THE USE OF RAPID DNA IN THE DEPARTMENT OF HOMELAND SECURITY

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The Department of Homeland Security (DHS) has traditionally relied on document reviews and interviews for familial relationship verification – a process that is more art than science. With DNA being the only biometric that associates biological family members to one another, DHS has been evaluating the use of DNA to expedite legal immigration of individuals, fight human trafficking along the US borders, and reunify families following critical or mass casualty incidents. While real-time kinship analysis is important, DHS does not maintain its own in-house human DNA identification capability and setting up laboratories at its many locations would be cost prohibitive. Customs and Border Protection, for example, has 328 ports of entry.
In response to this need, the DHS Science and Technology Directorate (S&T) collaborated with the Departments of Justice and Defense to develop Rapid DNA technology. Rapid DNA is a fully automated, ruggedized, robust, portable, and lights-out system that can be operated in the lab or field with minimal training. Rapid DNA is based on disposable microfluidic biochip technology that provides accurate DNA profile results and kinship analysis in ~90 minutes. Rapid DNA uses the traditional Short Tandem Repeats (STR) locations that are selected to not include any physical traits (other than gender), race, ethnicity, disease susceptibility, or medical information and the system was built with a 'Privacy-by-Design' approach that protects personally identifiable information.

Over the last year, DHS S&T has validated the Rapid DNA performance and successfully used it in kinship analyses including those performed in mass fatality response exercises. The presentation will include the DHS S&T Rapid DNA performance and kinship results, validation approaches, mass fatality response exercise feedback and recommendations for future use.