

Oakland Police Department Criminalistics Laboratory
DNA Instrumentation and Analysis and Software
Surveillance Impact Report
June 2023

1. Description

The Oakland Police Department (OPD) Criminalistics Laboratory's (Crime Lab) Forensic Biology/DNA unit utilizes specialized DNA collection and analysis instrumentation and software to perform forensic DNA testing. This is a biometric analysis which produces potentially sensitive information.

During the lengthy and complicated process to obtain a DNA profile from evidence or a reference sample, numerous steps may be necessary including, but not limited to: Digestion, Extraction, Quantitation, Normalization/Amplification, Typing, Interpretation, and Database upload.

OPD does not use Forensic DNA Analysis to surveil residents of Oakland; indeed, it is unlawful to analyze samples and upload them to Combined DNA Index System (CODIS) when no articulable nexus to a crime exists.

2. Purpose

At the end of all DNA analysis processes described previously, a determination can be made as to whether a DNA sample collected from a crime scene can be associated with a known individual through a comparison of evidentiary (crime scene) and reference DNA profiles.

3. Location

The DNA instruments and analysis software are housed in the Criminalistics Laboratory and may not be used elsewhere without disclosure to the Laboratory's accreditation agency ANAB [ANAB = American National Standards Institute (ANSI) National Accreditation Board] and revalidation.

4. Impact

The proposed biometric use policy covers how and when information is to be disseminated, as well as prohibitions against disclosures outside those listed. Civil Rights and liberties are adequately protected in that all samples are to be collected pursuant to search warrant, other legal means, or by documented consent. Nothing in the forensic DNA analysis allows for data collection to be discriminatory, viewpoint-based or biased by algorithm; in fact, the results of DNA analysis can, in a scientifically unbiased manner, include or (more importantly to privacy) exclude a person of interest. OPD recognizes that biometric analysis technology and associated data, if used in ways that violate accreditation, legal standards and uses described and referenced herein, would constitute inappropriate use.

5. Mitigations

The OPD Crime Lab mitigates against the impact of unlawful evidence submissions by requiring that all samples subject to DNA analysis are collected pursuant to search warrant, other legal means, or by documented consent.

Inappropriate uses of DNA biometric analysis technology and associated data are mitigated by:

- (1) Limiting access to the instrumentation and records.
 - a. Only staff authorized to work in the Crime Lab have access.
 - b. Sign-in and escort are required of all guests.
 - c. The laboratory is locked during business hours and locked and alarmed after hours.
- (2) Existence of written policies regarding care of data and casefiles.

NOTE: The use of the term “secure servers” throughout this Impact Report is on the basis of working with the Information Technology Department (ITD) in 2020 to develop terminology in this document. ITD is responsible for the preservation, fidelity and security of the data described herein.

 - a. Instrument software is in limited access locations and are hosted on secure servers.
 - b. DNA analytical data are kept on secure network drives.
- (3) Existence of written policies precluding wide dissemination of records.
 - a. Legal Discovery for Criminal or Civil trials is honored.
 - b. California Public Records Act (CPRA) requests are subject to limitations as specified in the Biometric Technology Use Policy.

6. Data Types and Sources

The instruments described previously collect data during one step in the process and may be passed along to another. Data generated by each instrument are stored in a proprietary format readable only by the protocol software or may be converted to tables to be used electronically or printed. The Use Policy indicates how raw data and paper casefiles are to be handled and stored.

7. Data Security

Criminalists and Forensic Technicians with duties in the Forensic Biology/DNA unit shall be the only Crime Laboratory personnel authorized to use the DNA collection and analysis software in casework, and only after completing a comprehensive training program and qualifying test, at which time, with the Supervisor’s recommendation, the Crime Laboratory Manager issues a written authorization. No one else shall have the authority to grant access to use the DNA instrumentation or software in casework. Criminalists and Forensic Technicians are granted access to one another’s cases only for the purpose of complying with discovery, documenting quality checks, verifications or peer review. Interns also are authorized to use the DNA collection and analysis software for special projects, not casework, and only after receiving necessary training and under the supervision of a qualified Criminalist. Data are stored on secure servers hosted in the Laboratory or by the Department.

8. Fiscal Cost

Digestion / Extraction

- Three EZ1 Advanced XL DNA purification instruments and software are in the laboratory; the cost of one new instrument is approximately \$63,000. Currently, two EZ2 DNA purification instruments have had grant funds identified for purchase. The current ongoing annual upkeep of the instrument is approximately \$3,100 per instrument.
- One Versa 1100 liquid handler instrument is in the laboratory; the cost of one replacement instrument is approximately \$85,000. The annual maintenance cost is approximately \$6,800 per instrument.

DNA Quantitation

- Three Qiagility liquid handler instruments are in the laboratory; the cost of one replacement instrument is approximately \$33,100. The annual maintenance cost is approximately \$2,700 per instrument.
- Two QuantStudio 5 Real-Time PCR DNA quantitation instruments are in the laboratory; the cost of two new replacement instruments is \$114,000. The current ongoing annual upkeep of both instruments is approximately \$10,200.

DNA Normalization / Amplification

- One SpeedVac concentrator is in the laboratory; the cost of one replacement instrument is approximately \$4,000. No annual maintenance cost.
- Two ProFlex thermal cyclers are in the laboratory; the cost of one replacement ProFlex instrument is approximately \$14,000. No annual maintenance cost.

DNA Typing

- One 3500 genetic analyzer; the cost of which was \$135,000. The annual maintenance cost is approximately \$6,000.

DNA Interpretation

- STRmix upgrade cost \$66,000; annual maintenance costs run ~\$12,000 annually
- FaSTR cost approximately \$37,000.
- Armed Expert acquisition cost approximately \$15,000

Grants, Proposition 69 funds, and Operations and Maintenance budgets have historically covered these costs.

9. Third Party Dependence

Electronic data are retained indefinitely on secure server or network drives and do not require a third party. Hardcopy data present in paper casefiles are currently stored under laboratory

control. In the future, if storage needs for hardcopy files exceed capacity, a Departmentally-approved records retention facility will be used as articulated in the Biometric Use policy.

10. Alternatives

The DNA analysis instruments and software have been validated and meet or exceed both accreditation requirements and industry standards. Alternatives have either been found to be inferior or would require time-exhaustive and expensive validation to replace the current platform with other technology.

11. Track Record

STR-based DNA analysis as a technology has extensive and longstanding documentation as a standard and effective method to analyze DNA. The methods using these technologies in total are employed by many private and government (local, state, federal) forensic and clinical laboratories. There is no known adverse information extant about the technology.