

**Statement of John W. Hicks**

**Presented to the**

**Subcommittee on Technology and Innovation  
House Subcommittee on Science and Technology  
U.S. House of Representatives**

***Strengthening Forensic Science in the United States: The Role of  
The National Institute of Standards and Technology***

**March 10, 2009**

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Mr. Chairman and members of the Subcommittee, thank you for the opportunity to appear before you today and to offer my perspective on the findings and recommendations found in the recently released report of the National Academy of Sciences (NAS), ***Strengthening Forensic Science in the United States: A Path Forward***. The Academy was given a broad charge to assess the state of forensic practices across the country and to make recommendations for improvement. In addition to traditional forensic laboratory services, the scope of its review included functions of medical examiners and coroners in determining cause and manner of death.

The recommendations found in the NAS report fall into four broad categories: (1) methods development and standardization; (2) laboratory accreditation and quality assurance; (3) research and training; and (4) resource needs. As described briefly below, a number of congressional initiatives over the past few years have directed much needed attention to resource needs and to forensic laboratory quality improvement issues, including laboratory accreditation and staff training. It is recommended that support for these initiatives be continued. It is clear, however, that additional steps are needed to address critical concerns related to methods development and validation, especially for forensic disciplines other than DNA analysis.

With regard to the forensic use of DNA technology, Congress has authorized a series of programs that provide resources needed to meet the unprecedented demand for testing services. These programs are administered by the National Institute of Justice and are intended to help eliminate testing backlogs and reduce case turnaround times, to provide defendants with access to post-conviction DNA testing, and to help assure that the technology is used effectively to identify missing persons.

With regard to “non-DNA” forensic laboratory services and medical examiners, legislation was enacted in 2000 which created the Paul Coverdell Forensic Science Improvement Program which awards grants to states and units of local government to help improve the quality and timeliness of forensic science and medical examiner services. Among other things, the Coverdell program calls for laboratory accreditation

by recognized accrediting bodies and provides for staffing and training needs. To assure transparency in laboratory operations, especially when problems may be indicated, Coverdell also requires that there be an independent entity with authority to investigate allegations of malfeasance or misconduct by laboratory personnel. While working in New York State, it has been my experience that these programs have been effective in bringing needed improvements to the 22 state and local forensic laboratories across the State. It is strongly recommended that support for these programs be continued and expanded.

In the Senate report that led to the NAS study, and in the NAS report itself, forensic DNA technology was set apart from other forensic disciplines in terms of what is known of the robustness of the underlying research and the methods validation work that was conducted to support its applications in the criminal justice system. The confidence in forensic DNA technology is the result of the considerable efforts of scores of scientists in the public and private sectors, working with academic researchers and forensic science practitioners, to assess, validate and optimize the various DNA testing methods in use today. A national Technical Working Group was formed at the outset to facilitate communication among forensic practitioners and help advance the technology in a coordinated way. The Technical Working Group on DNA Analysis Methods (TWGDAM) was specifically cited in the DNA Identification Act of 1994 which authorized CODIS, the national DNA Database. This effort was driven by Congressional leaders and agency administrators who recognized the importance and potential of this emerging technology as an identification tool to solve crimes and assure justice in the courts. High level support and direction was essential to maintain a focus that would assure the standardized methods necessary for data compatibility to enable the mutual sharing of information. Key federal agencies that contributed to the development and validation of forensic DNA technology include the Federal Bureau of Investigation (FBI), the National Institute of Justice (NIJ) and the National Institute of Standards and Technology (NIST).

The NAS Committee expressed concern over the apparent lack of systematic research to validate the basic premises and techniques for forensic disciplines that have been in practice since before the emergence of DNA technology. Disciplines which drew particular attention in their report are those that rely, in large part, on pattern recognition techniques such as those used in the examination of fingerprints; firearms and fired ammunition components; tool marks; and handwriting, among others. For these and other “non-DNA” forensic techniques that are widely used today, it would be helpful to identify and gather existing empirical studies, to conduct other studies as deemed necessary to update or supplement these data, and to put the information in a form that is readily disseminated within the relevant forensic and scientific communities. Based on these studies, appropriate standards should be developed or updated to assure the use of uniform and scientifically validated examination techniques by forensic practitioners. These appear to be areas of study for which the core competencies found in NIST are particularly well suited.

While perhaps best known for its work in industry, NIST has been actively involved with elements in the forensic community over the past decade and has made important contributions working collaboratively with other federal agencies, industry and academia. For example, the agency undertook a number of inter-laboratory and other studies pertaining to individual markers used in DNA identification which have helped guide the successful development and forensic application of this revolutionary technology. The results of these efforts are in daily use in public and private forensic DNA laboratories and NIST scientists have presented their work in academic courses in order to prepare the next generation of forensic scientists. They have also provided in-service training sessions and in addition, seminars at professional meetings across the country.

NIST has also performed studies designed to validate and improve the performance of large data systems used in criminal justice applications such as the Automated Fingerprint Identification System (AFIS), a vital system in continuous use by law enforcement and other agencies to resolve personal identification issues, and the National Integrated Ballistics Identification Network (NIBIN) which correlates imaged data from bullets and cartridge casings recovered during the course of criminal investigations. NIST provides standard reference materials for use by laboratories in private industry as well as public laboratories (including forensic laboratories). As new technologies continue to emerge with potential applications in forensic laboratories, NIST is uniquely positioned to facilitate communications between the forensic community and private industry to assure the timely and appropriate development and production of laboratory equipment, reagents and other supplies needed for implementing new techniques.

An expanded role for NIST represents the most effective and efficient way to bring about needed improvements in the forensic science community and to assure appropriate focus in the development of new technology opportunities that emerge in the future. The activities described above, and others that can be cited by officials from NIST, clearly demonstrate the agency's unique competencies which can be brought to bear more widely in the forensic community not only to validate current methods and practices, but also to define a structure which can guide a long-term process of continuous improvement. The DNA experience provides a useful model and a framework upon which to build. This framework includes working with other federal agencies such as the FBI and NIJ, and engaging established Scientific Working Groups for specific forensic disciplines. If charged with this role by Congress, it would be expected that NIST would establish a coordinating body to provide oversight and direction to the effort. This body might include officials from the criminal justice and crime laboratory communities, key professional associations, and established accrediting organizations such as the American Society of Crime Laboratory Directors – Laboratory Accreditation Board (ASCLD/LAB) and the American Board of Forensic Toxicology (ABFT).