DHS Science and Technology Directorate

Rapid DNA

Low-cost, rapid family relationship verification

The Department of Homeland Security (DHS) Science and Technology Directorate's (S&T) Resilient Systems Division is funding a Rapid DNA program, which performs rapid, low-cost, DNA-based family relationship (kinship) verification to improve immigration efficiency for legal kinship applicants, reduce kinship fraud, identify mass casualty victims, provide for family reunifications, and conduct DNA watch list checks.

Field operable by minimally trained users

1. DNA cheek (buccal) swab is taken.

2. The collected sample is inserted into a disposable microfluidic biochip and inserted into an automated, integrated desktop unit.

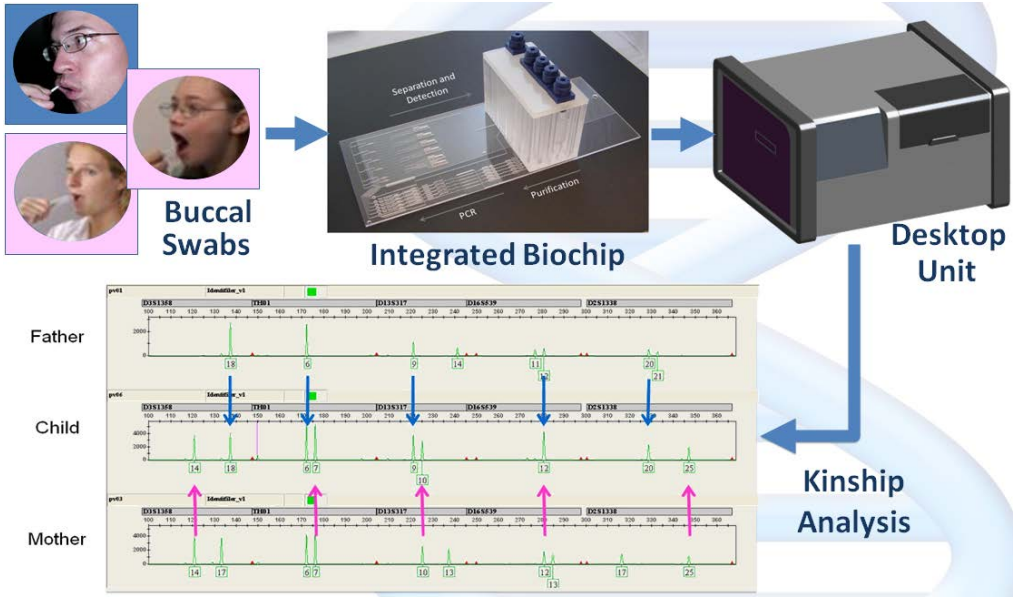
3. Family relationships are verified by an onboard expert system.

Capability for accelerated DNA analysis while reducing costs

The United States Citizenship and Immigration Services (USCIS) currently relies on documentary evidence and testimony elicited during interviews to verify family relationships, an approach described as "resource-intensive," "time consuming," and "more art than science" by the USCIS Ombudsman. After conducting a detailed needs and requirements assessment, DHS S&T found that DNA was the only biometric tool that could verify family relationships; however, existing DNA analysis procedures were found to be both costly and time consuming - processing of samples can take weeks and costs up to $500 per test. DHS S&T initiated a program to integrate and automate the DNA laboratory processes into a ruggedized, transportable, rapid, low-cost system capable of verifying claimed relationships in about an hour, costing $100 per sample that is operable by field officers without any laboratory expertise. Additional applications with Customs and Border Protection (CBP) and the Federal Emergency Management Agency (FEMA) are being pursued to counter human trafficking, identify mass casualty victims, and to reunite family members.

Program Timeline

- First 5-Sample prototype for USCIS field tests was delivered in early fall of 2012.
- Laboratory evaluation proved performance comparable to existing DNA laboratories in fall of 2013.
- CBP laboratory pilot testing was initiated in summer of 2014.
- Enhanced kinship capability delivered in fall of 2014.
- Pilot testing in overseas refugee camps expected in late 2015.
- Commercial devices delivered in late 2015.



Homeland Security
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To learn more about Rapid DNA, contact sandt.rsd@hq.dhs.gov

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