

## **CURRICULUM VITAE**

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### **Education**

Bachelor of Science, Biology-Chemistry, 1979  
Azusa - Pacific College  
Azusa, California

Master of Arts, Biology, 1983  
California State University  
Fullerton, California

Doctor of Philosophy, Biosciences, 2004  
George Mason University  
Fairfax, Virginia

### **Positions - FBI**

June, 1984 - December, 1986: Special Agent, Salt Lake City Division

December, 1986 - November, 1990: Special Agent, New York City Division

November, 1990 - February, 1997: Supervisory Special Agent Examiner, Hairs and Fibers Unit, FBI Laboratory (temporarily assigned to Forensic Science Research Unit, FBI Academy, January, 1991 - December, 1994)

February, 1997 - December, 2000: Supervisory Special Agent Examiner, DNA Unit II, Program Manager, Mitochondrial DNA Analysis

January, 2000 - October, 2000: Assistant Inspector, Inspection Division, FBI Headquarters, Washington, D.C.

October, 2000 - February, 2002: Supervisory Special Agent Examiner, DNA Unit II, FBI Academy, Quantico, VA.

February, 2002 - August, 2002: Research Scientist, Counterterrorism and Forensic Science Research Unit, FBI Academy, Quantico, VA.

August, 2002 – September, 2006: Biology Program Manager, Supervisory Special Agent, Chemical-Biological Sciences Unit, Operational Response Section, FBI Laboratory, Quantico, VA.  
October, 2006 – June, 2007: Acting Unit Chief, Supervisory Special Agent, Chemical –Biological Sciences Unit, Operational Response Section, FBI Laboratory, Quantico, VA.  
January, 2008 – present; Director, Forensic Science Program, Western Carolina University, Cullowhee, NC 28723

### **Awards**

May, 1979, Outstanding Science Graduate, Azusa-Pacific College, Azusa, CA.  
June, 1996, Director's Award, Scientific and Technical Achievement, Federal Bureau of Investigation, Implementation of Mitochondrial DNA Testing in the FBI Laboratory

### **Research Positions**

January, 1991-December, 1994

Conducted DNA research on PCR-based human polymorphic markers including short tandem repeat (STR) loci and mitochondrial DNA (mtDNA) while assigned to the Forensic Science Research and Training Center (FSRTC) at the FBI Academy, Quantico, VA.

February, 2002 - August, 2002

Conducted DNA research on polymorphic markers in pathogenic bacteria while assigned to the Counterterrorism and Forensic Science Research Unit (CTFSRU), FBI Academy, Quantico, VA.

August, 2002 – June, 2007

Established and manage the Biological Sciences Program, Chemical-Biological Sciences Unit, Operational Response Section, FBI Laboratory, Quantico, VA.

### **Presentations**

American Academy of Forensic Sciences, Annual Meeting, 1993, Boston, MA, Criminalistics Section

American Academy of Forensic Sciences, Annual Meeting, 1994, San Antonio, TX, Criminalistics Section

American Academy of Forensic Sciences, Annual Meeting, 1995, Seattle, WA, Criminalistics Section

American Academy of Forensic Sciences, Annual Meeting, 1998, San Francisco, CA, Criminalistics Section

Promega Corporation, Fifth International Symposium on Human Identification, Scottsdale, Arizona (September, 1994).

Promega Corporation, Eighth International Symposium on Human Identification, Scottsdale, Arizona (September, 1997).

Promega Corporation, Ninth International Symposium on Human Identification, Orlando, Florida (October, 1998).

First International Symposium on mitochondrial DNA, sponsored by the Armed Forces Institute of Pathology, (AFIP), Washington, D.C. (October, 1997).

Second International Symposium on Human Identification, Promega Corporation, Innsbruck, Austria (June, 1998).

Mitochondrial DNA Workshop, Second International Symposium on Human Identification, Promega Corporation, Innsbruck, Austria (June, 1998).

Fourth Annual Meeting of the International Society of Forensic Haemogenetics, Spanish-Portugese Group, La Gomera, Islas Canares, Espana. (June, 1999).

Connecticut Judge's Institute, "Developments in Forensics" Quinnipiac University, Connecticut (June, 1999)

Third International Meeting of the International Society of Forensic Scientists (IAFS) (August, 1999).

Promega Corporation, Mitochondrial DNA Workshop, Orlando, Florida (September, 1999).

Fifth Annual CODIS User's Meeting, Arlington, VA (November, 1999).

Department of DNA Analysis, Institute of Legal Medicine, Santiago, Chile (October, 2000).

National Center for the Analysis of Violent Crime (NCAVC), Critical Incident Response Group (CIRG), Stafford, VA (March, 2001).

American Academy of Forensic Sciences (AAFS) Annual Meeting (February, 2002) Forensic Utility of Mitochondrial DNA Analysis Workshop.

Cambridge Healthtech Institute (June, 2004) Advances in Forensic DNA Sciences, Washington, DC

International Association of Food Technologists Annual Meeting (March, 2005) Chicago, Ill

International Symposium on Agroterrorism (May, 2005) Kansas City, MO

PITTCON Conference (March, 2006), Orlando, FL

Terrorist Threats to the Food Supply, University of Minnesota School of Law (April, 2006).

First International Congress on Legal Medicine, Granada, Andalusia, Spain (November, 2006).

Keynote address at the National Plant Diagnostic Network (NPDN) Annual Meeting (January, 2007).

Not listed are numerous presentations to Universities, private companies, scientific meetings, and graduate level forensic DNA typing courses taught at the FBI Academy in Quantico, VA and George Mason University, Manassas, VA.

### **Publications**

Allard, Marc W., Miller, Kevin, Wilson, Mark R., Monson, Keith, and Budowle, Bruce (2002) "Characterization of the Caucasian Haplogroups Present in the SWGDAM Forensic mtDNA Dataset for 1771 Human Control Region Sequences" J. Forensic Sci. 47 (6): 1215-1223.

Allard, Marc W., Wilson, Mark R., Monson, Keith L., Budowle, Bruce (2004) "Control region sequences for East Asian individuals in the Scientific Working Group on DNA Analysis Methods forensic mtDNA data set" Legal Medicine 6: 11-24.

Allard MW, Polanskey D, Miller K, Wilson MR, Monson KL, Budowle B. (2005) "Characterization of human control region sequences of the African American SWGDAM forensic mtDNA data set" Forensic Sci Int. Mar 10;148 (2-3):169-79.

Allard MW, Polanskey D, Wilson MR, Monson KL, Budowle B. (2006) "Evaluation of variation in control region sequences for Hispanic individuals in the SWGDAM mtDNA data set" J. Forensic Sci. May 51(3): 566-73.

Alvarez JC, Johnson DL, Lorente JA, Martinez-Espin E, Martinez-Gonzalez LJ, Allard M, Wilson MR, Budowle B. (2007) "Characterization of human control region sequences for Spanish individuals in a forensic mtDNA data set." Legal Medicine (Tokyo). Nov;9(6):293-304.

Budowle, Bruce, Wilson, Mark R., DiZinno, Joseph A., Stauffer, Clinton, Fasano, Michael A., Holland, Mitchell M., Monson, Keith L. (1999) "Mitochondrial DNA Regions HVI and HVII Population Data" Forensic Sci. Int. 103: 23-35.

Budowle, Bruce, Allard, Marc W., and Wilson, Mark R. (2002) "Critique of interpretation of high levels of heteroplasmy in the human mitochondrial DNA hypervariable region I from hair" Forensic Sci. Int. 3280: 1-4.

Budowle, Bruce, Allard, Marc W., Wilson, Mark R. and Chakraborty, Ranajit (2003) "Forensics and Mitochondrial DNA: Applications, Debates, and Foundations" Ann. Rev. of Genomics and Hum. Genet. 4: 119-141.

Budowle, Bruce, Wilson, Mark, Burans, James P., Breeze, Roger G., and Chakraborty, Ranajit (2005) "Microbial Forensics", Chapter 1 in "Microbial Forensics" Elsevier Academic Press, Burlington, MA

Butler, J.M., Allen, R.O., McCord, B.R., Jung, J.M., Wilson, M.R., and Budowle, B. (1994) "Quantitation of PCR Products by Capillary Electrophoresis Using Laser Fluorescence" J. of Chromatography B, 658: 271-280.

Butler, John M., Wilson, Mark R., and Reeder, Dennis J. (1998) "Rapid mitochondrial DNA typing using restriction enzyme digestion of polymerase chain reaction amplicons followed by capillary electrophoresis separation with laser-induced fluorescence detection" Electrophoresis 19: 119-124.

Carracedo, A., Bar, W., Lincoln, P., Mayr, W., Morling, N., Olaisen, B., Schneider, P., Budowle, B., Brinkmann, B., Gill, P., Holland, M., Tully, G., and Wilson, M. (2000) "DNA Commission of the International Society for Forensic Genetics: Guidelines for mitochondrial DNA Typing" Forensic Sci. Int. 110: 79-85.

DiZinno, J.A., Wilson, M.R., and Budowle, B. (1999) "Typing of DNA Derived from Hairs" in: Forensic Examinations of Human Hairs, ed. by J. Robertson, Ellis Horwood Series, Taylor and Francis.

DiZinno, Joseph A., Lord, Wayne D., Collins-Morton, Mary B., Wilson, Mark, and Goff, M. Lee (2002) "Mitochondrial DNA Sequencing of Beetle Larvae (Nitidulidae: Omisita) Recovered from Human Bone" J. Forensic Sci. 47 (6): 1-3.

Gundry, R.L., Allard, M.W., Moretti, T.R., Honeycutt, R.L, Wilson, M.R., Monson, K.L., Foran, D.R. (2007) "Mitochondrial DNA analysis of the domestic dog: control region variation within and among breeds" J. Forensic Sci. 52 (3): 562-572.

Lord, W., DiZinno, J.A., Wilson, M.R., Budowle, B., Taplin, D., and Meinking, T.L. (1998) "Isolation, Amplification, and Sequencing of Human Mitochondrial DNA Obtained from Human Crab Louse, Pthirus Pubis (L.) Blood Meals" J. Forensic Sci. 43 (5): 1097-1100.

Lorente J.A., Lorente M., Budowle B., Wilson M.R., Villanueva E. (1994) "Analysis of the HUMTH01 allele frequencies in the Spanish population" J. Forensic Sci. 39: 1270-1274.

Lorente M., Lorente J.A., Wilson M.R., Budowle B., Villanueva E. (1994) "Sequential multiplex amplification (SMA) of genetic loci: a method for recovering template DNA for subsequent analysis of additional loci" Int. J. of Legal Med. 107: 156-158.

Lorente M., Lorente J.A., Wilson M.R., Budowle B., Villanueva E. (1993) "Sequential multiplex amplification of genetic markers from an individual sample" Proceedings of the Fourth International Symposium on Human Identification, pp. 173-175.

Lorente, J.A., Lorente, M., Budowle, B., Wilson, M.R., and Villanueva, E. (1994) "Analysis of the Short Tandem Repeat (STR) HUMvWA in the Spanish Population" Forensic Sci Int. 65 (3): 169-175.

Lorente, M., Lorente, J.A., Wilson, M.R., Budowle, B. (1993) "Composite PAGE: An Alternate Method for Increased Separation of Amplified Short Tandem Repeat Alleles" Int. J. Leg. Med., Vol. 106, No. 2, p.69.

Lorente, M., Lorente, J.A., Wilson, M.R., Budowle, B. and Villanueva, E. (1994) "Spanish population data for the short tandem repeat ACTBP2 (SE 33)", Advances in Forensic Haemogenetics, 5: 527-529.

Lorente, M., Lorente, J.A., Wilson, M.R., Budowle, B., and Villanueva, E. (1997) "Spanish population data on seven loci: D1S80, HUMTH01, HUMvWA, ACTBP2, D21S11, and HLADQ alpha." Forensic Sci. Int. 86: 163-171.

Lorente, M., Lorente J.A., Alvarez J.C., Budowle, B., Wilson M.R., Villanueva, E. (1997) "Sequential multiplex amplification: utility in forensic casework with minimal amounts of DNA and partially degraded samples" J. Forensic Sci. 42(5): 113-116.

Melton, T., Wilson, M., Batzer, M., and Stoneking, M. (1997) "Extent of Heterogeneity in Mitochondrial DNA of European Populations" J. Forensic Sci. 42 (3): 437-446.

Parsons, Thomas J., Muniec, David S., Sullivan, Kevin, Woodyatt, Nicola, Alliston-Greiner, Rosemary, Wilson, Mark R., Berry, Dianna L., Holland, Koren A., Weedn, Victor W., Gill, Peter, and Holland, Mitchell M. (1997) "A high observed substitution rate in the human mitochondrial DNA control region" Nature Genetics: 15: 363-367.

Stewart, J.E.B., Fisher, C.L., Aagaard, P.J., Wilson, M.R., Isenberg, A.I., Polansky, D., Pokorak, E., DiZinno, J.A., and Budowle, B. (2001) "Length Variation in HV2 of the Human Mitochondrial DNA Control Region", J. Forensic Sci. 46 (4): 862-870.

Ubelaker, Douglas H., Jumbelic, Mary, Wilson, Mark, Levinsohn, E. Mark (1999) "Multidisciplinary Approach to Human Identification in Homicide Investigation; A Case Study from New York, in Case Studies in Forensic Anthropology: A Reader, D.W. Steadman, ed. Prentice Hall.

Wilson, M.R., Stoneking, M., Holland, M.M., DiZinno, J.A., and Budowle, B. (1993) "Guidelines for the Use of Mitochondrial DNA Sequencing in Forensic Science", Crime Laboratory Digest: 20 (4): 68-73.

Wilson, M.R., Polanskey, D., Butler, J.M., DiZinno, J.A., Replogle, J., and Budowle, B. (1995) "Extraction, PCR Amplification, and Sequencing of Mitochondrial DNA from Human Hair Shafts", BioTechniques: 18 (4): 662-669.

Wilson, M.R., DiZinno, J.A., Polanskey, D., Replogle, J., and Budowle, B. (1995) "Validation of Mitochondrial DNA Sequencing in Forensic Casework Analysis" Int. J. Leg. Med.: 10 (2): 68-74.

Wilson, M.R., Budowle, B. (1993) "Inhibition of *Taq* polymerase by Melanin - Possible Solutions for Forensic Applications": Proceedings of the 45th Annual Meeting of the American Academy of Forensic Sciences, Boston, MA, 1993, Williams Printing, Inc., Colorado Springs, CO.

Wilson, Mark R., DiZinno, Joseph A., Polanskey, Deborah, Replogle, Jeri, and Budowle, Bruce (1994) "A Mock Case for Mitochondrial DNA Analysis" Proceedings from the Fifth International Symposium on Human Identification, Promega Corporation, Madison, WI

Wilson, Mark R., Polanskey, Deborah, Replogle, Jeri, DiZinno, Joseph A., and Budowle, Bruce (1997) "A family exhibiting heteroplasmy in the human mitochondrial DNA control region reveals both somatic mosaicism and pronounced segregation of mitotypes" Human Genetics: 100: 167-171.

Wilson, Mark R., DiZinno, Joseph A., Stewart, John E.B., Pokorak, Eric, Polanskey, Deborah, and Budowle, Bruce (1998) "Mitochondrial DNA Testing on Evidentiary Specimens in the FBI Laboratory: Casework Examples and Future Directions" Proceedings of the Eighth International Symposium on Human Identification, 1997, Promega Corporation, pp. 129-131.

Wilson, Mark R., DiZinno, Joseph A., Polanskey, Deborah, and Budowle, Bruce (1998) "Assessing Heteroplasmy in the Control Region of Human Mitochondrial DNA" Proceedings of the 50th Anniversary Meeting of the American Academy of Forensic Sciences, San Francisco, California, 1998, p.62, printed by McCormick-Armstrong, Colorado Springs, CO.

Wilson, Mark R., Allard, Marc W., Monson, Keith L., Miller, Kevin W.P., and Budowle, Bruce (2002) "Recommendations For Consistent Treatment of Length Variants in the Human mtDNA Control Region" Forensic Sci. Int. 129 (1): 35-42.

Wilson, Mark R., Allard, Marc W., Monson, Keith L., Miller, Kevin W.P., and Budowle, Bruce (2002) "Further Discussion of the Consistent Treatment of Length Variants in the Human Mitochondrial DNA Control Region", Forensic Sci. Communications: 4: (4) October, 2002

Wilson, Mark R. and Allard, Marc W. (2004) "Phylogenetics and Mitochondrial DNA", Forensic Sci. Rev.: I (16): 38-62.