

BACKGROUND

Mr. Keel conducted traditional serological and DNA analysis investigations and consultation in criminal and civil forensic cases from 1982 through 2021 from 36 US States and has provided expert testimony in 21 state and federal courts. The first 15 years of Mr. Keel's 40+ year career were spent in law enforcement laboratories. For the last 23 years of his laboratory career he served as a DNA Technical Lead Analyst. Mr. Keel has particular and extensive knowledge in crime scene processing, evidence examination, human body fluid and cellular material identification, DNA purification, polymerase chain reaction (PCR) based amplification of short tandem repeat (STR) genes, single source and mixture autosomal and Y chromosome DNA profiles, classical population statistics, probabilistic genotyping, and genetic genealogy.

Mr. Keel has personally conducted testing in hundreds of pre-trial and over 150 post-conviction forensic biology case investigations. As a private consultant since 2022, he now assists prosecutors, Conviction Integrity Units, defense attorneys, Innocence Projects, and private clients with expert peer review of forensic evidence in pre-trial, post-conviction, and civil litigation, and with recommendations for additional investigation, direct and cross-examination, effective assistance, and client management strategy.

PROFESSIONAL AFFILIATIONS

- American Academy of Forensic Sciences, current.
- California Association of Criminalists, current.
- The American Board of Criminalistics: Certifications:
 - Diplomate, General Criminalistics, 1991-2012.
 - Fellow, Molecular Biology, 1995-2012; November 2015, current.
- DNA Technical Leader/Manager, pursuant to the 1994 Identification Act and DNA Advisory Board Standard 5.2.1.1, advanced degree waiver conferred 1999.

- Licensed by the Texas Forensic Science Commission in Forensic Biology/DNA, December 2018-2022.

EDUCATION

- Bachelor of Science (Zoology), Texas A & M University, College Station, 1978
- Graduate Course Work, Texas A & M University, College Station, 1978-80 in Human Physiology
- Graduate Course Work, University of California, Berkeley, 1993 in Nucleic Acid Biochemistry

PROFESSIONAL EXPERIENCE

- 2011 – 2021 Forensic Analytical Crime Lab, Hayward, CA
Forensic Biology/DNA Analysis Unit
DNA Technical Leader/Supervisor/Analyst
- 1999 – 2011 Forensic Science Associates, Richmond, CA
Criminalist/Consultant in Forensic Biology/DNA Analysis
- 1996 – 1999 San Francisco, CA Police Department
Forensic Biology/DNA Analysis Unit
DNA Technical Leader/Supervisor/Analyst
- 1996 Tulsa, OK Police Department
Forensic Biology/DNA Analysis Unit
DNA Technical Leader/Supervisor/Analyst
- 1995 – 1996 Consultant in Forensic Science, Shreveport, LA
- 1994 – 1996 Caddo Parish, LA Coroner's Office, Shreveport, Louisiana
Death Investigator
- 1984 – 1993 Oakland, CA Police Department
Criminalist III, specialized in Forensic Serology and DNA Analysis
- 1982 – 1984 North Louisiana Crime Lab, Shreveport, Louisiana
Forensic Serologist

SPECIALIZED TRAINING

- Recombinant DNA Technology, University of California Extension, Berkeley, CA 1986
- Forensic DNA Analysis, University of California Extension, Berkeley, 1989
- The Application of DNA Technology to Forensics, University of California Extension, Riverside, 1990
- PCR/DQA1 Typing Methods, CETUS/California Department of Justice, Berkeley, 1991
- Bloodstain Pattern Interpretation, California Criminalistics Institute, Sacramento, California, 1991
- Advanced PCR Analysis Methods: PM, D1S80, and Quantiblot, Roche Molecular Systems, Alameda, California, 1993
- Advanced Crime Scene Reconstruction, California Criminalistics Institute, Sacramento, CA 1996
- Instrumental DNA Typing and Analysis
 - Capillary electrophoresis 310 instrumentation and GeneScan data collection/Multiplex STR analysis/GenoTyper data analysis, Perkin-Elmer/Applied Biosystems, Foster City, CA 1996
 - Profiler Plus/Cofiler Multiplex STR analysis internal validation SFPD, 1998
 - Identifiler Multiplex STR analysis internal validation FSA, 2001
 - Yfiler Multiplex STR analysis internal validation FSA, 2005
 - Minifiler Multiplex STR analysis internal validation FACL, August 2014
 - ABI Genetic Analyzer CE 3500/Genemapper ID-X Multiplex STR analysis: internal vendor training/internal validation FACL, October 2016
 - Investigator 24Plex QS Multiplex STR analysis internal vendor training/internal validation FACL, April 2017
 - STRmix Probabilistic Genotyping: vendor workshop Prague, Czech Republic April 5, 2017; internal validation FACL, January 2018
 - Genetic Genealogy/Next Generation Sequencing, Promega Webinar Series: Part 1: An Inside Look at the Facts and Fiction Surrounding GG, April 13, 2022; Part 2: Closing the Genealogy Gap, from Extraction to Prosecution, May 4, 2022; Part 3: Decoding Laboratory Options for GG, May 25, 2022

- Genetic Genealogy: Part 1: The Use of GG in Forensic Investigations, October 11, 2023; Part 2: GG 2011-2023 Expectations vs Realities; JFS/AAFS/Wiley Virtual Seminars
- Probabilistic Genotyping: DNA Interpretation Given Activity Level Propositions. AAFS 76th Annual Scientific Conference Workshop, February 20, 2024, Denver, CO.
- Investigative Genetic Genealogy: Case Studies, Regional Coordination, and DNA Analysts' Roles in Support. California Association of Criminalists, February 27, 2024
- Technical Writing for Criminalists, California Criminalistics Institute, May 2021
- FBI Quality Assurance Standards Auditor Training, June 2012

PROFESSIONAL PRESENTATIONS

- *A Collaborative Study of DQA1 Typing by PCR* presented to the California Association of Criminalists, 1991 Spring Seminar, Berkeley
- *A Collaborative Study of DQA1 Typing by PCR* presented to the American Academy of Forensic Sciences, 1992 Annual Seminar, New Orleans
- *Penile Swab Evidence in the Investigation of Rape* presented at the 1993 International Forensic DNA Analysis Symposium, Quantico, Virginia
- *Sampling Approach and DNA Analysis of Fingernail Evidence Specimens* presented at the Third Joint International Seminar of the Forensic Science Society [United Kingdom] and the California Association of Criminalists, May 2000, Napa, California
- *Finding the Roscetti Stone: a review of the Lori Roscetti homicide investigation and trial transcripts* presented to the California Association of Criminalists, 2005 Spring Seminar, Oakland
- *The Essential Elements of a Forensic DNA Analysis Laboratory Report; The Essential Elements of Expert Peer Review of a Forensic Laboratory DNA Investigation; The Utility of and Access to CODIS; and Some Potential Adverse Consequences of Regulation and Accreditation on Applied Forensic DNA Analysis* presented to the California Public Defender's Association, May 2014, Hayward

- *Adverse Effects of Blanket Quality Assurance Criteria on Sample-to-Sample and Lab-to-Lab Variable Genetic Data*, presented to the Joint California Association of Criminalists/Northwest Association of Forensic Scientists Seminar, October 2014, Rohnert Park, CA.
- *Demystifying "Touch DNA,"* presented to the 2015 National Innocence Network Conference, May 2, 2015, Orlando, FL.
- *The Difference between Low-Level DNA Analysis and Low-Copy Number (LCN) DNA Analysis and Why It Matters to You*, presented to the 2015 National Innocence Network Conference, May 2, 2015, Orlando, FL.
- *The Fundamentals of Forensic DNA Analysis*, presented as training to the Federal Habeas Corpus Resource Center, September 2015, San Francisco, CA
- *A Benchmark for Meaningful Forensic DNA Analysis: Field (Beta) Testing of the Qiagen Investigator Quantiplex Pro qPCR Assay*, presented at the 6th Annual Qiagen Investigator Forum, Prague, Czech Republic, April 5, 2017.
- *The Twenty-six Year Investigation of the Kidnapping, Rape, and Murder of Dana Ireland*, presented at the California Association of Criminalists Seminar, May 2017, San Francisco, CA.

SPECIAL RECOGNITION

2008 Innocence Network Conference, Santa Clara, CA: **Freedom and Justice Award** presented by the Northeast Council of the Wrongly Convicted "In recognition of your relentless pursuit of truth through science."

2021 Based in part upon recommendation by the Innocence Project (NY), Mr. Keel was selected as the expert for Special Counsel appointed by California Governor Gavin Newsom to review the 1983-1984 conventional serological testing and the 2002-2004/2019-2020 forensic DNA testing of evidence in light of the actual innocence claims and clemency request of California death row inmate Kevin Cooper.

REFERENCES

Prosecution

Rockne Harmon, Esq., Alameda County, CA District Attorney Office, retired.

Cynthia Garza, Esq., Chief, Conviction Integrity Unit, Dallas County, TX District Attorney Office.

Melissa Montle, Esq., Conviction Review Manager, CRD, Orleans Parish District Attorney's Office.

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Kurt Mechals, Esq., DDA, San Diego County, CA District Attorney Office.
Kelly Manderino, Esq., DDA, San Luis Obispo County, CA District Attorney Office.
Sean Gallagher, Esq., DDA, San Mateo County, CA District Attorney Office.
Philip Kearney, Esq., Murphy Pearson Bradley & Feeney, San Francisco, CA, former
San Francisco County, CA Deputy District Attorney.
Hon. Braden Woods, San Francisco Superior Court Judge, former San Francisco
County, CA Deputy District Attorney.

Defense

Hon. Christopher Plourd, Imperial County, CA Superior Court Judge, former defense
counsel.
Hon. Nina Morrison, US District Judge, Eastern District of New York, former Senior
Litigation Counsel, Innocence Project, NY.
Innocence Project, New York, NY:
Barry Scheck, Esq., Founder and Special Counsel.
Peter Neufeld, Esq., Founder and Special Counsel.
Vanessa Potkin, Esq., Director of Special Litigation.
Jane Pucher, Esq. and Susan Friedman, Esq., Sr. Staff Attorneys.
Jee Park, Esq., Executive Director, Innocence Project New Orleans, LA.
Richard Davis, Esq., Legal Director, Innocence Project New Orleans, LA.
Victor Abreu, Esq., Supervisory Asst. Federal Public Defender/Capital Trial Unit,
Eastern District of Pennsylvania.
George Kendall, Esq., Of Counsel, Squire Patton Boggs LLC, New York, NY.
Paul Casteleiro, Esq., Legal Director, Centurion, Princeton, NJ.
Thaddeus Betz, Esq., Criminal Defense Attorney, Bend, OR.

Forensic Serology/DNA Analysis Scientists

Gary Harmor, Laboratory Director and Chief Forensic DNA Analyst, Serological
Research Institute, Richmond, CA.
Karen Lawless, Forensic Edge, Consultant, Portland, OR.
Dave Hansen, DNA Technical Lead Analyst, Forensic Analytical Crime Lab, Hayward,
CA.
Dr. Edward Blake, Forensic Analytical Crime Lab/Forensic Science Associates, retired.