

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 vast quantities of samples is paramount as all 50 states have laws requiring DNA samples to be collected from certain categories of offenders. However, across the Nation, DNA labs lack the capacity to process the growing volume of samples, and states do not have the resources to maintain and upgrade the labs as needed. Additional testing capacity is also needed beyond the justice system. For example, the COVID-19 pandemic revealed an urgent need to process vast quantities of samples nation-wide in a short period 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 labs equipped with sequencers, thermal cyclers (PCR), and additional hardware/software for data processing, we can efficiently pool resources. Each regional lab would process samples in accordance with state of origin rules.
- **Incorporate new technologies:** New technologies can expedite backlog reduction. Capillary electrophoresis (CE) can provide DNA results in just a few hours, with no library sample preparation needed. CE can process a majority of sample types to reveal STR (short tandem repeats) allele size. In forensic casework for crimes, this STR data can be run against a national DNA database to match or exclude a suspect. Next-generation sequencing (NGS) can perform multiple analyses on one platform. Like CE, NGS reveals STR allele size, but it also shows sequence-specific data that adds additional information, such as externally visible characteristics and biogeographic ancestry. Laboratory Information Management Systems (LIMS) can import data, time-stamp it, and report results efficiently. Modern rapid DNA sequencers operate twice as fast as standard equipment.
- **Enhance the national supply of qualified technicians:** Simply hiring more qualified technicians is a good, temporary solution. Workforce development must also be fostered to ensure 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 reach larger populations of students as will partnering with community colleges and universities. Certification testing will help determine the

Contact Us

2650 Park Tower Drive
Vienna, VA 22180

[\(202\) 462-1676](tel:(202)462-1676)

info@au.edu

www.aui.edu



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knowledge, skills, and abilities students have attained. National backlogs will continue to grow and further stress our justice 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
5. 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.