The Role of Analytical Chemistry in Forensic DNA Testing

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http://www.cstl.nist.gov/strbase/

While TV shows like CSI: Crime Scene Investigation and NCIS make crime solving appear trivial and show scientists making conclusions at high speeds with full resolution, real forensic DNA laboratories today are overwhelmed with evidence needing to be analyzed. Budgets are shrinking while case backlogs are growing. Quality must not suffer in spite of demands for higher quantities of sample processing. Improved automation of laboratory processes is an obvious solution particularly in the area of data interpretation. This presentation will review the current state-of-the-science and show what role analytical chemistry plays in the ever evolving efforts of forensic DNA testing improvements in order to handle an increasing number of DNA

samples that need to be processed. Applications of DNA testing beyond forensic analysis will also be shown.

John M. Butler is NIST Fellow and Group Leader of Applied Genetics at the National Institute of Standards and Technology. He is author of the internationally acclaimed textbook Forensic DNA Typing—now in its third edition—as well as more than 100 scientific articles and invited book chapters. His book was also been translated into Chinese (2007) and Japanese (2009). His Ph.D. research, which was conducted in the FBI Laboratory, involved pioneering the techniques now used worldwide in modern forensic DNA testing.

Over the past 20 years, Dr. Butler has worked in government and industry. He enjoys teaching and regularly presents training workshops to scientists, students, and lawyers. He designed and maintains STRBase (http://www.cstl.nist.gov/biotech/strbase), an information resource for short tandem repeat DNA markers.

He serves as an invited guest to the FBI's Scientific Working Group on DNA Analysis Methods and currently chairs the mixture interpretation subcommittee. As a member of the World Trade Center Kinship and Data Analysis Panel, he aided the New York City Office of Chief Medical Examiner in their work to identify the remains of victims of the 9/11 terrorist attacks. He also serves on the Department of Defense Quality Assurance Oversight Committee for DNA Analysis and advises numerous national and international forensic DNA efforts. He is a member of the International Society of Forensic Genetics and an Associate Editor for the prestigious journal Forensic Science International: Genetics.

Dr. Butler has received numerous awards during his career including the Presidential Early Career Award for Scientists and Engineers (2002), the Department of Commerce Gold Medal (2008) and Silver Medal (2002), the Arthur S. Flemming Award (2007), Brigham Young University's College of Physical and Mathematical Sciences Honored Alumnus (2005), and the Scientific Prize of the International Society of Forensic Genetics (2003). In August 2011, ScienceWatch.com announced that Dr. Butler was number one in the world as a high-impact

author (number of citations per paper published) in legal medicine and forensic science for the decade of 2001-2011. He and his wife serve in their community and church and are the parents of six children, all of which have been proven to be theirs through DNA testing.