



**Armed Forces Medical Examiner System  
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## **DEPARTMENT OF DEFENSE DNA OPERATIONS**

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The Department of Defense DNA Operations (DoD-DNA Ops) a division of the Armed Forces Medical Examiner System (AFMES) is under the direction of Dr. Timothy McMahon. The AFMES-DoD DNA Ops is DoD's sole DNA testing laboratory tasked with current and past conflicts human identification efforts and is comprised of the Armed Forces Repository of Specimen Samples for the Identification of Remains (AFMES-AFRSSIR) and the Armed Forces DNA Identification Laboratory (AFMES-AFDIL).

The Armed Forces Repository of Specimen Samples for the Identification of Remains (AFMES-AFRSSIR) is responsible for managing, coordinating and maintaining the collection of DNA blood reference cards for all active duty, reserve, and National Guard service members, deployable DoD civilians, Coast Guard and select Department of State and contractor personnel. To date, over 7.8 million DNA blood reference cards have been accessioned into AFMES-AFRSSIR and approximately 225 thousand new DNA reference cards are collected and accessioned yearly.

The Armed Forces DNA Identification Laboratory (AFMES-AFDIL) is accredited by the ANSI-ASQ National Accreditation Board (ANAB) to the ISO/IEC-17025 forensic testing and FBI Quality Assurance standards; the same standards your State, County, Local and Federal Crime laboratories are accredited to. AFMES-AFDIL is comprised of the Current Day Operations, Past Accounting Operations, Family Reference-Laboratory Automation, Emerging Technology, and Quality Management and Validation sections.

The Current Day Operations section through autosomal and/or Y short tandem repeat (auSTR or YSTR) and/or mitochondrial DNA (mtDNA) sequencing supports the AFMES with DNA human remains testing for current medicolegal death investigations, other DoD human remains identification efforts, and assisting other Federal agencies in human remains identification endeavors according to established Memorandum of Agreements and Memorandum of Understandings. The section has the ability to process a DNA request in under 24 hours when requested by the AFMES.

The Past Accounting Operations section provides mtDNA sequencing, Y-STR and auSTR DNA testing and reporting services to the Defense POW/MIA Accounting Agency (DPAA) for use in the identification of human remains recovered as part of past conflict accounting efforts. The section for non-chemically treated specimens has a greater than 90% success rate for generating mtDNA sequencing and over a 50% success rate for generating auSTR and YSTR results. In 2016, AFMES-AFDIL became the first and only U.S. Forensic laboratory to develop and bring on line a Next Generation mtDNA sequencing protocol for chemically treated and/or highly degraded samples. Although developed initially for Korea punchbowl samples, the NGS mtDNA sequencing method has been utilized for samples from Vietnam and World War II as well. DNA results are utilized in approximately 85% of the past conflict identifications.

The Family Reference-Laboratory Automation section (FRS-LA) along with the DoD and the military Services have been actively collecting maternal (mtDNA), paternal (Y-STR) and autosomal (auSTR; Mother, Father, Brother Sister...) family reference specimens (FRS) from eligible family members of military personnel missing from past conflicts for over 26 years. The section is responsible for testing and managing AFDIL's past accounting family reference database which is used in the identification of missing service members. Annually, the FRS-LA section receives and processes approximately 2500 family references.

The AFMES-AFDIL is the global leader in the fields of human remains identification and employees or develops the most up to date mtDNA sequencing, auSTR, Y-STR, or Next Generation Sequencing methods to be used in past accounting as well as current day accounting efforts. As the global leader and technical expert in DNA human remains testing, AFMES-AFDIL DNA testing methods and knowledge are continuously sought by other U.S. States, U.S. commercial and foreign countries DNA forensic laboratories.

For additional information on the Armed Forces Medical Examiner System's mission in helping identify service members from the past, as well as current conflicts, visit the AFMES web site at [www.health.mil/AFMES](http://www.health.mil/AFMES) or call (302) 346-8648.

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