1 Overview

The DNA Standard Operating Procedure manual (SOP) specifies procedures for routine DNA analyses of biological evidence for human identification; it is approved for use in the DNA section of the Houston Police Department Crime Laboratory (referred to as "the laboratory") in conjunction with the Biology SOP. Within the scope of that purpose, it is intended to ensure effective and efficient use of the laboratory facilities for the benefit of all user agencies and with the ultimate goal of detection, solution, and prevention of crime. In addition, it incorporates the quality assurance elements necessary to ensure the reliability and uniformity of analyses and reported conclusions.

Each approved revision of this manual will be version-controlled and archived for retrieval by date of authority. Only the approved revision in effect at the time of analysis governs the analysis. If necessary, changes in SOPs will be documented via memoranda issued between manual revisions, until such time as the SOP manual is revised.

It is not possible to anticipate every situation that may arise or to prescribe a specific course of action for every case; therefore, the examiner must exercise good judgment based on experience and common sense, especially when processing evidence. Any deviation from accepted protocol requires approval of the DNA technical leader, and must be documented in the case file.

This SOP is only one part of the policies and procedures that govern all work performed by the DNA section. These other relevant documents include, but are not limited to, the:

- Houston Police Department General Orders
- Quality Manual
- Safety Manual
- Biology Section SOP
- DNA Training Manual

1.1 Technical Leader

The technical leader shall be a full-time employee of the laboratory and shall be accessible to the laboratory to provide on–site, telephone, or electronic consultation as needed.

Minimum educational requirements: The DNA technical leader shall have, at a minimum, a master's degree in a biology-, or forensic science-related area and successfully completed 12 semester or equivalent credit hours from a combination of undergraduate and graduate coursework covering the following subject areas: biochemistry, genetics, molecular biology, and statistics or population genetics.

- The 12 semester or equivalent credit hours shall include at least one graduate-level course registering 3 or more semester or equivalent credit hours.
- The specific subject areas listed above shall constitute an integral component of any coursework used to demonstrate compliance with this standard.
- Individuals who have completed coursework with titles other than those noted above shall demonstrate compliance through provision of pertinent materials such as a transcript, syllabus, letter from the instructor, or other document that supports the course content.

Minimum experience requirements: The technical leader of the DNA section shall have at least three years of forensic DNA laboratory experience obtained at a laboratory where forensic DNA testing was conducted for the identification and evaluation of biological evidence in criminal matters. Any newly appointed technical leader shall have a minimum of three years of human DNA experience (current or previous) as a qualified analyst on forensic samples. The DNA technical leader shall have previously completed or successfully complete the FBI-sponsored auditor training within one year of appointment.

Responsibilities: The technical leader shall be responsible for overseeing the technical operations of the laboratory. The technical leader shall have the authority to initiate, suspend, and resume DNA analytical operations of the laboratory or an individual. The specific responsibilities of the technical leader include:

- To evaluate and document approval of all validations and methods used by the laboratory and propose new or modified analytical procedures to be used by analysts.
- To review the academic transcripts and training records for newly qualified analysts and approve their qualifications prior to independent casework analysis.
- To approve the technical specifications for outsourcing agreements.
- To review internal and external DNA audit documents and, if applicable, approve corrective action(s) and document such review.
- To review, on an annual basis, the procedures of the laboratory and document such review.
- To review and approve the training, quality assurance, and proficiency testing programs in the laboratory.
- To review and approve of all DNA analysis outsource contracts with vendor laboratories before they are awarded. Approval of such a contract includes acceptance of ownership of the DNA data generated in analysis performed under that contract.
- To review requests by contract employees for employment by multiple NDIS participating and/or vendor laboratories, and if no potential conflict of interest exists, may approve such requests

In addition, newly appointed technical leaders shall be responsible for the documented review of the following:

- Validation studies and methodologies currently used by the laboratory; and
- Educational qualifications and training records of currently qualified analysts.

Technical Leader Contingency Plan: The DNA section shall have a contingency plan that is approved by laboratory management if the technical leader position is vacated. In the event that the technical leader position is vacated and there is no individual who meets the requirements and will serve as a technical leader, the laboratory shall immediately contact the FBI and submit a contingency plan within 14 days to the FBI for its approval. Work in progress by the DNA section may be completed during this 14-day period, but new casework shall not be started until the plan is approved by the FBI.

1.2 Casework CODIS Administrator

The casework CODIS administrator shall be an employee of the laboratory.

Minimum educational requirements: The casework CODIS administrator shall meet the educational requirements for a DNA analyst.

Minimum experience requirements: A casework CODIS administrator shall be or have been a current or previously qualified DNA analyst, with documented mixture-interpretation training.

Minimum CODIS training requirements: The casework CODIS administrator shall participate in FBI-sponsored training in CODIS software within six months of assuming CODIS casework administrator duties if the administrator had not previously attended such training. The casework CODIS administrator shall successfully complete the FBI-sponsored auditor training within one year of assuming their administrator duties if the administrator had not previously attended such training.

Responsibilities: The casework CODIS administrator shall be responsible for the following:

- Administering the laboratory's local CODIS network.
- Scheduling and documenting the CODIS computer training of casework analysts.
- Ensuring that the security and quality of data stored in CODIS is in accordance with state and/or federal law and NDIS operational procedures.
- Ensuring that matches are dispositioned in accordance with NDIS operational procedures.
- The casework CODIS administrator shall be authorized to terminate an analyst's or laboratory's participation in CODIS until the reliability and security of the computer data can be ensured in the event an issue with the data is identified.

The DNA section shall not upload DNA profiles to NDIS if the casework CODIS administrator position is unoccupied.

1.3 DNA Analyst

The analyst shall be an employee of the laboratory. The laboratory will retain at least two full-time employees who are qualified DNA analysts.

Minimum educational requirements: The analyst shall have a bachelor's (or its equivalent) or an advanced degree in a biology-, chemistry-, or forensic science-related area and shall have successfully completed courses (graduate- or undergraduate-level) covering the following subject areas: biochemistry, molecular biology, and genetics as it applies to forensic DNA analysis. These specific subject areas shall be an integral component of any coursework for compliance with this Standard. Analysts shall have a minimum of three courses and nine cumulative semester hours or equivalent that covers the required subject areas. Analysts who have completed coursework with titles other than those listed above shall demonstrate compliance with QAS Standard 5.4.1 through a combination of pertinent materials, such as a transcript, syllabus, letter from the instructor, or other document that supports the course content. The analyst shall also have coursework or training in statistics and/or population genetics. The technical leader shall document approval of compliance.

Minimum experience requirements: The analyst shall have six (6) months of forensic human DNA laboratory experience.

Minimum training requirements: DNA analyst training will include completion of the following, prior to beginning independent casework:

- Analysis of a range of samples routinely encountered in forensic casework prior to independent work using DNA technology.
- A competency test.

Analysts will enter into a proficiency test program within 6 months of being deemed competent on any portion of casework analysis.

Prior forensic human DNA laboratory experience and/or training may be accepted to fulfill training and experience requirements; however, a competency test must be successfully completed prior to beginning casework. Prior experience or training used to fulfill any portion of this requirement shall be documented and approved by the technical leader.

Because technical reviewers are also qualified DNA analysts, as outlined in 1.3 above, they satisfy QAS Standard 5.5, and all subcategories of QAS Standard 5.5, through the following:

- Technical reviewers are employees of the laboratory
- Technical reviewers are currently qualified analysts in methodologies being reviewed
- Technical reviewers have successfully completed a competency test prior to participating in the technical review of DNA data
- Technical reviewers participate in an external proficiency testing program on the same technology, platform, and typing amplification test kit used to generate the DNA data being reviewed.

1.4 DNA Technician

Criminalists who have all academic qualifications for DNA analysts may serve as DNA technicians. Technicians will perform specific portions of the DNA analysis procedure, after they have been trained and deemed competent in the specific procedure, following Quality Manual and sectional training requirements.

Training in a specific DNA technique will consist of completing only the section of the DNA analyst training program relevant to the specific procedure; however all reading assignments, practice samples, and competency testing requirements related to that specific procedure must be completed successfully and documented prior to performing the procedure on forensic casework samples. DNA technicians will not interpret DNA data, nor will they issue DNA analytical reports.

DNA technicians will participate in proficiency testing to the extent that they perform laboratory analysis, following proficiency testing requirements detailed in the Quality Manual.