



## Best Technical Advancement – Finalist



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Rape and sexual assault are prevalent within the U.S. military, across the United States, and worldwide. Identification of the suspects in these cases is often delayed due to backlogs and lengthy turnaround times for laboratory processing. As well, perpetrators remain free and may re-offend prior to their identification, creating new victims in the time it takes to process and investigate the initially reported incident. At the leading edge of rapid DNA technology since 2012, the Office of the Chief Scientist (OCS) within the Defense Forensic Science Center (DFSC) has over the last 18 months evaluated a potential new method for the rapid processing of sexual assault samples.

In this effort, OCS evaluated a newly developed rapid method for processing sexual assault samples: a novel method involving a short, pre-processing step using basic laboratory equipment by an individual with minimal technical training. This step is then followed by fully automated generation of a DNA profile on the ANDE® rapid DNA instrumentation. With a total processing time of approximately three hours—two hours entirely hands-off—this processing time significantly reduces the time required to generate a profile to aid in identifying the suspect. Additionally, this method uses room-temperature reagents, which allows for its use in areas where a refrigerator or freezer is not accessible.

The evaluation showed that the method is capable of generating DNA profiles for identification of the assailant from a majority of samples. The method even provided complete profiles of the male DNA donor from samples collected up to 72 hours after intercourse. Benefits of this rapid sexual assault processing method include:

- Ease of use: Requires minimal training to complete analysis.
- Simplified storage: Reagents are stable at ambient temperature.
- Time savings: Provides a 75% reduction in analysis time compared to traditional methods.
- Faster identification: Can lead to faster identification of offenders.



Although technical and legal hurdles exist for broad and immediate implementation, the results of this evaluation provide critical data to support efforts to clear these hurdles. This method will not only rapidly process sexual assault samples, but also identify assailants more quickly, enabling faster apprehension, reducing the opportunity to re-offend, and providing accelerated justice to victims.