THOMAS A. WAHL 42 Meadowlark Lane Fargo, ND 58102 701-412-3222 (cell)

SUMMARY OF QUALIFICATIONS

- Experience in setting up Forensic DNA Analysis Laboratories (both private and government sectors)
- 28 years experience in Forensic Genetics/Human Identification
- 19 years experience in Forensic & Paternity DNA analysis
- 8 years experience in forensic comparative hair analysis
- Board certified by the American Board of Criminalistics (ABC) in Molecular Biology
- Court qualified as expert witness in 21 U.S. and 2 Canadian jurisdictions; over 300 testimonies given
- 7 years experience providing Forensic consultation to clients (private labs)
- Training instructor for lab personnel and college interns (both private and government sectors)
- Research experience in development, validation, and implementation of new DNA genetic markers
- Experience in devising, manufacturing and quality control of forensic analytical kits
- Experience in sales and technical support of company products and services
- Ability to read, write and converse in Spanish

PROFESSIONAL EXPERIENCE

2006 to present

North Dakota State University Dept. of Chemistry, Biochemistry & Molecular Biology Forensic DNA Facility IACC Building, Room 326 Fargo, ND 58108 701-231-8670

Title: Senior Forensic DNA Analyst

Duties & Responsibilities:

- Set up an operational ISO 17025 accredited Forensic DNA Laboratory
- Examine physical evidence collected in criminal and civil investigation cases
- Perform DNA analysis of biological evidence
- Write clear and concise reports of findings
- Testify as expert witness in courts of law
- Validate new techniques and instrumentation to be implemented in casework analysis
- Provide training to new employees and NDSU graduate school students

1995 - 2006

Las Vegas Metropolitan Police Dept. (LVMPD) Criminalistics Bureau - Forensic Laboratory 5605 Badura Ave., Suite 120 B Las Vegas, NV. 89118 702-828-3949 (DNA LAB) Title: Criminalist II/DNA Analyst

Duties & Responsibilities:

- Examine physical evidence collected in criminal investigation cases
- Perform PCR STR DNA Analysis of biological evidence
- Write clear and concise reports of findings
- Testify as expert witness in courts of law
- Provide training to law enforcement and judicial personnel
- Validate new techniques and instrumentation to be implemented in casework analysis

Achievements:

- Hired to set up Forensic DNA Laboratory for LVMPD
- Trained existing personnel in Forensic DNA Analysis methods & techniques
- Validated and implemented DNA analysis techniques used in LVMPD DNA Lab

1993 - 1995

Genelex Corporation 2203 Airport Way South, Suite 350 Seattle, WA. 98134 206-382-9591

Title: Forensic Supervisor

Duties and Responsibilities:

- Supervised the Forensic Division of company
- Examine physical evidence collected in criminal & civil cases
- Perform RFLP & PCR DNA analysis of biological evidence
- Write clear and concise reports of findings
- Testify as expert witness in various courts of law
- Train lab personnel in forensic analysis of evidence
- Validate new techniques and instrumentation to be implemented in casework analysis
- Perform external case review and consultation services to clients
- Member of the Genelex Corp. Management Committee
- Represent company at exhibitor's booth at professional meetings
- Give oral & poster presentations at professional meetings

Achievements:

- Hired to set up Forensic DNA PCR Laboratory for Genelex Corp.
- Trained existing personnel in Forensic DNA Analysis methods & techniques
- Validated and implemented DNA techniques used in Genelex Corp.
- Testified in first PCR admissability case in Canada
- Largely responsible for increasing revenue growth of Forensic Division of Genelex Corp.

1988 - 1993

Analytical Genetic Testing Center (AGTC) [note: company no longer in existence] 7808 Cherry Creek Drive South, # 201 Denver, CO. 80231 303-750-2023

Title: Senior Forensic Geneticist

Duties and Responsibilities:

- Examine physical evidence collected in criminal & civil cases
- Perform conventional & DNA PCR genetic marker analysis of evidence (forensic & paternity)
- Write clear and concise reports of findings
- Testify as expert witness in various courts of law
- Instructor of AGTC forensic training courses offered to outside agencies (private & government sectors)
- Validate new techniques and instrumentation to be implemented in casework analysis
- Provide forensic consultation to clients
- Devise, manufacture and conduct quality control of AGTC analytical kits and reagents
- Perform sales duties and provide technical support for clients
- Represent company at exhibitor's booth at professional meetings
- Give oral & poster presentations at professional meetings

Achievements:

- Set up Forensic Laboratory for AGTC
- Trained AGTC personnel and college interns in Forensic DNA Analysis methods & techniques
- Validated inorganic DNA extraction methods for forensic application
- Developed a series of Forensic kits for company to market
- Validated PCR AmpliType Kit (HLA DQA1 locus) for forensic casework implementation
- Validated PCR AFLP loci APOB & PAH for forensic casework implementation

1986 - 1988

Florida Dept. of Law Enforcement (FDLE) Tampa Regional Crime Laboratory 4211-A North Lois Ave. Tampa, FL. 33614 813-878-7301

Title: Crime Laboratory Analyst/Serology

Duties and Responsibilities:

- Examine physical evidence collected in criminal cases
- Perform conventional genetic marker analysis of biological evidence
- Write clear and concise reports of findings
- Testify as expert witness in courts of law
- Validate new techniques and instrumentation to be implemented in casework analysis

Achievements:

• Implemented isoelectric focusing technique of polymorphic enzyme genetic markers

1986

Humagen, Inc. Charlottesville, VA. Title: Research Associate

Duties and Responsibilities:

- Conduct forensic science research for Humagen, a start-up biotechnology company
- Validate forensic kits developed by Humagen
- Assist in marketing of forensic kits

1980 - 1985

Wisconsin State Dept. of Justice Regional Crime Laboratory-Milwaukee 1578 South 11th Street Milwaukee, WI. 53204-2860 414-649-2440

Title: Crime Laboratory Analyst-Micro/Serology

Duties and Responsibilities:

- Examine physical evidence collected in criminal cases
- Perform conventional genetic marker analysis of biological evidence
- Perform comparative hair analysis
- Write clear and concise reports of findings
- Testify as expert witness in courts of law
- Validate new techniques and instrumentation to be implemented in casework
- Provide training to law enforcement and judicial personnel

EDUCATION

1972 - 1977

University of Wisconsin-La Crosse La Crosse, WI. Bachelor of Science in Medical Technology Minor: Chemistry

CERTIFICATION

• American Board of Criminalistics (ABC); certified in Molecular Biology - Diplomate and Fellow

PROFESSIONAL AFFILIATIONS

- Member, American Academy of Forensic Sciences (AAFS)
- Member, Midwest Association of Forensic Sciences (MAFS)

PUBLICATIONS/PRESENTATIONS

Casework Presentation, "APOB Amplified Fragment Length Polymorphism" Southwest Association of Forensic Scientists Estes Park, CO./October 1992

"Forensic Validation Studies on the APOB Amplified Fragment Length Polymorphism" American Academy of Forensic Sciences/Boston, MA. February 1993, Dr. Moses Schanfield Presenter, Thomas A. Wahl Co-Author

"HLA DQA1 Testing of Non-Human DNA" Northwest Association of Forensic Scientists Bend, OR./April 1993

"Forensic Validation Studies on the APOB Amplified Fragment Length Polymorphism" Northwest Association of Forensic Scientists Bend, OR./April 1993

"Qualitative and Quantitative Assessment of DNA Using Alpha Satellite DNA" Midwest Association of Forensic Scientists Madison, WI./October 1993

"Species Specificity Studies Using the Amplitype™ Polymarker PCR System" Fifth International Symposium on Human Identification, Promega Corporation Scottsdale, AZ./October 1994

"PCR on Trial"

Joint Meeting: Canadian Society of Forensic Sciences and the Northwest Assoc. of Forensic Scientists Forensic Use of PCR Analysis Workshop Vancouver, B.C./November 1994

"To Chelex or Not to Chelex, That Is the Question" American Academy of Forensic Sciences Seattle, WA./February 1995

"Implementation Studies on the Analysis of the Amplitype™ Polymarker PCR System" American Academy of Forensic Sciences Seattle, WA./February 1995

"Interpretation of DQA1 & Polymarker Dot Blot Data in Mixed & Partially Degraded Specimens" California Association of Criminalists, DNA User's Group Seminar Walnut Creek, CA./May 1995

"Presentation of DNA Evidence- A View from the Expert's Eyes" National College of District Attorneys Forensic Evidence Course San Francisco, CA./December 1995

"Demonstration: Cross-Examination of DNA Expert- Issue: Quality Control of Lab/Contamination" National College of District Attorneys

Forensic Evidence Course

San Francisco, CA./December 1995

Co-Presenter: George "Woody" Clarke, Deputy DA, Office of the District Attorney San Diego County, CA

PUBLICATIONS/PRESENTATIONS (continued)

"Resource Session: Serological Evidence in Sexual Assault Cases (When DNA Evidence Is Not Available)" National College of District Attorneys

Forensic Evidence Course

San Francisco, CA./December 1995

"Resource Session: Direct Examination: Introduction of Serological Evidence to Prove Criminal Participation"

National College of District Attorneys

Forensic Evidence Course

San Francisco, CA./December 1995

Schanfield, M.S., Wahl, T., Latorra, D. and Verret, J. (1993)

Abstract: "Amplified Fragment Length Polymorphisms (AFLPs) and DQA1 for Forensic Identification" Fourth International Symposium on Human Identification, Promega Corporation, pp. 127-142 Scottsdale, AZ./October 1993

Latorra, D., Wahl, T., Humphreys, K., Schanfield, M.S. (1993)

Abstract: Forensic Validation Studies on the APOB Amplified Fragment Length Polymorphism" Fourth International Symposium on Human Identification, Promega Corporation, pp. 223-224 Scottsdale, AZ./October 1993

Baker, C., Schanfield, M.S., Wahl, T., Cotton, R., Cooper, J., and Wheeler, C. (1994)

Abstract: Proving Death Without a Body- A Case Using Electrophoresis, DNA RFLP, Gm/Km Allotyping, DNA PCR and Histology"

American Academy of Forensic Sciences

San Antonio, TX./February 1994

Schanfield, M.S., Latorra, D., Verret, J. and Wahl, T. (1994)

"Amplified Fragment Length Polymorphisms (AFLPs) Inexpensive Environmentally Safe DNA Technology for Forensic Identification"

American Academy of Forensic Sciences

San Antonio, TX./February 1994

Presentation: "Application of the Quantifiler Kit in Forensic Casework"

Presented at "Future Trends in Forensic DNA Technology 2004"

Sponsored by Applied Biosystems

Phoenix, AZ./September 14,2004

Seattle, WA./September 21, 2004

Presentations: Morning and Afternoon Sessions

"New DNA Technologies RT-PCR, LCN & Laser Catapult MicroDissection Microscope (Zeiss)"

"Secondary Transfer of DNA, Interpretation of STR Mixtures"

Presented at "XIII Congreso Nacional de Medicina Legal Y Ciencias Forenses"

Bogota', D.C., Colombia

September 19 - 22, 2006

OTHER QUALIFICATIONS

 $\underline{Research} - Development \ and \ validation \ of \ ELISA \ based \ immunoassay \ commercial \ kit \ for \ detection \ of \ a \ human \ semen \ specific \ protein \ MHS-5 \ for \ forensic \ and \ clinical \ markets.$

Humagen, Inc. - Charlottesville, VA.

<u>Research</u> – Development and forensic validation of Amplified Fragment Length Polymorphisms (AFLPs) for human genetic loci APOB, PAH.

Analytical Genetic Testing Center - Denver, CO.

<u>Teaching</u> – Instructor of PCR AFLP course offered to the forensic and paternity testing science community by Analytical Genetic Testing Center – Denver, CO.

ADDITIONAL TRAINING/SEMINARS RECEIVED

"Advanced Serology Workshop"
Illinois Dept. of Law Enforcement Training Academy
Springfield, IL./August 1982

"Gm-Km Immunoglobulin Allotyping Workshop" Louisiana State Police Academy Baton Rouge, LA./March 1987

"Statistics Course" Florida Dept. of Law Enforcement Training Academy Tallahassee, FL./May 1987

"Isoelectric Focusing Workshop" Florida Dept. of Law Enforcement Training Academy Tallahassee, FL./March 1988

"Techniques in Gene Manipulation" University of South Florida Tampa, FL./May-June 1988

"Semen Analysis Workshop" Florida Dept. of Law Enforcement Training Academy Tallahassee, FL./August 1988

"Non-Isotopic Detection of DNA Polymorphisms" Allotype Genetic Testing , Inc. Atlanta, GA./August 1988

"Advanced Serology Workshop" Allotype Genetic Testing, Inc. Atlanta, GA./September 1988

"Non-Isotopic Detection of DNA Polymorphisms with Applications to Forensic & Paternity Testing, Bone Marrow Transplantation"

Allotype Genetic Testing , Inc.

Atlanta, GA./December 1988

ADDITIONAL TRAINING/SEMINARS RECEIVED (continued)

"Basic/Advanced Serology and PCR Workshops"

Instructor: Thomas Wahl

Analytical Genetic Testing Center

Denver, CO./ 1990-1993

"Non-Isotopic Analysis of Polymorphic Short Tandem Repeats (STR) Loci Workshop"

Promega Corp. Training Facility

Madison, WI./October 1993

"DNA Typing with STRs Workshop"

Promega Corp. Training Facility

Madison, WI./May 1995

"A Workshop in Statistics for Forensic Scientists"

National Forensic Science Technology Center (NFSTC)

St. Petersburg, FL./January 1996

"Statistics Workshop"

Seventh International Symposium on Human Identification, Promega Corp

Scottsdale, AZ./September 1996

"Capillary Electrophoresis Workshop"

Combined CAT/NWFS/SWAFS/SAT Meeting

Las Vegas, NV./November 1997

Workshop Coordinator: Thomas Wahl

"Powerpoint Workshop"

Combined CAT/NWFS/SWAFS/SAT Meeting

Las Vegas, NV./November 1997

"DNA Forensics – Science, Evidence and Future Prospects"

Cambridge HealthTech Institutes 2nd Annual Conference

McLean, VA./November 1997

"Advanced Capillary Electrophoresis Workshop"

Sponsor: Perkin-Elmer Corp.

Oregon State Police Forensic Laboratory

Portland, OR./January 1998

"Laboratory Auditing Workshop"

Sponsor: National Forensic Science Technology Center (NFSTC)

Las Vegas Metropolitan Police Dept. Forensic Laboratory

Las Vegas, NV./June 1999

"Forensic Parentage Identification"

Instructor: Dr. Moses Schanfield, President of Analytical Genetic Testing Center, Denver, CO.

Las Vegas Metropolitan Police Dept. Forensic Laboratory

Las Vegas, NV./October 1999

"DNA STR Typing Workshop"

Promega Corp. Training Facility

Madison, WI./November 1999

ADDITIONAL TRAINING/SEMINARS RECEIVED (continued)

"DNA in the Laboratory and in the Courtroom: Scientific, Technical and Legal Aspects" American Academy of Forensic Sciences Reno, NV./February 2000

"Molecular Biology 407" University of Nevada Las Vegas (UNLV) Graduate school course: 3 credits Spring Semester of 2000

"Scientific Working Group on DNA Analysis Methods (SWGDAM) Meeting" Eleventh International Symposium on Human Identification, Promega Corp. Biloxi, MS./October 2000

"Paternity Mini-Symposium" – SWGDAM Eleventh International Symposium on Human Identification, Promega Corp. Biloxi, MS./October 2000

"Short Tandem Repeat (STR) Analysis Course" FBI Training Academy Quantico, VA./August 2001

"Digital Imaging Workshop" Las Vegas Metropolitan Police Dept. Forensic Laboratory Las Vegas, NV./September 2001

"Microsoft Excel 2000 Course Las Vegas Metropolitan Police Dept. Training Facility Northwest Area Command Las Vegas, NV./July 2002

Applied Biosystems (ABI) Training on the ABI 7000 Sequence Detection System Las Vegas Metropolitan Police Dept. Forensic Laboratory Las Vegas, NV./November 2003

Applied Biosystems (ABI) Training on the ABI 3100 Avant Genetic Analyzer Las Vegas Metropolitan Police Dept. Forensic Laboratory Las Vegas, NV./November 2003

First Annual Advanced DNA Technology Workshop Bode Technology Group San Diego, CA./March 2004

Workshop: "Generating DNA Profiles from Difficult Samples" Promega Corp. 17th International Symposium on Human Identification Nashville, Tennessee/ October 12, 2006

FSS i³ Expert Systems Forum Promega Corporation Madison, WI./June 26, 2007

TRAC29: Laser Capture Microdissection(LCM): Methods for Microgenomic Analysis
The Foundation for Advanced Education in the Sciences, Inc. at the National Institutes of Health (NIH)
Bethesda, MD./ August 6 to August 9, 2007
1 credit/28 Lecture/Lab Hours

Fifth Annual Advanced DNA Technical Workshop Bode Technology San Diego, CA./March 10-13, 2008

DNA·VIEW/PATER, Casework Analysis, Parentage Testing, Kinship, Population Genetics Training Charles Brenner, Ph.D. - Forensic Mathematics Consultant Forensic DNA Facility, North Dakota State University Fargo, ND/April 9th-11th, 2008

 18^{th} Triennial Meeting of the International Association of Forensic Sciences (IAFS) New Orleans, LA./ July 23-25 th , 2008