Future

The Future

Through the combination of increased Federal funding and expanded database laws, such as the DNA Fingerprint Act of 2005, the number of profiles in NDIS has and will continue to dramatically increase resulting in a need to re-architect the CODIS software. A considerable focus during this time will be to enhance kinship analysis software for use in the identification of missing persons. This next generation of CODIS will utilize STR and mtDNA information as well as meta data (such as sex, date of last sighting, age etc.) to help in the identification of missing persons. The re-architecture will also enable CODIS to include additional DNA technologies such a Y Short Tandem Repeat (Y-STR) and mini-Short Tandem Repeat (miniSTR).

The FBI Laboratory is committed to the support of the CODIS program. With the continued cooperation and collaboration of legislative bodies and all components of the criminal justice community - law enforcement, crime laboratories, victims, prosecutors and the judiciary - the future of DNA, CODIS and NDIS holds even greater promise to solve crime and identify missing persons.

Offender/Forensic Profiles & Total Offender Hits

Calendar Year	2000	2001	2002	2003	2004	2005	2006	2007
Offender Profiles	460,365	750,929	1,247,163	1,493,536	2,038,514	2,826,505	3,977,433	5,372,773
Forensic Profiles	22,484	27,897	46,177	70,931	93,956	126,315	160,582	203,401
Investigations Aided	1,573	3,635	6,670	11,220	20,788	30,455	43,156	62,059
Forensic Hits	507	1,031	1,832	3,004	5,147	7,071	9,529	11,750
Total Offender Hits	**731**	**2,371**	**5,032**	**8,269**	**13,855**	**21,519**	**32,439**	**49,813**
National Offender Hits	26	167	638	1,151	1,864	2,855	4,276	6,508
State Offender Hits	705	2,204	4,394	7,118	11,991	18,664	28,163	43,305

COMBINED DNA INDEXSYSTEM

CODIS

CODIS supports

NDIS NATIONAL DNA INDEX SYSTEM

SDIS STATE DNA INDEX SYSTEM

LDIS LOCAL DNA INDEX SYSTEM

Contacts

CODIS
703-632-8315

Nuclear DNA
DNA Analysis Unit I
703-632-8446

mtDNA
DNA Analysis Unit II
703-632-7572

CODIS Architecture

NDIS is the highest level in the CODIS hierarchy, and enables the laboratories participating in the program to exchange and compare DNA profiles on the national level.

SDIS allows laboratories within states to exchange DNA profiles.

All DNA profiles originate at **LDIS**, and then flow to **SDIS** and **NDIS**.

Palm Beach

U. S. Department of Justice
Federal Bureau of Investigation

CODIS

COMBINED DNA INDEX SYSTEM

The FBI Laboratory's Combined DNA Index System **(CODIS)** blends forensic science and computer technology into an effective tool for solving crime.

COMBINED DNA INDEXSYSTEM

Combined DNA Index System

CODIS

The FBI Laboratory's Combined DNA Index System (CODIS) began as a pilot software project in 1990 serving 14 state and local laboratories. The DNA Identification Act of 1994 formalized the FBI's authority to establish a National DNA Index System (NDIS) for law enforcement purposes. Today, over 170 public law enforcement laboratories participate in NDIS across the United States. Internationally, more than 40 law enforcement laboratories in over 25 countries use the CODIS software for their own database initiatives.

Crime

Crime

CODIS generates investigative leads in cases where biological evidence is recovered from the crime scene. Matches made among profiles in the Forensic Index can link crime scenes together; possibly identifying serial offenders. Based upon a match, police from multiple jurisdictions can coordinate their respective investigations and share the leads they developed independently. Matches made between the Forensic and Offender Indexes provide investigators with the identity of a suspected perpetrator(s). Since names and other personally identifiable information are not stored at NDIS, qualified DNA analysts in the laboratories sharing matching profiles contact each other to confirm the candidate match.

SEVERAL **Indexes** Categorize the Profiles Entered into CODIS

Convicted Offender
contains profiles of individuals convicted of crimes.

Forensic
contains DNA profiles developed from crime scene evidence, such as semen stains or blood.

Arrestees
contains profiles of arrested persons (if state law permits the collection of arrestee samples).

Missing Persons
contains DNA reference profiles from missing persons.

Unidentified Human Remains
contains DNA profiles developed from unidentified human remains.

Biological Relatives of Missing Persons
contains DNA profiles voluntarily contributed from relatives of missing persons.

nuclear DNA

Nuclear DNA is found in the nucleus of the cell. It is inherited from both the mother and the father. Nuclear DNA analysis targets areas of the nuclear DNA called Short Tandem Repeats (STRs) for entry into CODIS. Nuclear DNA can be found in samples from blood, semen, bones, cigarette butts, shirt collars, hats, weapons, bottles and envelopes, etc. CODIS allows for the entry of 13 core STR loci into indexes based on specimen categories. For questions concerning nuclear DNA analysis, please contact the DNA Analysis Unit I at 703-632-8446.

mtDNA

Mitochondrial DNA (mtDNA) is found in the mitochondria of the cell. It is inherited only from the mother. Mitochondrial DNA is generally extracted from biological items of evidence such as hair, bones and teeth. Typically, these samples contain low concentrations of degraded DNA, often making them unsuitable for nuclear DNA examinations. The aspect of maternal inheritance is useful in missing persons cases where direct DNA reference samples are often not available, but since multiple individuals can have the same mtDNA type, unique identifications are not possible using only mtDNA analyses. CODIS allows for the entry of mtDNA only in the Missing Persons related Indexes. For questions concerning mtDNA analysis, please contact the DNA Analysis Unit II at 703-632-7572.

Missing Persons

In 2000, the FBI Laboratory began developing the National Missing Person DNA Database (NMPDD) program for the identification of missing and unidentified persons.

Both mtDNA and STR profiles can be entered into the missing persons indexes of CODIS. Efforts to enhance kinship analysis for missing persons data is a top priority of the CODIS Program. Once fully implemented, the enhancements will provide investigators with a powerful tool in the identification of missing and unidentified persons on a national level. For questions concerning missing persons cases, please contact the DNA Analysis Unit I (Nuclear DNA) at 703-632-8446, or the DNA Analysis Unit II (mtDNA) at 703-632-7572.

NMPDD uses 3 Indexes in NDIS

to enter DNA profiles that can be searched against each other

Unidentified Human Remains

Missing Persons

Biological Relatives of Missing Persons

National Missing Person DNA Database