CURRICULUM VITAE

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Education:

Ph.D., Biology, 1991, Clark University, Worcester, MA
M.Ed., Biology, 1982, Framingham State College, Framingham, MA
BS, Biology, 1978, University of California, Santa Cruz, CA

Academic Activities:

2012 - Associate Director, Laboratory of Biological Anthropology, University of Kansas
2012 – Adjunct Faculty, University of Kansas, Department of Anthropology
2006 to Present – Member, AOAC National Committee on Bio-Threat Agents
2004 to 2005 – Adjunct Faculty, Westminster College, Salt Lake City, UT
2003 – Member: NIH Study Group, Nucleic Acid Technology
1996 – Member: National Center, Human Genome Research Review Committee
1994 to Present – DNA Forensics Expert Witness
Editorial Board: Journal of Applied and Theoretical Electrophoresis

Professional Organizations:

American Society of Parasitology
American Chemical Society
American Society of Microbiology
International Association for Food Protection
American Nutrition Society

Grant Awards:

SBIR Phase II: 2012 $720,000
SBIR Phase I: 2011 $69,000
SBIR Phase I: 2003 $69,000

November 2007 – February 2012: Director of Research and Business Development, Evogen, Inc., Lenexa, KS
I was responsible for setting the research direction and maintaining the focus of business development activities within the organization. These activities included the design of new instrumentation platforms for the collection and detection of bio-threat agents, new chemistries for the enumeration of infectious agents, establishing collaborations with local, national, and international organizations, bringing new staff into the organization, and mentoring students from local universities. As the Director of Research, I participated in numerous meetings, conferences and consultations with representatives from the AOAC, DHS and MRI Global involving the methods for the collection and detection of select agents. I was awarded both SBIR Phase I and Phase II grants for the development of assays for the identification of ticks and tick-borne diseases. Working with the University of Kansas and Kansas State University, I conducted meetings on the development of molecular assays for food-borne and insect vectored microbial diseases.

As the Director of Research and Business Development, I was responsible for the development and implementation of the R&D strategic plan and budget. This responsibility included resource planning, presentation of the strategic plan and budget to the Board of Directors, and continuous budget review and examination to improve efficiency and increase profits.

January 2007 – October 2007: Director, State of Kansas Department of Environment and Public Health Laboratories, Topeka, KS
As the director of the environmental and public health laboratories, I was responsible for the realignment of testing programs, staffing, and budget programs within the laboratory. I was responsible for preparation of budget reports, and presentation of these findings before the Kansas State Legislative Committees on finance and public health. In addition, I was tasked with studying the relocation and privatization of the testing programs for the state of Kansas. I participated in meetings and conferences with the CDC and DHS related to public health, infectious diseases and select agents.

July 2003 – January 2007: President/Chief Science Officer, Anzen Biosciences, LLC. Grass Valley, CA
As the Chief Science Officer of Anzen Biosciences, LLC, I was responsible for setting the direction and operational tenor of the company. I directed the development of new technologies related to the collection and analysis of nucleic acids, proteins, antigens, and toxins using a variety of analytical platforms including PCR and electrochemical microarrays.

Accomplishments: Completed the research and development phases of a prototype, field deployable electrochemical detector and transferred this detector to production and market; developed three electrochemical based products for agricultural pathogens, PCR amplicon, and bio-toxins. Brought to market a simplified DNA extraction chemistry (ZenLyse). Initiated a research and development program for custom primer kits targeted against agricultural and environmental pathogens. While working with the USDA, Beltsville, MD, I conducted meetings on the development of DNA extraction methods for food-borne pathogens.

September 2002 – July 2003: Senior Research Scientist, Idaho Technology, Inc. Salt Lake City, UT
As a Senior Research Scientist, I was responsible for the development, evaluation, and validation of nucleic acid collection and purification chemistries, and the integration of new chemistries onto automated platforms. Direct the development of applications for new technology and the commercialization of new nucleic acid based technology.

March 2002 – July 2002: Research Program Manager, Sigma-Aldrich, St. Louis, MO
As the Research Program manager, I was responsible for the evaluation, development and commercialization of enzymes, reagents, and PCR based assay systems.

Accomplishments: Initiated new research programs on novel enzymes and non-amplification DNA/RNA detection technologies. Research programs were terminated due to corporate reorganization.

September 1998 – March 2002: Scientific Director, Benchmark Genetics, P.O. Box 408, Northfield, MN 55057/Scientific Director, Equine Testing Services, P.O. Box 826, Versailles, KY 40383
As the Scientific Director, Benchmark Genetics/Equine Testing Systems, I was responsible for evaluation, assessment, development, and implementation of DNA, cell, and immunology based technologies in advanced DNA, HTS, and *in vitro* testing systems.

Accomplishments: Initiated and directed the development of a chemical and reagent free pre-PCR DNA sample preparation system. Developed *in vitro* testing systems for equine testing. Evaluated new chemistries for DNA sample preparation, PCR, and real-time PCR. Evaluated the application of DNA and Protein chips for use in clinical and environmental applications as single tests and components of HTS systems.

February 1997 – August 1998 Director, Pace Alternative Laboratory Services, Genetics Testing Division. 1700 Elm Street, Suite 200, Minneapolis, MN 55414
As the Director, Genetics Testing Division, I was responsible for the development, evaluation, acquisition, and marketing of HTS and *in vitro* testing systems used for determining the genotoxicity of chemical lead compounds. Updated Pace analytical staff and the scientific community through technical notes, publications, and presentations at national and international science meetings.

Accomplishments: Identified new and relevant HTS and cell-based *in vitro* technologies for chemical lead compound testing and established the corporate infrastructure to facilitate the development of the new genetics testing division. Conducted technology transfer negotiations with appropriate technology developers. Established the in-house technical support and training program, and the customer service program.

January 1996 – November 1996 Director of Research, Memorial Blood Center of Minneapolis, 2304 Park Ave. South, Minneapolis, MN 55404 (Consultant Position/DNA Quest)
As the Director of Research, I was responsible for the review and development of new and existing technologies for DNA and immunology based testing, particularly as they relate to paternity testing and clinical *in vitro* diagnostics (HIV, HCV, and HLA). Responsible for the optimization and validation of new DNA based procedures being considered for use within the blood center. Updated the blood center technical staff, and the scientific community through technical notes, publications, and presentations at national and international science meetings.

Accomplishments: Established new protocols for the collection, extraction, and storage of DNA samples used for paternity and clinical testing. Introduced PCR based DNA testing within the paternity and clinical testing laboratories and setup in-house training and customer support programs. Efforts resulted in the establishment of a Nucleic Acids Testing Laboratory and a significant increase in center revenue.

February 1995 – December 1995. Director, Research and Development/Regulatory Affairs, Fitzco, Inc., 5600 Pioneer Creek Drive, Maple Plain, MN 55359
As Director, Research and Development/Regulatory Affairs, I was responsible for the review and development of new and existing technologies and their respective applications to the analysis of human and pathogen DNA, particularly as they relate to DNA collection, storage, transportation, and *in vitro* analysis. Responsible for the validation and development of new technologies made available to Fitzco through collaborations with other technology companies and universities. Assisted in the preparation and filing of new patents. Coordinated scientific data to be used in technology licensing negotiations. Update the scientific community through technical notes, publications, and presentations at national and international science meetings. Assist in the development and implementation of marketing for new products. Oversight and assistance with the Fitzco QA/QC Quality Program.

Accomplishments: Developed new products and reagents for DNA collection and pre-PCR sample preparation over a period of 7 months. Established customer support team and in-house technical training. Moved manual procedures onto automated platforms to accelerate DNA sample processing. Validated new reagents for PCR and *in vitro* diagnostics. Life Technologies and Whatman, Inc. currently market developed products.

October 1991 – February 1995: Branch Chief, DNA Technology Development, DoD DNA Registry, Armed Forces Institute of Pathology, Washington DC 20306-6000
As Branch Chief of the DNA Technology Development Branch, I was responsible for the review and development of new and existing technologies and their respective applications to human DNA typing and *in vitro* diagnostics. These technologies include but are not limited to HPLC, Capillary Electrophoresis (CE), MS, and combined technologies, i.e., CE/MS. Responsible for the validation of new technologies for use in the DNA laboratory as well as improvements to methods and technologies currently under use. Coordinated technology transfers and researched patent issues. Conducted negotiations with relevant biotechnology companies/universities to access and license appropriate technologies. Update the forensic community through technical notes, publications, and presentations at national and international science meetings. Responsible for the management and fiscal integrity of three research sections; DNA Automation (Large Scale DNA extraction, amplification, analysis, and micro arrays), DNA Analytical Systems (Laser-Based Optical Systems and Relevant Chemistries), and DNA Separations Chemistries (HPLC and CE Based Chemistries, to include polymer development). Responsible for interfacing with R&D groups in relevant industries and functioning as the AFDIL Research Program Manager. Served as a member of the Directors Administrative Committee of the AFIP, AFIP Safety Committee, and the Quality Assurance Review Board of the AFIP.

Accomplishments: Developed an effective research team from a single scientist to a complete staffing of 5 Ph.D.s, 3 MS staff, 5 Graduate Students, 2 Visiting Scientists, and 4 Technicians. Established Capillary Electrophoresis as an analytical method for DNA testing. Developed new methods for DNA sample collection, transport, storage, and pre-PCR sample preparation. Validated protocols and systems for PCR, real-time PCR and RT-PCR. Successfully conducted technology transfer negotiations for the Department of Defense and managed a research budget in excess of 15 million dollars. I organized and chaired two national conferences on DNA-based technology working closely with the Federal Bureau of Investigation (FBI), the National Institute of Health (NIH), and the National Institute of Standards and Technology (NIST). In addition, I conducted negotiations on the development of a genome center for the government of Kuwait.

1990 - September 1991 Dionex, Atlanta, GA
As senior Field Chemist for the southern region, I was responsible for the development of new applications and methods for the environmental, food, pharmaceutical, biotech, clinical diagnostic, and forensic markets. Monitored markets for analytical needs, with special attention given to DNA and protein and peptide analysis by Capillary Electrophoresis. Assist the sales force by providing analytical support to new and potential customers. Follow-up on methods development for new products (Capillary Electrophoresis and Nucleo Pac HPLC column chemistry) and update methods with technical notes, publications, and presentations at national and international science meetings.

Accomplishments: Established in-house training programs for capillary electrophoresis and customer support services for the Southeastern United States. Developed over 100 applications for Capillary Electrophoresis. Developed new buffer systems and separation chemistries for DNA and bioactive molecules. Produced marketing materials and coordinated technical seminars with the marketing and sales team. Presented over 200 technical equipment demonstrations. Efforts resulted in increased sales activity in excess of 300% over an 18-month period.

October 1988-August 1990 Dionex, Sunnyvale, CA
As Senior Marketing Applications Chemist for the Eastern United States, I was responsible for developing new applications and methods for the food, pharmaceutical, and biotech markets. Monitored the markets for analytical needs and developed marketing reports on those needs. Assisted the sales force by providing analytical support to customers. Developed methods for new products or up-dated methods with technical notes and publications. Presented methods at national and international science meetings.

1987- September 1988 Waters division of Millipore, Milford, MA
As Chromatography program Trainer, responsible for designing, developing, and implementing chromatography training for the international sales training program. Prepared training segments on life sciences, pharmaceutical methods development, environmental sciences, prep-HPLC, and data management. Responsible for interfacing with marketing departments to keep all information updated.

Accomplishments: Produced and presented customer training program for the application of HPLC within the life sciences.

September 1985-1987 Waters division of Millipore, Milford, MA
As customer Education Specialist, I was responsible for training Waters customers in the operation, maintenance, and use of all HPLC equipment produced by the company. Developed and presented training programs on the life sciences and clinical applications of HPLC.

1979-1985 United States Army Research Institute of Environmental Medicine, Natick, MA
As Biological Research Assistant, supervised laboratory technicians. I was responsible for tissue, plasma, and media extraction of drugs used in the treatment of organophosphate toxicity, cold injury, and heat stress. HPLC analysis and maintenance of the HPLC system. Planned and performed experiments concerning the effects of therapeutic agents on tissue and cultures in the absence of the toxic agent. Analyzed data and prepared drafts of manuscripts for publication and presentation at scientific conferences. Prepared and presented military training programs in clinical laboratory practices, map reading, and compass. Received awards for Meritorious Service, Outstanding Achievement, and Good Conduct.