

SAMUEL HARRINGTON, Ph.D.

VA Dept. of Health & Human Services
Public Health Laboratories
6 Hazen Drive, Fairfax, VA 22033
Office: 800-555-5555
harringtons@dhhs.state.va.us

1012 South Street
Fairfax, VA 22033
Home: 571-555-5555
Cell: 571-555-5555
harringtonsam@aol.com

Leadership Addendum — Science & Management

Dr. Samuel Harrington brings exceptional value through the combination of his core management qualifications, leadership talents and scientific knowledge, proficiency and experience. He continues to develop his cross-functional general management skills and remains on the cutting-edge of scientific advancements and contemporary topics in biotechnology.

BUSINESS MANAGEMENT & ORGANIZATIONAL LEADERSHIP

— Strategies, Initiatives, Contributions & Successes —

Much more than a scientist, Dr. Harrington is a management professional who is experienced and successful in directing organizations, programs, projects and teams. He brings strategic perspective, business acumen, sound judgment and financial discipline to private and public organizations involved in the life sciences/biotechnology fields.

“His work ethic is exemplary and his professional demeanor a model for others to emulate.”

David L. Cooper, Director, Division of Molecular Diagnostics, University of Virginia Medical Center

“The quality of Samuel’s work is exceptional ... and he excels this area [communications]”

Chief, VA Public Health Laboratories

Organizational Development & Leadership

Dr. Harrington has provided both technical and managerial leadership to scientific organizations, and over the course of this 20+-year career, he has:

- Established the Virginia Public Health Laboratory as an important participant/contributor to the national biotech industry.
- Led the complete organizational startup of the MDX developmental laboratory for the Division of Molecular Diagnostics at the University of Virginia Medical Center.
- Contributed the vision, technical expertise and business management capabilities to create and direct Kuwait’s first molecular genetics laboratory.

Business & Finance Management

Dr. Harrington’s ability to achieve operational and financial performance objectives within the departments he leads has made significant contributions to the ROI, profitability and value of the larger organizations. As demonstrated by his track record, Dr. Harrington takes personal responsibility for all general business, daily operations and budgeting/cost control initiatives. For example, he has:

- Authored and executed the business plan for the MDX molecular development laboratory for the University of Virginia Medical Center (UVMC), and integrated it into the main organizational structure.
- Participated in planning, administering and controlling \$1 million operating budget for the Division of Molecular Diagnostics at UVMC.
- Achieved all budgetary performance objectives and gained financial discipline within the Virginia PHL.

Laboratory Operations Management

With more than 20 years’ of academic, research and management work in science, Dr. Harrington is well-qualified in establishing, staffing, managing and improving the performance of laboratory operations/organizations. For example:

- Manage all aspects of operations — including disease surveillance, disease outbreak investigations, test development and testing for bio-threat (BT) organisms — in a “best in class” public health laboratory.
- Established Virginia’s first Microbial Gene (DNA) Bank.
- Modernized and improved performance in key operational areas — productivity, efficiency, personnel qualifications, quality, compliance — for the State of Virginia’s PHL.

BIOTECHNOLOGY / BIOMEDICAL RESEARCH, DEVELOPMENT & DIAGNOSTICS
— Projects, Activities, Contributions & Achievements —

“[Samuel Harrington’s] strengths [include]... scientific knowledge and technical expertise, quality of work, initiative, sense of humor and ability to get along with people.”

“[Dr. Harrington] set up an RT-PCR procedure for West Nile Virus which brought much praise to the PHL for its ability to quickly deal with a developing public health problem.”

“[Dr. Harrington] has shown a great deal of initiative in learning about Virginia’s infectious disease needs and developing molecular procedures for their detection and identification.”

Chief, VA Public Health Laboratories

Dr. Harrington’s career is focused on Infectious Disease, Molecular Diagnostics and Genetic Disorders.

Molecular Diagnostics of Infectious Diseases

Dr. Harrington’s work in molecular diagnostics of infectious diseases has involved extensive research, surveillance, testing, assay development and publication. He is proficient in the utilization of sophisticated laboratory methodologies, techniques and technologies including, but not limited to: DNA fingerprinting (PFGE, Ribo Printing, PCR-based fingerprinting – RAPD/AFLP); DNA/RNA sequencing; PCR (including Real Time, RT-PCR, multiplex); oligonucleotide primer/probe design and synthesis; Southern hybridization; molecular cloning; and recombinant DNA technologies.

- Developed a two-hour RT-PCR test for the detection of B. pertussis directly from crude clinical specimens, thereby eliminating the need for traditional labor-intensive, time-consuming specimen processing (DNA extraction) step. Laboratories across the U.S. (e.g. SC, OK, FL., others) and Europe (Germany and Spain) have requested permission to use this test in their laboratories, and a Canadian diagnostics company has expressed interest in participating with validation studies. Presented this work at the 103rd General Meeting of the American Society for Microbiology in Washington, D.C., May 2003.
- Developed and presented (at the 102nd General Meeting of the American Society for Microbiology in Salt Lake City, UT, May 2002) a duplex RT-PCR test for surveillance of West Nile and Eastern Equine Encephalitis viruses using SmartCycler®.
- Developed and managed the design, validation, application, test and troubleshooting of molecular diagnostics-based assays for rapid identification and surveillance of emerging infectious diseases for the State of New Virginia PHL.
- Distinguished the NH PHL as one of the first labs in the U.S. to participate in proficiency testing (RT-PCR) for SARS utilizing a RT-PCR test developed by the CDC — validated test is being performed routinely at VA PHL.
- Developed a RT-PCR test for the rapid detection of the food-borne pathogen Noro (Norwalk) virus from human stools using melt-curve analysis of the amplified product — several PHLs have requested permission to use this test in their facilities.
- RNA isolated from mosquito pools inhibits West Nile virus real-time RT-PCR. Presented findings at the 3rd International Conference on Emerging Infectious Diseases in Atlanta, Georgia in March 2002.
- Investigation of simultaneous outbreaks of S. pneumoniae and H. influenzae in major medical center. Presented abstract at the 6th Annual PulseNet Update Meeting in Ann Arbor, Michigan in April 2002.
- Molecular Diagnostics of Infectious Diseases: State of the Technology. Invited article summarizing emerging technologies and applications in the rapid diagnosis of disease. Published in Biotechnology Annual Review, Elsevier Publishing Company, 2000.
- Rapid detection of hepatitis C virus in plasma and liver biopsies by capillary electrophoresis. In: Nucleic Acid Electrophoresis Springer Lab Manual, 1998.
- Developed and co-presented an abstract entitled “Nosocomial Legionnaire’s disease: An explosive outbreak following interruption of hyperchlorination,” presented at the Interscience Conference on Antimicrobial Agents and Chemotherapy in San Francisco in October 1995.
- Co-developed “Depressed Lymphoproliferative Responses *in vitro* to Different Streptococcal Epitopes in Patients With Chronic Rheumatoid Heart Disease,” presented at the Conference on Infectious Diseases in Developing Countries held in Kuwait in March 1987.

Molecular Diagnostics of Genetic Diseases

Either independently or as a member of a team of multidisciplinary professionals, Dr. Harrington has conducted a wide-range of scientific research/experimentation, developed mutation screening assays, written/published numerous articles and delivered presentations covering a vast spectrum of areas related to genetic diseases.

- Developed mutation screening and detection assays for a number of genetic diseases such as breast cancer (BRCA-1 mutation screening), Fanconi's anemia, Canavan's disease, Factor V Leiden, Fragile X syndrome and Huntington's disease.
- Molecular Diagnosis: a primer and specific application to Gaucher disease. *Gaucher Clinical Perspectives* 1 (3) 1-6, 1993
- Phenotype, Genotype, and the treatment of Gaucher Disease. *Clinical Genetics*. 49 111-118, 1996.
- Enzymatic and Molecular Diagnosis of Gaucher Disease. *Clinics in Laboratory Medicine*. 15 (4) 899-913, 1995.
- A review of the molecular biology of glucocerebrosidase and the treatment of Gaucher disease," published in *Cytokines and Molecular Therapy*, 1995.1 149-163, 1995.
- A new diagnostic test for Gaucher Disease suitable for mass screening. *PCR Methods and Applications* 4 (1) 1-5, 1994.

BioSecurity

Dr. Harrington champions interest and involvement in the conduct of scientific research and development, especially diagnostic test development and validation, of organisms and pathogens potentially used in biological terrorism/warfare. His work makes him of significant value to organizations and programs involved in related medical practice and public health programs, actions, projects and policies — to ultimately bridge the gap between public health specialists/organizations, the public, government agencies/intelligence community and primary care providers.

In April 2003, the U.S. House of Representatives overwhelmingly approved President Bush's "Project Bioshield," solidifying national interest and commitment to preparedness against potential bioterrorism attack.

- Distinguished the Virginia Public Health Laboratory (VA PHL) as one of the first in the U.S. to be awarded funding for bio-terrorism testing and preparedness.
- Established the MDX laboratory as the first PHL in the U.S. to use SmartCycler® for the development and routine testing of emerging infections including BT organisms — enabling the laboratory to participate in validation studies with CDC and Lawrence Livermore National Laboratory in developing assays for BT organisms.
- Implemented and supervised internal proficiency testing — within CDC protocols — and personnel cross-training programs at the VA PHL.
- Initiated VA PHL's participation in PulseNet (National Molecular Sub-Typing Network for Food-Borne Disease Surveillance), a network of laboratories (including CDC, FDA, USDA, state and local PHLs) adhering to standardized microbial surveillance procedures using Pulsed Field Gel Electrophoresis (PFGE) in performing gene sub-typing — a membership of particular importance to being equipped to respond to potential bio-terrorism threats/incidents.
- Adopted CDC-based Anthrax testing procedures, facilitating VA PHL's selection as a testing beta site by the Lawrence Livermore National Laboratory.
- Led Virginia's participation in President Bush/CDC's strategy for immunizing public health workers and first responders against Smallpox — including ensuring the capacity for testing for the vaccine strain of Smallpox and other related viruses.

DNA Fingerprinting & Gene Banking

- Established Virginia's first microbial DNA bank with 1,000+ DNA and RNA samples from various pathogens — food-borne pathogens, West Nile virus, Hepatitis C virus, Noro virus isolates — each containing nucleic acids in one or more formats: highly purified genomic DNA or RNA, immobilized (aerosol-resistant) purified DNA, agarose DNA plugs (ready for PFGE analysis) and viable organism (whenever possible).
- Developed and presented several one- to two-week long workshops on methods and applications of DNA fingerprinting techniques at the University of Puerto Rico during the years of 1997 through 2003.

DNA Fingerprinting & Gene Banking — *Continued:*

- Developed a DNA fingerprinting method to distinguish between closely related isolates of *Legionella pneumophila*, the causative pathogen for Legionnaire Disease — providing the only way to track the transmission of this pathogen from patients to hospital rooms/hospital rooms to patients. A six-figure liable suit against the University of Virginia Medical Center (University Hospital) was thwarted as a result of the availability of this technique.
- Co-authored an abstract on tDNA-PCR amplification of species-specific polymorphic bands in *plasmodium faciparum*, *plasmodium berghei* and *plasmodium yoelii* at the University of Puerto Rico in San Juan, 2001.
- Authored “Typing of *Legionella pneumophila* isolates by degenerate (D)-RAPD fingerprinting,” published in *Molecular and Cellular Probes*, 1995.
- Co-authored and presented “Microsatellite Analysis (MSA) Using the Polymerase Chain Reaction (PCR) of Paraffin Embedded Material for Distinction of Tissues From Different Individuals,” at the United States and Canadian Academy of Pathology (USCAP) Specialty Conference in Toronto, Canada in March 1995.
- Authored “DNA Fingerprinting of Crude Bacterial Lysates using Degenerate RAPD Primers (D-RAPD),” published in *PCR Methods and Applications*, 1995.
- Authored and presented “Genetic identification technologies: PCR and DNA fingerprinting” at 2nd UN-sponsored Conference on the Perspectives of Biotechnology in Arab Countries, held in Amman, Jordan in March 1993.

Other Biomedical Research

- Authored, “Prediction of biologic aggressiveness in colorectal cancer by p53/K-ras-2 topographic genotyping,” published in *Molecular Diagnosis*, 1996.
- Authored, “Distribution and evolution of CTG repeats at the myotonin protein kinase gene in human populations,” published in *Genome Research*, 1996.
- Authored “Loss of heterozygosity in spontaneous and chemically induced tumors of the B6C3F1 mouse,” published in *Carcinogenesis*, 1994.
- Authored “Identification of allelic loss in liver tumors from the B6C3HF1 mouse,” published in *Cell Biology Supplement*, 1992.
- Authored, “Antibody levels and in vitro lymphoproliferative responses to streptococcus pyogenes erythrogenic toxin A mitogen of patients with rheumatic fever,” published in *Clinical Microbiology*, 1991.
- Authored, “Isolation and characterization of developmentally regulated sea urchin U2 snRNA genes,” published in *Developmental Biology*, 1991.
- Authored, “The U1 snRNA gene repeat from the sea urchin (*Strongylocentrotus purpuratus*): The 70 kilobase tandem repeat ends directly 3' to the U1 gene,” published in *Nuclear Acids Research*, 1991.
- Authored “A developmental switch in the sea urchin U1 RNA,” published in *Developmental Biology*, 1989, and presented at the American Society for Biochemistry and Molecular Biology meeting held in San Francisco in January 1989.
- Authored, “Isolation and characterization of tandem repeated U6 genes from the sea urchin *Strongylocentrotus purpuratus*,” published in *Biochemistry Biophysics*, 1994, and presented at the Developmental Biology of the Sea Urchin meeting in Woods Hole, MA (August 1988) and at the Annual Meeting of Florida Biochemists in Miami in February 1988.
- Authored, “Modified nucleosides and the chromatographic and aminoacylation behavior of tRNA^{ile} from *Escherichia coli* C6,” published in *Biochemistry Biophysics Acta*, 1988.