

We Make Scientific Breakthroughs Possible

Solving the National DNA Analysis Backlog Crisis

DNA analysis is a vital tool to the criminal justice system. The importance of having the capacity to process and analyze vastquantities of samples is paramount as all 50 states have lawsrequiring DNA samples to be collected from certain categories ofoffenders. However, across the Nation, DNA labs lack the capacityto process the growing volume of samples, and states do not havethe resources to maintain and upgrade the labs as needed.Additional testing capacity is also needed beyond the justicesystem. For example, the COVID-19 pandemic revealed an urgentneed to process vast quantities of samples nation-wide in a shortperiod of time. More must be done to meet growing needs.

To address this growing need, AUI proposes the following:

 Increase testing capacity: By creating 10 regional labsequipped with sequencers, thermal cyclers (PCR), andadditional hardware/software for data processing, we canefficiently pool resources. Each regional lab would processsamples in accordance with state of origin rules.

Contact Us

2650 Park Tower Drive Vienna, VA 22180

(202) 462-1676 info@aui.edu

www.adi.edu





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- Incorporate new technologies: New technologies can expedite backlog reduction. Capillary electrophoresis (CE) canprovide DNA results in just a few hours, with no library samplepreparation needed. CE can process a majority of sampletypes to reveal STR (short tandem repeats) allele size. Inforensic casework for crimes, this STR data can be run againsta national DNA database to match or exclude a suspect. Next-generation sequencing (NGS) can perform multiple analyseson one platform. Like CE, NGS reveals STR allele size, but italso shows sequence-specific data that adds additionalinformation, such as externally visible characteristics and biogeographic ancestry. Laboratory Information ManagementSystems (LIMS) can import data, time-stamp it, and reportresults efficiently. Modern rapid DNA sequencers operatetwice as fast as standard equipment
- Enhance the national supply of qualified technicians: Simplyhiring more qualified technicians is a good, temporarysolution.
 Workforce development must also be fostered toensure a consistent pipeline of talent. Curriculum focused on DNA forensic technician training must be developed and hands-on lab experience provided.
 E-learning capabilities will help reachlarger populations of students as will partnering with communitycolleges and universities.
 Certification testing will help determine the



knowledge, skills, and abilities students have attained. National backlogs will continue to grow and further stress ourjustice system if we fail to act and create regional labs now.

Several trends indicate the backlog will continue to grow including:

- 1. Increasing awareness of the value of DNA evidence
- 2. Increasing evidence submissions
- 3. Advances that allow for smaller DNA samples
- 4. Reopening of cold cases from the pre-DNA-testing-era
- Increasing post-conviction testing of older, pre-DNA-testing-era cases

Building a regional lab would cost approximately \$1.2-1.5 million, with operating costs of \$250,000 per month. To reduce the initial capital needed, AUI would evaluate leasing space on a university campus or in technology parks. AUI would also hire the appropriate personnel and ensure the training protocols are established and maintained. AUI would collect an overhead and management fee for operating the labs.

AUI is well suited to address this national challenge as we build, operate and manage cutting-edge scientific facilities, and we focus on workforce development to prepare the next generation of technicians and scientists. AUI is a nonprofit, non-member organization that convenes experts to make scientific breakthroughs possible. We are deeply experienced in working with state, local and federal government partners to serve the public good. AUI manages complexity to address global challenges.