statute, which determined those convictions for which a DNA sample should be taken, violated the Ex Post Facto Clause because it was enacted after the defendant committed the crime for which he was convicted.
353 See Nicholas v. Goord, 430 F.3d 652 (2d Cir. 2005); United States v. Kimler, 335 F.3d 1132, 1146 (10th Cir. 2003) ("The DNA Act, while
test without finding a special need. Nevertheless, the Fourth Amendment provides only a baseline of privacy protection. Legislation may provide more, for example, as it does for wiretapping and eavesdropping under Title III or the federal bank records statute.

implicating the Fourth Amendment, is a reasonable search and seizure under the special needs exception to the Fourth Amendment's warrant requirement because the desire to build a DNA database goes beyond the ordinary law enforcement need.

See United States v. Sczubelek, 402 F.3d 175, 187 (3d Cir. 2005) ("In view of the importance of the public interests in the collection of DNA samples from criminal offenders for entry into a national DNA database and the degree to which the DNA Act serves to meet those interests, balanced against the minimal intrusion occasioned by giving a blood sample and the reduced privacy expectations of individuals on supervised release, we conclude that the collection of DNA samples from individuals on supervised release, pursuant to the DNA Act, is not an unreasonable search in violation of the Fourth Amendment."); Padgett v. Donald, 401 F.3d 1273, 1280 (11th Cir. 2005) ("Because we believe that Georgia's legitimate interest in creating a permanent identification record of convicted felons for law enforcement purposes outweighs the minor intrusion involved in taking prisoners' saliva samples and storing their DNA profiles, given prisoners' reduced expectation of privacy in their identities, we adopt the reasoning in Jones and hold that the statute does not violate the Fourth Amendment."); United States v. Kincade, 379 F.3d 813, 832 (9th Cir. 2004) (reaffirming balancing approach of Rise v. Oregon, 59 F.3d 1556, 1559 (9th Cir. 1995)); Groceman v. United States Dep't of Justice, 354 F.3d 411, 413 (5th Cir. 2004) (per curiam); Jones v. Murray, 962 F.2d 302, 306-07 (4th Cir. 1992).

See, e.g., People v. Garvin, 847 N.E.2d 82 (Ill. 2006); Landry v. Attorney General, 709 N.E.2d 1085, 1087 (Mass. 1999); Johnson v. Commonwealth, 529 S.E.2d 769, 774 (Va. 2000); Doles v. State, 994 P.2d 315, 319 (Wyo. 1999) ("Although collecting DNA samples is a search and seizure, we are persuaded that the Act's mandated DNA collection from convicted felons is reasonable and does not violate the Fourth Amendment.").


Standard 16-8.1(a)

Standard 16-8.1(a) encourages legislatures to "authorize the establishment, maintenance, and operation of DNA databases used for criminal identification, and proscribe DNA databases that are not statutorily authorized." Because of privacy interests, all DNA databases should be authorized by the legislature, and unauthorized databases should be explicitly prohibited. A legislature may delegate, with appropriate guidelines, implementation of a database to an administrative agency. As an added protection, significant criminal and civil penalties should be enacted for maintaining an unauthorized database as well as for the unauthorized disclosure of information from any database.

Standard 16-8.1(b)

Standard 16-8.1(b) specifies the types of databases that are permissible. The Standard would permit only three kinds of such databases: (1) those including profiles of persons convicted of crimes; (2) those derived from evidence collected from crime scenes or other relevant locations, and (3) those maintained for quality assurance at a laboratory. The Standard leaves to the legislatures the determination of the crimes for which a conviction warrants inclusion in the database, but recommends that persons found not guilty by reason of insanity for such crimes, and persons adjudicated for conduct that, but for their age (juveniles), constituted the commission of such crimes, should be included. Because the Standards are limited to criminal justice issues, databases for missing persons are beyond the scope of these Standards.

Arrestee databases. As an alternative to a convicted offender database, the Standards would permit, but do not affirmatively recommend, a database of profiles "of persons arrested for crimes designated by the legislature as appropriate for inclusion in the database." Unlike convicted-offender databases, the constitutionality of arrestee databases has not been extensively litigated and only a few states presently authorize them. They are the continuing subject of academic

358 Permitting local quality-assurance databases is something not addressed in most database statutes.

359 California's Proposition 69, adopted in 2004, expands California's database to include profiles derived from persons arrested for certain crimes, "immediately following arrest . . . or as soon as administratively practicable after arrest, but, in any case, prior to . . . any physical release from confinement or custody." People v. Espana, 40 Cal. Rptr. 3d 258, 260 (Cal. Ct. App. 2006). Concerning Virginia's database, which since 2003 has included the profiles of persons arrested for violent felonies, see Suzanne Nelson, The Expansion of New
Rather than taking a position in that debate, the Standard provides alternative language in the event a jurisdiction sanctions arrestee databases and their constitutionality is upheld. By limiting


See generally D.H. Kaye, The Constitutionality of DNA Sampling on Arrest, 10 CORNELL J.L. & PUB. POL'y 455 (2001). Concerning arrestee databases, compare Kaye & Smith, supra note 46, at 434 ("Because there are powerful crime-control reasons for a state to establish arrestee DNA databases, it is neither heretical nor misguided to ask whether the Supreme Court will in due course recognize an exception to the warrant requirement for biometric identifiers like fingerprints and DNA profiles."); with Tracey Maclin, Is Obtaining an Arrestee's DNA a Valid Special Needs Search under the Fourth Amendment? What Should (and Will) the Supreme Court Do? 34 J. L. MED. & ETHICS 165, 181 (2006) (considering the constitutionality of Virginia and Louisiana statutes requiring the taking of DNA samples from persons arrested for certain crimes, and concluding that "under the [Supreme] Court's current precedents, forcibly obtaining and testing DNA samples of arrestees, absent judicial authorization or probable cause for the search, cannot be justified under the special needs exception"). For a critique of the expansion of California's DNA database wrought by Proposition 69, see Tania Simoncelli & Barry Steinhardt, California's Proposition 69: A Dangerous Precedent for Criminal DNA Databases, 34 J. L. MED. & ETHICS 199 (2006). Concerning a universal database, compare Kaye & Smith, supra note 346, with Teresa K. Baumann, Proxy Consent and a National DNA Databank, an Unethical and Discriminatory Combination, 86 IOWA L. REV. 667 (2001).

It provides: "[or of persons arrested for crimes designated by the legislature as appropriate for inclusion in the database, if there has been a judicial determination of probable cause or an indictment or information has been filed]."

The law has long recognized the difference between an arrest and a conviction. The latter is either based on a jury verdict ("beyond a reasonable doubt") or a guilty plea with its attendant constitutional safeguards (including the right to counsel). One police officer can make a legal arrest based on that officer's assessment of probable cause, which is not a high standard. In 2002, 70.2% of murder arrests resulted in conviction, but the conviction rates for some other crimes were much lower: robbery (47.2%), aggravated assault (23.3%), and burglary (50%). MATTHEW R. DUROSE & PATRICK A. LANGAN, BUREAU OF JUSTICE, STATISTICAL BULL.: FELONY SENTENCES IN STATE COURTS, 2002, at 5 (2004). Moreover, the FBI has reported that one-third of the initial rape
such a database to profiles of persons arrested for such crimes only “if there has been a judicial determination of probable cause or an indictment or information has been filed,” the alternative requires, by one means or another, a finding of probable cause before the accused’s profile is added to the database; an arrest, standing alone, is not sufficient.

**Forensic databases.** Subdivision (ii) authorizes databases for forensic profiles. By comparing profiles of convicted offenders or those derived from DNA evidence taken from a new crime scene with those in a forensic database, the perpetrators of unsolved crimes can be identified and links between two or more unsolved crimes can be made. For example, when a rape occurs or a person is (arrested for or) convicted of rape, and a profile is obtained from the crime scene or from the person, comparing that profile to the profiles stored in the forensic database may connect the crime and/or the person to other unsolved rapes.

**Quality assurance databases.** Subdivision (iii) authorizes local laboratory databases for quality assurance purposes. These may contain profiles of lab workers, including janitorial staff, so that contamination can be detected. They may also include the profiles from other cases being tested in the lab in order to detect cross-contamination between cases. The existence of this type of database may result in a “cold hit” (a crime in which there is no suspect), even before forensic profiles are uploaded into CODIS or the state system.

**Standard 16-8.1(c)**

*Testing.* Because the purpose of the database is undermined by improper testing, this subdivision specifies that testing should meet the requirements of Standard 16-3.2.

suspects identified by the police are eliminated by DNA profiling. NRC II, supra note 3, at 51.


364 If the arrest occurs in a public place, an arrest warrant is not required. United States v. Watson, 423 U.S. 411 (1976). There is a requirement for judicial review of the probable cause determination within 48 hours if the suspect is detained. County of Riverside v. McLaughlin, 500 U.S. 44 (1991); Gerstein v. Pugh, 420 U.S. 103 (1975).

365 Although the purpose of the database is quality assurance, a cold hit in this context is analogous to a plain view seizure.
Standard 16-8.1(d)

Confirmatory testing. There should be confirmatory retesting of any cold hit. In other words, a cold hit would provide probable cause for obtaining a search warrant, or reasonable suspicion for a court order pursuant to Standard 2.2, for collecting a fresh sample from the suspect, which could then be compared directly with the crime scene evidence.

Standard 16-8.1(e)

Privacy. Subdivision (e) specifies privacy protections, such as anonymous profiles, which remain so until a match is declared. Presently, non-coding DNA sites are used, that is, loci on the DNA molecule that perform no known function. This does not mean, however, that future research will not identify a function for these loci.

Standard 16-8.1(f)

Sample retention. The greatest controversy has not involved database profiles, which are similar to a computer bar code or vehicle identification number (VIN). These profiles have no value except for identification purposes, and they remain anonymous until a match is declared. In contrast, biological samples contain a person's entire genetic code, and some commentators have argued that samples should therefore be destroyed. The counter argument is that technological advances may result in a better system that uses different loci and re-collecting samples from convicts, in prison or after release, would be impracticable. In addition, if the convict dies and there is a subsequent

366 See MD. CODE ANN. PUB. SAFETY § 2-510 (LexisNexis 2003) (“Use of match as evidence. A match obtained between an evidence sample and a database entry may only be used as probable cause to obtain an additional DNA sample from the subject and is not admissible at trial unless confirmed by additional testing.”).

367 At one time, noncoding loci were called “junk” DNA, but that term has fallen out of favor among geneticists.

368 See WIS. STAT. ANN. § 165.77(2)(b)(3) (West 2006) (requiring destruction of specimens under certain conditions).

“cold hit” to a newly discovered crime scene of an old case, confirmatory retesting would be possible if samples are retained. This may be important if an innocent person is charged with that crime.

**Standard 16-8.1(g)**

While amenable to the expansion of authorized databases – even, perhaps, to the establishment of a universal database[370] – Standard 16-8.1(g) declares that such expansion should occur only “as resources become available, privacy concerns are resolved, and the security of the information is assured.”[371] Resources are necessary because maintenance of a broadly inclusive database could be expensive, not only because of the expenditures necessary to collect the resulting samples, but because of those necessary to maintain the privacy and security of the database. The expense involved in maintaining privacy, and assuring security, would be particularly great if the samples obtained for the profiling were to be retained in order to avoid the necessity for re-collecting them should technology develop that made the profiles stored in the database obsolete.

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STANDARD 16-8.2 USE RESTRICTIONS AND DESTRUCTION OF DNA EVIDENCE

(a) A profile developed from DNA evidence collected as provided in Standards 16-2.2 and 16-2.3 should not be entered into a database or compared with profiles in a database (for example, by keyboard search).

(b) If a profile developed from DNA evidence at a crime scene or other location as provided in Standard 16-2.1 has been identified as that of a person who is not a suspect, that profile should not be entered into a database or compared with profiles in a database (for example, by keyboard search).

(c) A profile developed from DNA evidence collected by consent as provided in Standard 16-2.4 should not be entered into a database or compared with profiles in a database (for example, by keyboard search) without the written consent of the person who is the source of the profile.

(d) A profile developed from a DNA sample collected from a location other than a crime scene solely for the purpose of obtaining the profile of a person should not be entered into a database.

(e) When the official investigation or prosecution is concluded and it is determined that a previously unknown source of DNA evidence was either (i) a victim of the crime that is under investigation or that is the subject of the prosecution or (ii) any other person not related to that crime as a perpetrator, the evidence should be destroyed and any profile developed from it should be expunged from any DNA database into which it had been entered.

(f) A profile developed from a DNA sample collected from the remains of an unidentified deceased person may, for purposes of identifying that person, be compared with profiles in the databases authorized in Standard 16-8.1(b), but should not be entered into a database.

(g) Notwithstanding the provisions of subdivisions (a) through (f), a laboratory conducting DNA testing should be permitted to enter in a quality assurance database maintained by the laboratory any profile developed from DNA extracted in the testing conducted in the laboratory, and should be permitted to retain the profile in that database as long as necessary for quality assurance purposes.
Commentary

A database can be used in two ways: (1) a profile can be permanently entered into the database and (2) a one-time search may be conducted. The latter is called a keyboard search. 372

Standard 16-8.2(a)

Judicial orders: elimination samples. When biological evidence is collected at a crime scene, there is no way of knowing the source of the evidence until it has been tested and a DNA profile developed. The evidence may be a mixture of a homicide victim’s and the perpetrator’s blood. If there were more than one assailant, several profiles may be developed from samples collected at the scene. Moreover, saliva or sweat from innocent third parties may result in still additional profiles. Similarly, in a rape case, a vaginal smear may include the victim’s, the assailant’s, and a spouse or boyfriend’s DNA. Elimination samples are required in this context. The guiding principle is that the profiles of rape victims and other innocent persons should not be entered into or compared with a database (keyboard search) — whether these samples are given voluntarily or judicially ordered. This includes a biological sample obtained by judicial order from a person under Standard 16-2.2(b)(ii) or from a hospital or other entity under Standard 16-2.3.

Judicial orders: suspects. When a biological sample is obtained from a person by judicial order under Standard 16-2.2(b)(i) or from a hospital or other entity under Standard 16-2.3, the person is a suspect. The use of biological evidence for a purpose other than the one for which it was originally obtained raises serious privacy issues. Commentators on privacy have identified a principle called the “purpose specification principle”, which “sets out the requirement that personal information collected for one purpose cannot subsequently be used for a different, incompatible purpose.” 373 Moreover, because judicial orders may be

372 The DNA Identification Act recognizes “one-time keyboard search on information obtained from any DNA sample lawfully collected for a criminal justice purpose except for a DNA sample voluntarily submitted solely for elimination purposes.” 42 U.S.C.A. § 14132 (e)(2) (West 2005) (“Definition. – For purposes of paragraph (1), the term ‘keyboard search’ means a search under which information obtained from a DNA sample is compared with information in the index without resulting in the information obtained from a DNA sample being included in the index.”).

373 Viktor Mayer-Schonberger, Strands of Privacy: DNA Databases, Information Privacy, and the OECD Guidelines, in DNA AND THE CRIMINAL
based only on reasonable suspicion in this context (a lesser standard than probable cause), use of the sample should be limited to the investigation for which it was obtained. If a match is declared between the suspect's profile and the crime scene evidence, the suspect may be charged, and if convicted, that defendant's profile may be entered into a database pursuant to Standard 16-8.1(b).

Standard 16-8.2(b)

Crime scene evidence. Once profiles have been developed from DNA evidence obtained from a crime scene, those profiles may be compared with and determined to match profiles developed from samples obtained for elimination purposes from the victim or other innocent third parties. For the reasons stated in the commentary to Standard 16-8.2(a), those profiles — like those obtained directly from the victim or innocent third party — should not be entered into a database or compared with profiles in a database in a keyboard search.

Standard 16-8.2(c)

Consent. Standard 16-2.4 permits a DNA sample to be obtained by consent for elimination purposes. Because it is unrealistic to expect most people to anticipate that elimination samples will be used in a different investigation from that in which it is requested, this subdivision requires that if a profile derived from such a sample is to be compared with the profiles in a database or entered into a database, consent for such use should be obtained in writing.

Standard 16-8.2(d)

Subdivision (d) concerns the use of a so-called "abandoned" sample, that is, a profile developed from a DNA sample collected from a location other than a crime scene solely for the purpose of obtaining the profile of a person. As with a sample obtained from a suspect by

JUSTICE SYSTEM 225, 229 (David Lazer ed., 2004) (eight principles were developed by the Organization for Economic Cooperation and Development (OECD) originally designed to address information privacy issues in health care in the United States).

374 See Florida v. Jimeno, 500 U.S. 248, 249 (1991) (“The Fourth Amendment is satisfied when, under the circumstances, it is objectively reasonable for the officer to believe that the scope of the suspect’s consent permitted him to open a particular container within the car.”); 3 WAYNE R. LAFAYE, SEARCH AND SEIZURE § 8.1(c) (4th ed. 2004) (scope of consent).

375 See supra notes 46 - 50 and accompanying text.
judicial order or by consent, use of the sample should be limited to the investigation for which it was obtained. A profile developed from such a sample should not be entered into a database. If a match is declared between the profile thus developed and the crime scene evidence, the suspect may be charged, and if convicted, that defendant’s profile may be entered into a database pursuant to Standard 16-8.1(b).

Note that this provision does not apply to samples obtained from a location other than a crime scene for other investigative purposes. For example, bloody clothes belonging to a suspect in a shooting and found at the home of the suspect’s girlfriend may properly be collected pursuant to Standard 16-2.1(a), and might properly be included in a crime scene database maintained pursuant to Standard 16-8.1(b)(ii).

Standard 16-8.2(e)

A profile from a crime scene that cannot be identified may be compared with profiles in other investigations and entered into the forensic database as provided in Standard 16-8.1(b). However, if the person is subsequently identified and not successfully prosecuted, that person’s profile should be expunged from the database. This would include the profile of a person whom law enforcement determines is not a suspect, or a suspect who is not charged, whose case is dismissed, or who is acquitted.

Standard 16-8.2(f)

Because the Standards are limited to criminal justice issues, databases for missing persons are beyond the scope of these Standards. When human remains are discovered, however, it is often difficult to determine whether a crime has been committed, as opposed to a suicide, natural or accidental death. In this instance, a profile developed from those remains may be compared with profiles in the database but not entered into the database.

Standard 16-8.2(g)

Standard 16-8.1(b)(iii) permits the establishment of quality control databases in local laboratories. None of the restrictions in Standards 16-8.2(a) through (f) apply to these databases.
STANDARD 16-8.3 ACCESS TO DNA DATABASES

Information in a database should be provided only to criminal justice agencies and only for purposes of criminal identification, except:

(a) a defendant should have access to:
   (i) the results of all database searches and analyses performed in connection with the case;
   (ii) the search procedures used to identify profiles relevant to the case; and
   (iii) upon a showing of good cause, any other information related to the database that is relevant to the defense;

(b) upon a showing of good cause, a court should grant a defendant's request to order a comparison of profiles in the database with an unknown profile;

(c) a prosecutor should have access to the same information provided to the defense pursuant to subdivisions (a) and (b) of this standard;

(d) the agency maintaining a database should be permitted to disclose information about the database for the purpose of seeking advice on quality control and assurance;

(e) persons conducting scientific research on population genetics or related issues may be granted access to genetic profiles in a database for the purposes of that research, provided that the profiles are anonymous, privacy concerns are resolved, and the security of the information is assured; and

(f) as allowed by Standard 16-8.2(f).

Commentary

Standard 16-8.3(a) - (c)

Defense access. There are times when the defense may need access to a database in order to prepare adequately for trial. For example, a
“cold hit” may involve a partial profile, e.g., only 6 loci instead of 13 loci have been developed. In this situation, the defense may want to know whether cold hits other than the defendant resulted from that database search.

**Standard 16-8.3(e)**

Research. Transparency is a hallmark of science. In *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, the Supreme Court cited peer review and publication as indicia of scientific reliability. Moreover, “good science” requires publication, replication, and verification, and the role of peer review “is to promote the publication of well-conceived articles so that the most important review, the consideration of the reported results by the scientific community, may occur after publication.” Similarly, the National Academies 1992 Report contains the following comment:

Any population databank used to support forensic DA typing should be openly available for reasonable scientific inspection . . . According to long-standing and wise scientific tradition, the data underlying an important scientific conclusion must be freely available, so that others can evaluate the results and publish their own findings, whether in support or in disagreement. There is no excuse for secrecy concerning the raw data.

\[\text{\textsuperscript{376}} 509 U.S. 579, 593-94 (1993). \]
\[\text{\textsuperscript{377}} \textit{See} Brief of the New England Journal of Medicine et al. as Amici Curiae in Support of Respondent at 2, \textit{Daubert v. Merrell Dow Pharm., Inc.}, 509 U.S. 579 (1993) (No. 92-102) ("'Good science' is a commonly accepted term used to describe the scientific community's system of quality control which protects the community and those who rely upon it from unsubstantiated scientific analysis. It mandates that each proposition undergo a rigorous trilogy of publication, replication and verification before it is relied upon.'"). \]
\[\text{\textsuperscript{378}} \textit{Id.} at 3. \]
\[\text{\textsuperscript{379}} \textit{NRC I, supra} note 22, at 93. \]
In sum, access to the research underlying test protocols is a critical aspect of the scientific method. Under this subdivision, only anonymous profiles (i.e., without identifying data) may be disclosed to researchers.

**STANDARD 16-8.4 EXPUNGEMENT**

(a) If any person's conviction is vacated, the person's profile should be expunged from any database that includes the profiles of convicted offenders, unless the person's profile is in that database based on another conviction.

(b) Methods should be devised to expunge routinely from databases any profile which should not have been entered or which should be expunged pursuant to these standards.

(c) A person should have the right to petition a court to have that person's profile expunged from a database as required by these standards.

**Commentary**

**Standard 16-8.4(a)**

If the justification for entering a person's DNA profile in a database is predicated on a conviction, the profile should be expunged from the database if the conviction is vacated.

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380 See State v. Schwartz, 447 N.W.2d 422, 427-28 (Minn. 1989) ("The validity of testing procedures and principles is assessed in the scientific community by publishing the data in peer review journals. The TWGDAM, FBI and CACLD standards stress that publication of a laboratory's work product and data used in DNA analysis, as well as independent replication and validation studies, are essential prerequisites to reliability. Efforts to assess the reliability of the commercial laboratories' methodology consequently have been hindered because this information has not yet been made fully available. For example, Cellmark has not yet published data regarding its methodology and its probes are only selectively available."); State v. Alt, 504 N.W.2d 38, 48-49 (Minn. Ct. App. 1993) ("Alt argues the FBI DNA test results are inadmissible because the FBI does not allow members of the scientific community general access to its data bases. ... We are troubled by Alt's allegations of denial of access to the FBI data bases.").

381 Although these Standards do not endorse arrestee databases, states with arrestee databases should make provision for expungement where the arrestee is acquitted.

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Standard 16-8.4(b)

The state should assume primary responsibility for expungement. Individuals will generally not be aware whether their profiles have been expunged, or have access to an attorney or the funds necessary to pursue expungement.

Standard 16-8.4(c)

This subdivision provides a mechanism for an individual to have his or her profile expunged.