

# SAMUEL HARRINGTON, Ph.D.

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## SENIOR EXECUTIVE – SCIENTIST

**Chief Science Officer – Executive Director – Program Manager – Senior Scientist/Researcher**  
**Biotechnology Enterprises – Molecular Research & Diagnostics Organizations**

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### CAREER PROFILE & DISTINCTIONS

- Dynamic, entrepreneurial business professional with high-caliber general management qualifications ... strong orientations in finance and technology ... proven leadership talents. Led the startup of three biotechnology R&D organizations and turned-around an existing test / surveillance laboratory.
- Accomplished senior-level scientist and recognized innovator in modern technical and managerial strategies, principles, methodologies and processes for the biotech industry. Designed and developed numerous scientifically / commercially significant diagnostic reagents and assays.
- Professional experience spanning diverse clinical and technical settings; private biotech firms ... large R&D operations ... public health organizations ... hospitals ... academic facilities ... federally-funded homeland security projects.
- Accustomed to, and effective in high-profile scientist executive roles ... managing large organizations ... overcoming complex business/technical challenges ... gaining respect from competitors and peers ... communicating complex concepts to technical and non-technical audiences ... maintaining impartiality in politically charged environments ... fostering consensus and generating cooperation from multicultural, multidisciplinary teams.
- Confident, assertive, diplomatic and outgoing with exceptional communication, public speaking and interpersonal relations skills. Multicultural, bilingual professional — speak fluent Arabic and English.

### MANAGEMENT QUALIFICATIONS

Entrepreneurial Vision, Strategy & Leadership  
Financial Planning & Management  
Program & Project Management  
Staff Training, Development & Supervision  
Team Building, Mentoring & Leadership

P&L and Operations Management  
Budget Planning, Analysis & Control  
Process Design / Improvement – Business & Technical  
Technology Investments & Solutions  
Marketing, Communications & Public Relations

### AREAS OF EXPERTISE

Molecular Diagnostics R&D  
Disease Investigation & Management – Infectious & Genetic  
Laboratory Management Quality Improvement & Assurance  
Advanced Laboratory Procedures & Technologies  
Homeland Security Strategies, Policies & Programs

Molecular-Based Surveillance  
DNA Fingerprinting & Gene Banking  
Regulatory Affairs & Compliance – CLIA, CAP  
GLP, CQA, CQI  
Crisis / Emergency Preparedness & Response

### PROFESSIONAL EXPERIENCE

State of Virginia, Fairfax, VA

1999 to Present

#### STATE MOLECULAR BIOLOGIST

**Department of Health & Human Services, Public Health Laboratories (PHL)**

Hold full P&L accountability for Virginia's only public health reference laboratory — infectious disease testing and surveillance services, bio-terrorism detection, prevention and response — serving the state's 1.2 million citizens. Manage all aspects of business operations (e.g., strategic planning, budgeting, financial reporting, staffing, workflow, administrative affairs, internal/external customer service, quality, regulatory reporting / affairs). Provide technical and managerial oversight to six primary areas of laboratory operations: test development, disease surveillance, disease outbreak investigations (including emerging infections, air-water-food-borne infections), and testing for bio-threat organisms / bio-terrorism. Manage \$600K capital budget and \$250K annual budget for operations. Lead a three-person management team and provide indirect supervision to seven technical and non-technical support employees.

**DIRECTOR OF MOLECULAR DIAGNOSTICS - State of Virginia – Continued:****Management & Leadership Successes:**

- Put the State of Virginia “on the map” in the U.S. biotech industry. Distinguished the facility as one of the best labs in the nation, and one of the first public health organizations to receive federal funding for bio-terrorism testing and preparedness.
- Evolved a very basic laboratory operation into a dynamic scientific organization staffed with talented, highly trained professionals utilizing state-of-the-art technologies and contemporary methodologies to perform sophisticated testing / surveillance of emerging infections.
- Led an ambitious campaign to secure \$600K+ investment in technology (state and federal sources). Achieved financial accountability and discipline throughout the organization in order to maximize ROI.
- Equipped the organization and prepared the staff to handle both routine and emerging infections (including potential bio-terrorism organisms) despite the challenges of operating under serious financial and staff constraints.
- Converted the test development strategy from a successive to concurrent approach. Reengineered laboratory processes and workflows enabling completion of 80,000+ tests in FY 2001/2002.
- Designed and led intensive training and career development programs — trained / qualified four professionals in advanced molecular testing — and provided team coaching and one-on-one mentoring.
- Served as an effective representative / spokesperson for the organization to internal and external parties — scientific community, state / federal agencies (CDC, FDA, USDA, other public health laboratories), regulatory officials, media, and the public — and continue to advocate on behalf of the MDX / PHL and its activities, budgets, personnel and projects.

**Clinical Projects & Achievements:**

- Distinguished as the state’s top-ranking science officer providing consulting, advisory and leadership services on matters related to molecular diagnostics.
- Led the entire development cycle — design, validation, application, training, troubleshooting — of molecular diagnostics-based assays for rapid investigation, diagnosis and surveillance of emerging / reemerging infectious diseases including E. coli, Salmonella, West Nile Virus and Noro Virus.
- Participated in validation of new rapid tests developed by CDC for BT organisms including anthrax, smallpox and the emerging virus responsible for SARS.

**Columbia University Medical Center (CUMC) – Mailman School of Public Health, New York, NY** 1992 to 1998

**PROGRAM COORDINATOR - DEVELOPMENT**  
**Division of Molecular Diagnostics**

Key member of a seven-person management team for a key division within this large, diverse healthcare conglomerate — 2<sup>nd</sup> largest medical center in New York and largest in northeastern area — comprised of several regional hospitals and specialty institutions (including Columbia Cancer Institute and Starzl Transplant Institute). Managed the business, clinical and technology aspects of test development. Led a team of 13 full-time technologists.

**Management Achievements:**

- Established the MDX developmental laboratories from the ground up — lab was a model followed by other laboratories throughout the U.S. — and provided the vision and operational framework for accommodating emerging technologies and future expansion
- Contributed to planning, development and control of annual budgets of nearly \$1 million for operations — including \$200K for capital equipment.
- Developed/presented formal training programs — one-month courses in lecture and wet lab formats — to physicians on topics related to emerging/advanced molecular diagnostics methodologies, technologies and applications.

**Clinical Projects & Achievements:**

- Developed DNA fingerprinting method to distinguish between closely related isolates of Legionella pneumophila — causative pathogen for Legionnaire Disease. Existence of this technique thwarted potential litigation (six-figure damage claim) by a former patient against the hospital.
- Developed test for identifying four most common gene mutations of Gaucher Disease among Ashkenazi Jewish populations. Delivered \$110K+ per year in revenue from laboratory test fees.

**The Methodist Dallas Transplant Institute (MDTI), Dallas, TX**

1995 to 1998

**SCIENTIST/CONSULTANT**

Contributed expertise in molecular diagnostics to a multidisciplinary team of professionals — immunology, molecular biology, genetics, cell biology, other disciplines — working clinical R&D activities for the oldest/largest comprehensive international organ transplant programs in the world (a division of the University of Texas Medical Center). Developed customized, specialty reagents utilized in research at the Institute.

**Clinical Projects & Key Accomplishments:**

- Developed 2-hour assay — vs. existing test requiring 24+ hours — for detecting presence of low-level HCV in donated livers to be used in transplantation.
- Established custom oligonucleotide design and synthesis service. Generated \$150K+ in annual revenue (commercial value exceeded \$300K).

**Applied Genetics Laboratories, Inc. (AGL), Melbourne, FL**

1991 to 1992

**PROJECT LEAD/STAFF SCIENTIST**

Managed a five-year, \$2.5 million project funded by the National Institute of Environmental Health Sciences (NIEHS) for R&D of early cancer detection/treatment methods. Provided technical and managerial oversight to all aspects of the project lifecycle. Tracked and controlled project budgets. Supervised four laboratory technologists.

**Clinical Projects & Key Accomplishments:**

- Designed and executed protocols for searching for TSGs in mice genome and detecting mutations enabling early diagnosis of cancer in humans.
- Participated in presenting annual project report to National Institute of Environmental Health Sciences in North Carolina.

**Kuwait Institute for Scientific Research, Shwaikh, Kuwait**

1985 to 1987

**RESEARCH SPECIALIST****Department of Biotechnology**

Established and managed Kuwait's first molecular genetics laboratory. Developed research strategies and managed projects. Provided consulting/advisory services on business and scientific issues. Built and led a team of 10 scientists, and hired/managed administrative support staff.

**Research Projects & Key Accomplishments:**

- Distinguished as the only molecular biologist in Kuwait, and independently started and managed mission statement, business/clinical strategy, business/laboratory operations, policy/procedure formation, budget, staff, equipment for this, the first molecular genetics laboratory in the country.
- Co-Principal Investigator on three-year, \$480K+ project involving establishment of basic tools and methodologies for subsequent production of high-value compounds — single cell proteins — for use as animal feed supplements.

**TEACHING EXPERIENCE****University of Virginia, Hampton, VA**

2000 to Present

**ADJUNCT ASSOCIATE PROFESSOR****Department of Microbiology**

Served in a consulting role as a biotechnology subject-matter expert. Led presentations to faculty and graduate students on topics related to molecular diagnostics, public health and bio-terrorism. Provided advice on technical issues and made recommendations for academic/scientific programming.

**Florida State University, Tallahassee, FL**

1987 to 1991

**RESEARCH ASSOCIATE**

Supervised graduate students and taught undergraduate coursework in chemistry. Worked with senior scientists on projects.

TEACHING EXPERIENCE – *Continued:*

Kuwait University Faculty of Medicine, Jabriya, Kuwait

1985 to 1987

**LECTURER**

Provided classroom and laboratory instruction in biochemistry and molecular biology to undergraduate students. Led/participated in scientific research with focus on rheumatic fever.

**EDUCATION**

**Ph.D. – Medical Biochemistry**, West Virginia University, Morgantown, WV, 1983

**MS – Biochemistry**, Duquesne University, Pittsburgh, PA, 1979

**B.Sc. – Biochemistry**, Kuwait University, Khaldiya, Kuwait, 1977

**PUBLICATIONS - a partial list**

**Samuel Harrington**. Molecular Diagnostics of Infectious Diseases: State of the Technology. Biotechnology Annual Review, Elsevier Publishing Company (2000).

**Samuel Harrington**, Robert Lanning, David Cooper. Rapid detection of hepatitis C virus in plasma & liver biopsies by capillary electrophoresis. Nucleic Acid Electrophoresis Springer Lab Manual, Dietmar Tietz (ed), Springer-Verlag, Heidelberg (1998).

**Samuel Harrington**, William Pasculle, Robert Lanning, David McDevitt, David Cooper. Typing of Legionella pneumophila isolates by degenerate (D-RAPD) fingerprinting. Molecular and Cellular Probes, 9 405-414 (1995).

John A. Barranger, Erin Rice, **Samuel Harrington**, Carol Sansieri, Theodore Mifflin, and David Cooper. Enzymatic and Molecular Diagnosis of Gaucher Disease. Clinics in Laboratory Medicine, 15 (4) 899-913 (1995).

**Samuel Harrington**, Robert W. Lanning and David L. Cooper. DNA Fingerprinting of Crude Bacterial Lysates using Degenerate RAPD Primers (D-RAPD). PCR Methods and Applications, 4 265-268 (1995).

**Samuel Harrington**, Carol A. Sansieri, David W. Kopp, David L. Cooper and John A. Barranger. A new diagnostic test for Gaucher Disease suitable for mass screening. PCR Methods and Applications, 4 (1) 1-5 (1994).

David L. Cooper, **Samuel Harrington**. Molecular Diagnosis: a primer and specific application to Gaucher disease. Gaucher Clinical Perspectives, 1 (3) 1-6 (1993).

**PRESENTATIONS – a partial list**

**Samuel Harrington** and Krista Marschner. "A new, two-hour test for Bordetella pertussis using the SmartCycler," 103<sup>rd</sup> General Meeting of the American Society for Microbiology (ASM), Washington, DC, May 2003.

**Samuel Harrington**. "Methods & Applications of DNA Fingerprinting Techniques," Five 1- and/or 2-week-long workshops presented at the University of Puerto Rico, 1997 through 2003.

**Samuel Harrington** and Denise Bolton. "Development of a duplex real time RT-PCR test for surveillance of West Nile and Eastern Equine Encephalitis viruses using the SmartCycler," 102<sup>nd</sup> General Meeting of the American Society for Microbiology (ASM), Salt Lake City, UT, May 2002.

D.K. Voloshin, A.W. Pasculle, S.P. Krystofiak, **S. Harrington** and E.J. Wing. "Nosocomial Legionnaire's disease: an explosive outbreak following interruption of hyperchlorination," Interscience Conference on Antimicrobial Agents and Chemotherapy, San Francisco, CA, October 1995.

**S. Harrington**. "Genetic identification technologies: PCR and DNA fingerprinting," Second UN-sponsored Conference on the Perspectives of Biotechnology in Arab Countries, Amman, Jordan, March 1993.

**S. Harrington**, G. L. Rosner, D. L. Cooper and J. A. Barranger. "A new PCR-based diagnostic test for Gaucher Disease (GD)," Amer. J. Hum. Genet. 53 (supplement) 1755, 1993.

Bahr, G., **Harrington, S.**, Yousof, A., Jarrar, I., Rotta, J., Majeed, H. and Behbehani, K. "Depressed lymphoproliferative responses in vitro to different streptococcal epitopes in patients with chronic rheumatoid heart disease," Conference on Infectious Diseases in Developing Countries, Kuwait City, Kuwait, March 1987.

**PROFESSIONAL AFFILIATIONS**

Member, American Society for Microbiology — ASM  
Consultant, INTOTA Corporation

Member, Association for Molecular Pathology — AMP  
Member, Council of Healthcare Advisors, Gerson Lehrman Group