Laboratory Information Management Systems – DoD DNA Operations

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Director DoD DNA Operations
Armed Forces Medical Examiner System

Military Libraries Training Workshop 2019
Dec 11, 2019
Outline

- Armed Forces Medical Examiner System (AFMES)
- DoD DNA Operations
- DNA Databases
- Laboratory Information Management Systems
**Mission**
- Investigate deaths
- Identify the fallen
- Improve readiness

**Vision**
Be the global leader in comprehensive and innovative medicolegal services enhancing the readiness, sustainability, and survivability of those we serve

- Deploy Solutions for 21st Century Battlefield
- Improve Readiness, Health and Experience
- Deliver Solutions to Combatant Commands

Impartial; Objective; Authoritative and Scientific determination of cause/manner of death and identification of decedents (10 USC § 1471)
1st & only Forensic Pathology Fellowship in DoD at AFIP

Kennedy Autopsy done by military general pathologists

Apollo 1 Mission Mishap

Jonestown Mass Suicide

Gander, Newfoundland DC-8 Mishap

Space Shuttle Challenger Mishap

Establishment of AFMES and location at AFIP

Death of Ron Brown (SEC Commerce) 10 USC 1471 enacted

DoDIG Findings

9/11 and OEF

OIF

BRAC 2005: relocates AFMES from DC area and re-aligns ADCON & oversight from AFIP to MRMC

1961

1963

1967

1978

1985

1986

1996

1988 Authority: DoDD 6010.16

1999 Authority: 10 USC 1471 gives statutory and jurisdictional authority and makes AFMES responsible to SECDEF

1996

2001

2003

2005: BRAC results released

2010

2015 Re-align w/ DHA
Apollo 1 Mission Mishap

Apollo Program starts with tragedy of Apollo 1 fire on Jan 27, 1967. The program continues in 1968-1969

Killed in fire – Gus Grissom, Ed White, and Roger Chaffee

Inside of Apollo 1 Capsule

Space Shuttle Challenger Mishap

The New York Times

THE SHUTTLE EXPLODES

6 IN CREW AND HIGH-SCHOOL TEACHER ARE KILLED 74 SECONDS AFTER LIFTOFF

Thousands Watch A Rain of Debris


Jonestown Mass Suicide

Gander, Newfoundland DC-8 Mishap
Establishment of AFMES and location at AFIP 1988

Department of Defense

DIRECTIVE

AD-A272 374

March 8, 1988
NUMEX 8610.16

SUBJECT: Armed Forces Medical Examiner System

Reference: (a) Title 10, United States Code, Sections 139, 176, 3012, 4731, 5021, 6012, and 9711
(b) Title 37, United States Code, Section 555

A. PURPOSE

This Directive establishes an Armed Forces medical examiner system with an Office of the Armed Forces Medical Examiner (OAFME) and an Armed Forces Medical Examiner (AFME), under reference (a), to conduct scientific forensic investigations for determining cause and manner of death under specific circumstances for:

1. Members of the Armed Forces on active duty or on active duty for training.
2. Civilians, including dependents of military members.

B. APPLICABILITY

This Directive applies to the Office of the Secretary of Defense (OSD) and to the Military Departments.

C. DEFINITIONS

The terms used in this Directive are defined in enclosure 1.

D. POLICY

1. The AFME and the OAFME shall be located at the Armed Forces Institute of Pathology (AFIP).
2. The AFME shall be notified expeditiously of the death of any service member on active duty or active duty for training and of any individual, regardless of status, who dies on a military installation, vessel, or aircraft or who was enrolled in the Personnel Reliability Program, references (c) and (d).
3. The AFME shall have the authority to order a medicolegal investigation to include an autopsy of the death of any service member on active duty or member of the Reserve components on active duty for training where the Federal Government has exclusive jurisdictional authority, and where the circumstances surrounding the death are suspicious, unexpected, or unexplained. Such circumstances include, but are not limited to the following: [List of conditions]

DHA
Defense Health Agency
Death of Ron Brown
United States Secretary of Commerce (SecCom)
April 3, 1996
Enacted October 5, 1999

10 U.S.C. § 1471
Forensic Pathology Investigations
September 11, 2001
Operation Enduring Freedom
Operation Iraqi Freedom

The New York Times
U.S. ATTACKED
Hijacked Jets Destroy Twin Towers
And Hit Pentagon In Day Of Terror

OEF: Oct 7, 2001

OIF: Mar 20, 2003
**Humanitarian Efforts 2005 and 2010**

**Hurricane Katrina**
- **August 23–31, 2005**
- Costliest hurricane in the U.S.
  - Nearly **106 billion** U.S. dollars
  - Damage caused by Superstorm Sandy, which struck in 2012, was approximately 71 billion U.S. dollars
- **62** tornadoes in **8** states spawned from the storm
- **26** ft (8 m) maximum storm surge in Mississippi
- **1,200** lives lost

**Haiti Earthquake**
- **Caught in the Danger Zone**
  - The epicenter of Tuesday’s 7.0 magnitude quake struck one of the most densely populated parts of Haiti. The numerous aftershocks were centered at short distances to the west of the initial temblor, along a fault line.

**Visuals**
- Maps of Haiti and Hurricane Katrina
- Images of humanitarian efforts in Haiti and Hurricane Katrina aftermath

BRAC Relocates AFMES from DC area to DAFB
Building Fully Occupied 2012
OSD 

ASD/HA

DHA

Armed Forces Medical Examiner System

(Policy Authority, Direction, Control)

(Policy Oversight)

(Authority, Direction, Control)

(Provides technical advice to ASD/HA thru DHA on execution of responsibilities for forensic medicine disciplines)

10 USC § 1471; (DoDI 5154.30)
DHA

Combat Support

Armed Forces Medical Examiner System

(provides authority, control, direction and operational oversight of AFMES; appoints AFME; appoints DPAA ME)

(Directorate w/ oversight of AFMES)

10 USC 1471; (DoDI 5154.30)
Director, Armed Forces Medical Examiner System (COL Finelli)

Deputy Director (LtCol Briones)

Chief Of Staff (Mr Vojtecky)
- S-1 through S-8
- PAO, Legal, & Safety

OAFME (LTC Uribe)

DNA Operations (Dr McMahon)

Forensic Toxicology (LTC Sartori)

Senior Enlisted Advisor (M Sgt Weber)

The ONLY Federal Medical Examiner System
Office of the AFME

Functions:

• Provide comprehensive forensic pathology investigations worldwide IAW 10 USC 1471
• Responsive to no-notice missions worldwide
• Identify decedent; determine cause & manner of death
• Train fellows, residents, medical students and mortuary affairs specialists
• Conduct mortality surveillance on all Active Duty U.S. Service Members
• Provide information to improve Warfighter survivability
• Provide death certificates and autopsy reports to authorized entities
• Provide weekly, quarterly, and annual suicide reports
• Present and publish relevant findings related to service member mortality

Stakeholders:

• Families of the decedents
• DoD Leadership, Combatant Commanders, Local Commanders, Surgeon Generals
• Investigative agencies, safety boards, 15-6 investigators
• FBI, NTSB, DoJ, other federal agencies
• Combat casualty care providers, Joint Trauma Analysis and Prevention of Injury in Combat, Defense Suicide Prevention Office
AFME leads the AFMES; serves as scientific authority for the identification of remains; ensures the Medical Examiner at Defense POW/MIA Accounting Agency (DPAA) is fully informed in order to establish identification and laboratory Policy consistent with AFMES
Remains arrive at Dover AFB
AFMES Medical Examiner takes control of Transfer Case/EOD check
Contents removed from Transfer Case, photographed & documented
Remains tagged & processed through fingerprinting, dental, radiography

Remains transferred to Dress and Restoration (D&R)
Remains embalmed
Remains transferred to AFMAO personnel for preparation
Remains transferred to Autopsy then released by Medical Examiner

When D&R complete, remains transferred to Departures
Remains transferred to casket and prepared for departure
Remains depart for designated burial place via air or hearse with reverse DT or sendoff

Color legend for designated areas of responsibility:
AFMAO
AFMES
Feedback to the Field

Mortality Statistics help us understand health and how it can be improved
Functions:

- DoD centralized laboratory which performs routine and specialized toxicological analysis on military aircraft, ground and ship incidents, with and without fatalities.
- Forensic toxicology support for criminal investigations conducted by AFOSI, CID and NCIS.
- Alcohol and drug tests for medicolegal (sexual assault, DUI, suicide) determinations.
- Quality assurance, certification and inspection services for the DoD Drug Demand Reduction Program.
- Selected cases of national and international interest.

Stakeholders:

- Armed Forces Medical Examiners
  - Full service post mortem toxicology
- Drug Demand Reduction Program/Labs
  - Provide QA/QC support through proficiency specimens, inspections, prevalence testing and surveillance (DoDI 1010.16/DoDD 1010.01)
  - Provide a technical evaluation and method development capability
- Military Working Dog Kennels World Wide
  - Provide K-9 training aides for the 200 services kennels
- Services JAG Corps
  - Deliver expert witness support at legal proceedings
  - Provide DFSA toxicology training
DoD DNA Operations

Functions:

• Collection and storage of DNA reference specimens of current military, and other designated individuals (AFRSSIR) IAW DEPSECDEF memo 16 Dec 1991: Establishment of a Repository of Specimen Samples to Aid in Remains Identification Using Genetic Deoxyribonucleic Acid (DNA) Analysis
• Provide laboratory operations for processing of specimens and references for human remains identification (AFDIL)
• Produce comparison reports for use by DPAA and Medical Examiners for authoritative identification of decedents
• Provide laboratory operations for current and past conflict personnel accounting
• Research

Stakeholders:

• Families of decedents
• OAFME
• Defense POW/MIA Accounting Agency
• National Security Intelligence and Law Enforcement
• Other Federal Agencies as requested
AFMES Missions Supported By DoD DNA Operations

Present Day Accounting

Past Accounting

www.bbc.co.uk

FRS Databasing

World Wide Support
DoD DNA Operations

DoD DNA Operations (Dr. McMahon)

AFDIL (DNA Testing Lab)
AFRSSIR (Repository)

Quality Management
Current Day Operations
Past Accounting Operations
FRS-LA (Family Reference)
Emerging Technology
• **Criminal Forensics**

  • Question: Who in the general worlds population committed the crime?
  
  • Open population as you initially do not know who committed crime
  
  • Nuclear DNA testing with either Direct Comparison to Reference or search of appropriate database

• **Human Remains Identification**

  • Question: Who is the missing individual?
  
  • Typically a closed population
  
  • Nuclear and mtDNA testing with Direct comparison to reference with either Direct Comparison to Reference or search of appropriate database
AFRSSIR (Repository)
Division of the Armed Forces Medical Examiner System (AFMES)
  - Defense Health Agency (DHA)

Established in 1990
  - Utilize DNA methods to identify the remains of US service members

Mission Partner with the Defense POW/MIA Accounting Agency (DPAA) since 1990
American Society of Crime Laboratory Directors-Laboratory Accreditation Board (ASCLD – ISO 17025 International Certification)

Federal Bureau Of Investigation (FBI) Quality Assurance Standards

DoD DA Oversight Committee (Defense Science Board 1995)
Currently there are more than 81,000 Americans remain missing from WWII, the Korean War, the Vietnam War, the Cold War, and the Gulf Wars/other conflicts. Out of the 81,000 missing, 75% of the losses are located in the Indo-Pacific, and over 41,000 of the missing are presumed lost at sea (i.e. ship losses, known aircraft water losses, etc.).
Points to Consider

• Every DNA result will not necessarily lead to or support a new ID
  – Too degraded
  – Commingling
  – Subsequent recoveries
  – Local national/non-US
  – No family reference
  – Non human
The Human DNA Genome

Nuclear DNA
~3.2 billion base pairs (bp)

Mitochondrial DNA
16,549 bp
DNA Degradation: Example

1 in = 100 base-pairs
mtDNA Forensic Testing Strategies

Control Region

<table>
<thead>
<tr>
<th>Forward</th>
<th>Reverse</th>
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<tr>
<td>16024</td>
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<tr>
<td>F15971</td>
<td>R599</td>
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</table>

Primer sets (~200bp i.e. 2 in)

- PS1: F15989/R16251
- PS2: F16190/R16410m19
- PS3: F15/R285
- PS4: F155/R389

Mini-primer sets (~120bp i.e. 1 in)

- mps1a
- mps1b
- mps2a
- mps2b
- mps3a
- mps3b
- mps4a
- mps4b
mtDNA and YSTR
Lineage Markers

Maternal Donors

Paternal Donors
Nuclear DNA Capabilities (auSTR and YSTR)

AmpFISTR GlobalFiler
https://www.thermofisher.com/order/catalog/product/4476135

PowerPlex Fusion
https://promega.com

AmpFISTR MiniFiler
https://strbase.nist.gov/kits/MiniFiler.htm

AmpFISTR YFiler
https://strbase.nist.gov/kits/YFiler.htm
Autosomal Inheritance

Nuclear Donors

Allele share between Generations
Nuclear DNA Shared Between Relatives

Amount of total nuclear DNA in common with one's relatives
• Kokura Mortuary

• Chemically Modified
  – 40-50% formaldehyde: Bad for DNA

• 16 year project by AFMES-AFDIL
NGS Success

- **Overall**: 1363 samples in 3.5 yrs
  - ~707 reportable sequence (52%)
  - World War II, Korea, Vietnam

- **DNA Reports**
  - 309 DNA Comparison Reports
  - 136 First Time Named Reports
  - 173 Addendum Reports

- **Processing Capacity**
  - Increased to ~43 samples/month

http://www.airforcemedicine.af.mil/Media-Center/Display/Article/1226667/next-generation-dna-sequencing/
Common mtDNA sequence and no auSTR or YSTR results generated:

- Sequence whole mtDNA genome
- Individuals with common mtDNA distinguishable
- Grant to expand whole mtDNA database: better statistics
DNA Tests Reported By AFDIL
As Of September 30th, 2019

94% Success Rate Obtaining MtDNA Sequence Data
63% Success Rate Obtaining Au-STR DNA Data
66% Success Rate Obtaining Y-STR DNA Data
60% Success Rate Obtaining NGS Data
<table>
<thead>
<tr>
<th>FY</th>
<th>Believe to Be Reports</th>
<th>Addendum Reports</th>
<th>Foreign National</th>
<th>Total Reports</th>
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<td>57</td>
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<td>719</td>
</tr>
<tr>
<td>2019</td>
<td>207</td>
<td>448</td>
<td>3</td>
<td>658</td>
</tr>
</tbody>
</table>
DNA Forensic Databases

• A database is organized files of data that are organized to allow for search and retrieval of information.

• DNA databases compare profiles derived from evidentiary samples to a database of DNA profiles obtained from known or unknown individuals to provide investigative leads or statistical weight for inclusion or exclusions.

• Typical DNA Databases
  • Criminal or Missing Person Database
    • Collection of DNA Profiles that can be searched to look for matches
  • Statistical Population Databases
    • Includes population data to determine allele frequencies to allow calculation of statistical relevance
  • DNA Databank
    • Is the repository of the actual blood or buccal swab samples
• The FBI created and mandated to main the Combined DNA Index System (CODIS).


• Blends DNA forensic science and computer technology to offer effective tool for solving crimes and missing person cases

• Enables federal, state and local crime labs to exchanged and compare electronic data allowing for crimes and convicted offenders to be linked.
• **ALL CONVICTED OFFENDER LEGISLATION**
  
  1999 – 5 states  
  2003 – 27 states  
  2008 – 42 states  
  2011 – 50 states  

• **ARRESTEE LEGISLATION**
  
  1999 – 1 state  
  2006 – 7 states  
  2012 – 26 states  
  2018 – 32 states
• **DNA profile entry and management**: the function dealing with the database DNA profiles

• **Searching**: the function allowing a search of database DNA profiles

• **Match management**: the function managing search results

• **Statistical calculations**: Popstats function enabling laboratory personnel to calculate profile statistics based upon population frequency data
DNA profiles generated at participating crime laboratories are organized into Indexes in CODIS.

- **Convicted Offender Index**
  - DNA Profiles from individuals convicted of a crime and eligible based on their states collection laws.

- **Arrestee Index**
  - DNA Profiles from individuals arrested for eligible crimes based on their states collection laws.

- **Forensic Index**
  - DNA profiles developed from crime scene evidence that may have originated from the perpetrator/s.
• National Missing Person DNA Database (NMPDD): Assist with Missing Persons or Unidentified Remains
  • Missing Person Index
    • DNA Profiles of missing persons; Direct profiles
  • Unidentified Human Remains Index
    • DNA Profiles from found remains with no ability to identify

• Biological Relatives of Missing Person Index
  • Contains DNA Profiles from eligible family members
RDIS: Rapid DNA Index System

• 2010 FBI establish RAPID DNA program to look at developing capability for DNA testing to occur in a booking station.

• Building on DoD funded project to get DNA profiles in 90 minutes.

• RDIS will allow trained police officers to collect a swab at the booking station, run it on a RAPID instrument, search CODIS to see if the individual is wanted for other crimes.
2010 CJIS WAN (Criminal Justice Information Systems Wide Area Network), a stand-alone law enforcement computer network that operates like the Internet. The software is the same at all sites and configured based on LDIS, SDIS, or NDIS rights.

- Participating labs connected via T1 line on CJIS WAN that allow 1.5 MB per second, no security risk like internet.

- LDIS labs will enter profiles meeting requirements to SDIS and SDS administrator will promote to NDIS based on meeting set requirements.

- NDIS automatically searched once a week
  - Can search partial profiles and set stringency levels.
NDIS Nomenclature

- **ORI = DCFBIWAD7**
  - FBI Laboratory Wash. DC Div.7

- **Specimen ID #**
  - MD060215039Q4M
    - MD, 2006, February 15 Case# 39
      Question Specimen 4 Male Fraction

- **STR Profile**
  - 11,11; 12,12; 12,13; 10,20; 29,30; 16,18; 12,13; 09,11; 11,15; 23,24; 06,9.3; 08,08; 17,19; X, Y

- **Analyst Identifier = JCL**
### Database Search – Perfect Match

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<th>Locus</th>
<th>Crime Scene</th>
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<tr>
<td>D16S539</td>
<td>11,12</td>
<td>11,12</td>
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</table>
• DNA Databank
• Family Reference Database
• Population Database
AFRSSIR (Repository)
DNA Reference Cards

- All active duty, reserve, and National Guard service members.
- 250,000 new cards a year
- Developed Specimen Management System to track and in-process the samples.
- Must be able to talk to service specific databases
- Card on file tied to readiness, promotion status, and retention.
DNA Reference Cards
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Family Reference Collection Efforts:
Types of References Collected

**Family Relationship**

- Great Grandmother (Maternal)
- Great Grandfather (Maternal)
- Great Grandmother (Paternal)
- Great Grandfather (Paternal)

**Types of References Collected**

- Spouse (+)
- Daughter (-)
- Son (-)
- Granddaughter (-)
- Grandson (+)
- Great Granddaughter (-)
- Great Grandson (+)

**Shaded gray boxes indicate a relative who may be a useable reference for DNA analysis.**

- Biological children of missing females can be used as a maternal mtDNA reference.

- “R” represents Removed. (ex. 1st Cousin 2R means 1st Cousin twice removed)

- (-) Donor for Nuclear DNA Analysis
- (#) Donor for Mitochondrial DNA
- (+) Donor for “Y” DNA Analysis

If your relationship is not represented in the chart above, please describe, in detail, your relationship to the missing individual.
• Receive ~2000 family references a year

• World War II, Korea, Vietnam, Cold War
  • World War II: 12% of the 74K missing: 36-38 recoverable
  • Korea: 92% of the original 8100 missing
  • Vietnam: 85% of the original ~1600 missing
  • Cold War 85% of the ~125 missing
Reference Database

- Unique Identifiers assigned
  - Year; case type identifier; Sequential case number; sample number; subsample
    - 2020F3098-01A
      - Year 2020
      - F: Family Reference; H: Past accounting; M: Military (CDO)
      - 3098, is the 3098th case accessioned into system for the year.
      - 01; multiple samples 01, 02, 03....
      - A is first sample, if multiple samples A, B, C,...

- Entered into searchable database
Evidence Accession
Completed Chain of Custody

Chain Of Custody
03/12/15 2:52:43 PM

PACKAGE: 201542

Sender Name: McManus, Amber
Sender Organization: AFDIL
Address: Dover AFB
115 Purple Heart Dr
Dover, DELAWARE 19902 United States

Date: 3/11/2015 12:00:00 AM

Telephone:

Tracking Number: N/A

Comments: One HS ziploc bag, labeled "GSM COC Exercise Training Use Only 030915BET", containing one brown GS envelope, labeled "Test No 13-571 Item 1", containing one medium sized TS manilla envelope, labeled same, containing four smaller TS manilla envelopes.

Custody/Tracking

Completed Chain of Custody

Custody Of Custody
03/12/15 2:52:43 PM

Chain Of Custody

Evidence Nbr Date/Time Action Released By Received By Reason Witness

0001 A 3/11/2015 2:12:41 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence

0003 A 3/11/2015 2:14:00 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence


0004 A 3/11/2015 2:35:43 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence

0002 A 3/11/2015 2:35:43 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence


0002 A 3/11/2015 2:37:43 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence

0001 A 3/11/2015 2:37:43 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence

0002 A 3/11/2015 2:37:43 PM Check-In Lab 249 Rfg 016210301110822 - Shelf 2 Initial Check-in of Evidence


0001 A 3/11/2015 2:39:06 PM Transfer McManus, Amber L. Transfer to Evidence Custodian

0002 A 3/11/2015 2:39:06 PM Transfer McManus, Amber L. Transfer to Evidence Custodian


0002 A 3/11/2015 2:42:05 PM Transfer McManus, Amber L. Transfer to Evidence Custodian


0004 A 3/11/2015 2:42:05 PM Transfer McManus, Amber L. Transfer to Evidence Custodian

0002 A 3/11/2015 2:42:05 PM Transfer McManus, Amber L. Transfer to Evidence Custodian

0001 A 3/11/2015 2:42:05 PM Transfer McManus, Amber L. Transfer to Evidence Custodian
Laboratory Information Management System: LISA

Reference Database
Laboratory Information Management System: LISA

Reference Database
Laboratory Information Management System: LISA

Reference Database
Laboratory Information Management System: LISA

Population Database
### Sibling, Cousins Inheritance

<table>
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<th>Locus</th>
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<th>Sibling 1 (9 shared alleles)</th>
<th>Sibling 2 (7 shared alleles)</th>
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<tbody>
<tr>
<td>D13S317</td>
<td>8,15</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>D2S1338</td>
<td>23,25</td>
<td>23,25</td>
<td>19,25</td>
</tr>
<tr>
<td>D21S11</td>
<td>29</td>
<td>29,32.2</td>
<td>29</td>
</tr>
<tr>
<td>D16S539</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td><strong>D18S51</strong></td>
<td><strong>15,17</strong></td>
<td><strong>16,18</strong></td>
<td><strong>15,16</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Locus</th>
<th>Sample A</th>
<th>Sibling 1</th>
<th>Sibling 2</th>
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<tbody>
<tr>
<td>D18S51</td>
<td>15,17</td>
<td>16,18</td>
<td>15,16</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Locus</th>
<th>Mom</th>
<th>Dad</th>
</tr>
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<tbody>
<tr>
<td>D18S51</td>
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<td>17,18</td>
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</table>

#### Likelihood Ratio

<table>
<thead>
<tr>
<th>Population Group</th>
<th>Sample 1 and Sib 1</th>
<th>Sample 1 and Sib 2</th>
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</thead>
<tbody>
<tr>
<td>Sister of Service Member</td>
<td>5.84 million</td>
<td>212 thousand</td>
</tr>
</tbody>
</table>
Laboratory Information Management System: LISA

Casework Management
Armed Forces Medical Examiner System

The Armed Forces Medical Examiner System (AFMES) is committed to being the Department of Defense’s (DoD’s) leader in providing medical-legal services and emerging technologies essential for the readiness, sustainability and survivability of our service members. AEMES provides the DoD and other federal agencies comprehensive forensic investigative services, to include forensic pathology, DNA Forensics, forensic toxicology, and medical mortality surveillance. AFMES is not only the single worldwide medical examiner system, but it also supports the entire U.S. federal government.

Mission
Investigate deaths, Identify the fallen, Improve readiness

Vision
Be the global leader in comprehensive and innovative medicolegal services enhancing the readiness, sustainability, and survivability of those we serve.

- Office of the Armed Forces Medical Examiner
- DoD DNA Operations
- Division of Forensic Toxicology

https://health.mil/afmes
Director DoD DNA Operations: Timothy.P.McMahon10.civ@mail.mil