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The Facts About Forensic DNA Analysis and DNA Databases

A guide to scientific methodologies, laws and regulations for forensic DNA sample analysis.



Scientific Methodology of Forensic DNA Databases

Our nation's Combined DNA Index System (CODIS) stores profiles from convicted offenders, unsolved crime scene evidence and missing persons. Its success is demonstrated by the thousands of cases that have been solved by matching crime scene evidence to known convicted offenders. The following information details how the DNA database system has been specifically designed to protect privacy.

- Forensic DNA analysis uses just 13 markers out of more than three billion base pairs in the DNA strand. These 13 sites, or "loci", were specifically selected by a group of DNA experts assembled by the FBI.
- The 13 specific loci were chosen because they are unique to each individual and reside on portions of the human genome that **DO NOT contain any predictive information on genetic health or other personal characteristics**, other than gender information.

- The shared local, state and national forensic DNA databases, known as CODIS, do not contain names, social security numbers or any personally identifying information about an individual. The profile is identified by a Specimen ID Number that is generated randomly by the computer when the profile is uploaded.
- CODIS stores DNA profile information as a simple series of numbers and letters, as well as the lab and analyst that entered the profile into the system. See below for an example of the data that goes into the database.
- After there is a match between the offender profile and the crime scene DNA profile, the Specimen ID Number is used to cross-reference an offline, state-maintained secure database in which that profile's identity is stored.
- CODIS profiles are NOT shared with other types of databases and are NOT part of the criminal history record. They are also NOT accessible by third parties, such as the Department of Homeland Security. DNA profiles are only searched against the CODIS index of unsolved crimes or missing persons/unidentified remains index.
- CODIS data is protected by the FBI's state-of-the-art encryption and firewall technology.

*Below is the **only** information that is uploaded into CODIS*

SAMPLE CODIS PROFILE:

Originating Laboratory Identifier	Lab XYZ
Specimen ID Number	0012152
13 Core Loci	06,09,11,12,10,10,22,24,9.3,10,08,09,14,14,15,17,17,22,25,12,2,9,10,09,13
Analyst Identifier	ABC



Protecting Against Profile Misuse

While forensic DNA profiles do not contain private genetic information, additional steps have been taken to further protect privacy. Federal law strictly prohibits the dissemination of information from DNA databases to unauthorized persons and for unauthorized reasons. The law states:

- Information resulting from DNA analysis may **ONLY** be released to criminal justice agencies for law enforcement identification purposes, in judicial proceedings, and to criminal defendants for the case in which the person is involved.
- Any person who has access to national DNA database information or samples and knowingly discloses such information in an unauthorized manner may be fined up to \$250,000 and sentenced to one year in prison.
- Since the inception of the CODIS system there has never been an incidence of misuse, nor has there ever been a breach of the database.
- After the sample is verified, only law enforcement working on the case to which the profile matched can be notified of the identifying information and the match. This is used by law enforcement as an investigative lead. If the authorities decide there is enough evidence to prosecute, a search warrant is requested for another DNA sample and it is this sample that is admissible as evidence in a court of law.

For more information, view operating procedures used by the National DNA Index System at:

<http://static.fbi.gov/docs/NDIS-Procedures-Manual-Final-1-31-2013-1.pdf>



Protection of Retained Samples

Personal privacy is of the utmost concern. That's why a significant body of laws and regulations, both state and federal, already exist to provide ample privacy protection against illegal intrusions.

According to government regulations, crime laboratories are not permitted to destroy DNA samples following analysis. After a match is made in CODIS, the laboratory re-tests the original offender sample to confirm the match. This extra step is taken to confirm accuracy and ensure that innocent people are not wrongly questioned.

All laboratories participating in CODIS must store DNA samples in a secure, locked site and undergo an annual audit to ensure compliance. These strict standards are established by the Scientific Working Group on DNA Analysis Methods (SWGDM).

For more information on SWGDAM standards, visit:

www.fbi.gov/about-us/lab/codis/qas_databaselabs

The Importance of DNA Arrestee-Testing Laws

Every day, innocent people needlessly become victims of violent crimes. Most of these crimes are committed by repeat offenders. By passing state legislation that enables law enforcement to collect DNA from felony arrestees we can:

- Catch repeat offenders sooner
- Prevent violent crimes
- Exonerate the innocent
- Protect civil liberties
- Minimize racial bias
- Reduce criminal justice costs

About DNA Saves

DNA Saves is a non-profit association organized to educate policy makers and the public about the value of forensic DNA. Jayann and David Sepich formed the association in late 2008, marking the five-year anniversary of the senseless murder of their daughter, Katie. DNA Saves is committed to working with states across the nation to pass laws allowing



DNA to be collected upon felony arrest and to provide meaningful funding for DNA programs.

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