

Curriculum Vitae
Joy Halverson, DVM, MPVM
Director and Senior Scientist
QuestGen Forensics

Professional Experience

12/01-present Director and Senior Scientist, QuestGen Forensics, LLC,
29280 Mace Blvd., Davis, CA
4/96-11/01 Scientist, Celera AgGen, 1756 Picasso Avenue, Davis, CA
1/89-4/96 President, Zoogen, Inc. 1756 Picasso Ave, Davis, CA
1/87-12/88 Post-doctoral Researcher, University of California, Davis,
CA
7/81-12/86 Veterinarian, veterinary hospitals in Canberra, Australia
and Sacramento, CA

Education

<u>Year</u>	<u>Degree</u>	<u>Institution</u>	<u>Specialization</u>
1985	Masters	University of California, Davis, CA	Veterinary Epidemiology
1981	Doctorate	University of California, Davis, CA	Veterinary Medicine
1976	Bachelor	University of California, San Diego, CA	Biology

Professional Memberships

American Academy of Forensic Science
American Veterinary Medical Association
Association of Avian Veterinarians
International Society of Animal Genetics

Publications

J. Halverson and C. Basten. Forensic DNA identification of animal-derived evidence: tools for linking victims and suspects. Croatian Medical Journal 46(4): 598-605. August 2005.

J. Halverson and C. Basten. A PCR multiplex and database for forensic identification of dogs. Journal of Forensic Science (50(2): 352-63.

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S. Denise, E. Johnston, J. Halverson, K. Marshall, D. Rosenfeld, S. McKenna, T. Sharp, J. Edwards. 2004. Power of exclusion for parentage verification and probability of match for identity in American Kennel Club breeds using seventeen canine microsatellite markers. *Animal Genetics*: 35(1):14-27.

C. Vila, C. Walker, A. Sundqvist, O. Flagstad, Z. Andersone, A. Casulli, I. Kojola, H. Valdman, J. Halverson, H. Ellengren. 2003. Combined use of maternal paternal and bi-parental genetic markers for the identification of wolf-dog hybrids. *Heredity* 90(1): 17-24.

J. Halverson, L. Spelman. 2002. Sex determination and its role in management. *in Komodo Dragons - Biology And Management*, Smithsonian Institution Press, 2002. pp.165-177.

D. Eason, C. Millar, A. Cree, J. Halverson, D. Lambert. 2001. A comparison of five methods for assignment of sex in the Takahe (*Aves:Porphyrio Mantelli*). *Journal of Zoology*, 253(3):281-292.

C. Millar, G. Taylor, P. Moore, J. Halverson, D. Lambert. A novel restriction fragment length polymorphism for petrels or tube-nosed birds. *Molecular Ecology* 9(11):1915-1917.

A. Carmichael, A. Fridolfsson, J. Halverson, H. Ellengren. 2000. Male-biased mutation rates revealed from z and w chromosome-linked ATP synthase alpha-subunit (ATP5a1) sequences in birds. *Journal of Molecular Evolution*, 50(5): 443-447.

G. Shutler, P. Gagnon, G. Verret, H. Kalyn, M. Korkosh, E. Johnston, J. Halverson. 1999. Removal of a PCR inhibitor and resolution of DNA STR types in mixed human-canine stains from a five year old case. *Journal of Forensic Science* 44(3) :623-626. 1999.

J. Halverson, J. Dvorak, T. Stevenson. 1995. Microsatellite sequences for canine genotyping. United States Patent Application, Registration No. 36,377.

J. Halverson, G. Sverlow. 1994. Methods and compositions for the diagnosis of flea allergies. United States Patent Application, Serial No. 08/333,952.

J. Halverson, J. Dvorak. 1993. Avian sex identification probes. United States Patent Serial No. 08/194,131.

A. Fridolfsson, H. Cheng, N. Copeland, N. Jenkins, Liu Hsiao-Ching, T. Raudsepp, T. Woodage, C. Bhanu, J. Halverson, H. Ellengren. 1998. Evolution of the avian sex chromosomes from an ancestral pair of autosomes. *Proceedings*

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of the National Academy of Sciences of the United States Of America,
95(14):8147-8152.

C. Millar, C. Reed, J. Halverson, D. Lambert. 1997. Captive management and molecular sexing of endangered avian species: an application to the Black Stilt (*Himantopus novaezelandiae*) and hybrids. *Biological Conservation* 82(1):81-86.

T. Fleming, J. Halverson, J. Buchanan. 1996. Use of DNA analysis to identify sex of Northern Spotted Owls (*Strix Occidentalis Caurina*). *Journal Of Raptor Research* 30(3):118-122.

C. Millar, D. Lambert, S. Anderson, J. Halverson. 1996. Molecular sexing of the communally breeding Pukeko - an important ecological tool. *Molecular Ecology*5(2):289-293.

T. Sabo, R. Kesseli, J. Halverson, I. Nisbet, et al. 1994. PCR-based method for sexing Roseate Terns (*Sterna Dougallii*). *Auk*111(4):1023-1027.

J. Halverson, J. Dvorak. 1993. Genetic control of sex determination in birds and the potential for its manipulation. *Poultry Science*72(5):890-896.

J. Dvorak, J. Halverson, P. Gulick, K. Rauen, et al. 1992. cDNA cloning of a Z-linked and W-linked gene in gallinaceous birds. *Journal Of Heredity*83(1):22-25.

Abstracts

J. Halverson, C. Basten. The impact of canine inbreeding on likelihood calculations for the significance of DNA matches in forensic investigations. International Society of Animal Genetics. Tokyo, Japan. September 2004.

J. Halverson. 2002. Canine mitochondrial haplotyping and its use in criminal investigations. Cambridge Healthtech Institutes Fifth Annual DNA Forensics Meeting, Washington, DC. June 2002.

J. Halverson, E. Johnston, L. Bickel, T. Sharp, J. Edwards. 2000. The AKC breed study: STR polymorphism at 17 loci in 91 AKC-registered breeds. International Society of Animal Genetics. Minneapolis, Minnesota, USA. July 2000.

J. Halverson, M. Malandro. 2000. The utility of mitochondrial hypervariable regions (Hv1 And Hv2) as forensic tools of feline and canine identification. Plant and Animal Genome VIII, San Diego, California. January 2000.

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J. Halverson, J. Edwards. 1998. Microsatellite polymorphism in major dog breeds. International Society of Animal Genetics. Auckland, New Zealand. July 1998. Abstract in Animal Genetics 29(Suppl.1)

J. Ziegler, Weller, J. Kuiper, M. M. Neff, J. Halverson, S. Bates. 1996. AFLP map of the dog genome. International Society of Animal Genetics. Tours, France. July 21-25, 1996. Abstract In Animal Genetics 27(Suppl.2)

D. Fantin, M. Bozzini, C. Gaiser, J. Halverson, S. Bates, J. Ziegler. 1996. Automating canine parentage and identification. International Society of Animal Genetics. Tours, France. July 21-25, 1996. Abstract in Animal Genetics 27(Suppl.2)

Presentations

Halverson J. Tallulah and the pursuit of justice - Avian mitochondrial typing for forensic identification. Annual meeting of the Association of Avian Veterinarians. Providence, RI August 2007.

Halverson J. Avian mitochondrial typing for forensic identification. Annual meeting of the American Academy of Forensic Science. Seattle, WA February 2006.

Halverson, J. Identification of canine and feline DNA in forensic investigations. Fifth ISABS (International Society for Applied Biological Sciences) Conference in Forensic Genetics and Molecular Anthropology. Dubrovnik, Croatia. September 2005

Halverson, J. Hanging by a Hair: Forensic identification with animal hairs. Forensics and the law - seminar at DePaul University, Chicago, IL August 2005

J. Halverson. Hanging by a Hair -- Animal hairs in casework. Trace evidence section of the combined meeting of the Southern Association of Forensic Scientists and the Mid-Atlantic Association of Forensic Scientists, Orlando, FL September 2004

J. Halverson, L. Lyon. Forensic identification of feline hairs -- casework and a mitochondrial database. Annual meeting of the American Academy of Forensic Science, Dallas, TX February 2004

J. Halverson, A. Perroud, C. Gaiser. 2003. Forensic identification of canine hairs: is heteroplasmy significant? Promega 14th International Symposium on Human Identification. Phoenix, AZ October 2003 (Invited)

J. Halverson, N. Dvorak, A. Carrera, A. Kahn, A. Basten, C. Gaiser. Canine DNA testing and its use in criminal investigations. 2003. Bi-Annual Meeting of the

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European Academy of Forensic Science, Istanbul, Turkey September 2003.
(Invited)

J. Halverson. 2002. Animal DNA and its application to homicide investigations. Virginia Homicide Investigators, September 30-October 2, 2002, Williamsburg, VA (Invited)

J. Halverson. 2000. DNA typing of animal-derived evidence in human crimes. Cambridge Healthtech Institute's Fourth Annual DNA Forensics , May 31-June 2, 2000. Springfield, VA (Invited).

J. Halverson. 1997. DNA testing in animals-from discovery to high-throughput application. Cambridge Healthtech Institute's Impact of Molecular Biology on Animal Health and Production Research, March 10-11, 1997. Baltimore, MD (Invited).

Continuing Education

Annual meeting of the Association of Avian Veterinarians. Providence, RI August 2007.

Annual meeting of the American Academy of Forensic Science. Seattle, WA February 2006.

Fifth ISABS (International Society for Applied Biological Sciences) Conference in Forensic Genetics and Molecular Anthropology. Duvrovnik, Croatia. September 2005

Forensics and the law – seminar at DePaul University, Chicago, IL August 2005

Combined meeting of the Southern Association of Forensic Scientists and the Mid-Atlantic Association of Forensic Scientists, Orlando, FL September 2004

Annual meeting of the American Academy of Forensic Science, Dallas, TX February 2004

Promega 14th International Symposium on Human Identification. Phoenix, AZ October 2003.

Biannual Meeting of the European Academy of Forensic Science, Istanbul, Turkey. September 2003.

Annual Meeting of the Association of Avian Veterinarians, Pittsburgh, PA. August 2003.

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Annual Meeting of the American Academy Of Forensic Science. Chicago, ILI.
February 2003.

Annual Meeting of the Association of Zoo Veterinarians, Milwaukee, WS. October
2002.

Annual Meeting of the Association of Avian Veterinarians, Monterey, CA. August,
2002.

DNA Forensics (5th Annual Meeting), Cambridge Healthtech Institute,
Washington, DC. June 2002.

Biannual Meeting of the International Society of Animal Genetics. Minneapolis,
MN, USA. July 2000.

DNA Forensics (4th Annual Meeting), Cambridge Healthtech Institute, Springfield,
VA. May 2000.

Plant And Animal Genome Viii Conference, San Diego, CA. January 2000.

Plant And Animal Genome Vii Conference, San Diego, CA. January 1999.

Canine Health Foundation/American Kennel Club Canine Genetic Health
Conference, St. Louis, MO. November 1999.

Biannual Meeting of the International Society of Animal Genetics. Auckland, New
Zealand. July 1998.

Canine Health Foundation/American Kennel Club Molecular Genetics and
Canine Genetic Health Conference, St. Louis, MO. November 1997.

Canine Health Foundation/American Kennel Club National Parent Club Canine
Health Conference, St. Louis, MO. October 1997.

Impact Of Molecular Biology on Animal Health and Production Research,
Cambridge Healthtech Institute, Baltimore, MD. March 1997.

Biannual Meeting of the International Society of Animal Genetics. Tours, France.
July 1996.

American Kennel Club Parent Club Genetics Conference, Florham Park, NJ.
October 1995.

American Kennel Club Parent Club Genetics Conference, Florham Park, NJ.
October 1994.

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Closed Casework

State of Iowa v. Ben O'Donnell, 2003

The defendant was charged with first degree murder in the death of Tracy Ann Carson. The victim's body had been wrapped in a bolt of fabric, partially burned and then buried; spring flooding unearthed the body. Examiners noted animal hairs on the fabric. Mitochondrial haplotypes of the cat hairs, one of which was an uncommon type, could not be excluded to the suspect's three cats. Ben O'Donnell pleaded guilty to second-degree murder.

Dog Attacks in Cook County, 2003

A woman was attacked and badly injured by two dogs in a park in Cook County, Illinois. Police searching for the dogs found a second female victim who died within a few hours. Dog A behaved threateningly toward police and was killed; tissue from the second victim was found in Dog A's stomach. Police trapped a number of dogs, including Dog B whom they strongly suspected based on the description of the surviving victim. In order to reassure the public, police needed to confirm that Dog B was the second attacker. Dr. Halverson tested the clothing of the two victims for canine DNA. Mitochondrial types from Dogs A and B, along with the types of two dogs owned by the victims, accounted for all DNA profiles found on the clothing.

State of Florida v. Brent Robert Huck, 2003

The defendant was charged with the kidnapping and murder of Misty April Morse. Dr. Halverson worked with Agent Terry Laufenberg of the Brevard County Sheriff's Office to test canine hair found on tape binding the victim's body. The mitochondrial haplotype of the hair matched that of the suspect's dog. Brent Huck was convicted on both counts.

Commonwealth of Pennsylvania v. Stephen Treiber, 2002

The defendant was charged with arson and resulting death of his daughter. Dr. Halverson worked with Corporal Stepankow of the Millcreek Police and Federal Prosecutor Anthony Krasnek on both laboratory analysis and trial testimony. STR analysis was performed on a hair found encased in the glue of a threatening letter. The hair could not be excluded to the defendant's dog, suggesting that the letter had been fabricated. Stephen Treiber was convicted on all counts.

State of Iowa v. Andrew Rich, 2002

The defendant was charged with the murder and robbery of John Helble. Dr. Halverson worked with Michael Schmit of the Division of Criminal Investigation and Linda Paulson from the Office of the Johnson County Attorney on both laboratory analysis and a deposition. A mitochondrial haplotype of an evidence hair found in an ammunition box stolen from the victim matched that of the victim's dog. Mr. Rich pleaded guilty to voluntary manslaughter and first-degree robbery and was given a 35-year sentence.

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State of California v. David Westerfield, 2002.

The defendant was charged with the kidnapping and murder of eight-year-old Danielle Van Dam. A mitochondrial haplotype of dog hairs found in the suspect's motor home, on a quilt, and in the lint-trap of his dryer matched that of the Van Dam's dog. David Westerfield was convicted. This case was the first trial in the United States to admit canine mitochondrial DNA analysis as evidence.

Shasta County, California v. Joshua Lee Davis, 2002.

The defendant was charged with animal cruelty for the vicious stabbing death of a dog. A DNA profile from a knife in the defendant's possession could not be excluded to the dead dog. The defendant pleaded guilty to one felony count of cruelty to animals.

People vs. Jeanette Slover, Michael Slover Sr., and Michael Slover Jr.

The charge against the defendants was first degree murder of Karyn Hearn, the ex-wife of Michael Slover Jr. Dr. Halverson worked with Detective Mike Mannix and Prosecutor Richard Current of Macon County, IL. to profile a dog hair recovered from the duct tape used in the disposal of the victim's body. All alleles seen in a partial DNA profile from the hair were consistent with the defendants' dog. The defendants were convicted.

People vs. Laykham, Ventura County, 2002.

The charge against the defendant was residential burglary and assault with intent to commit rape. Dr. Halverson worked with Investigator Dave Williams and Prosecutor Lisa Lee to show that hair found on the defendant's clothing could not be excluded to the victim's dog. Dr. Halverson testified in a Kelly-Frye admissibility hearing and at the trial. The defendant was found guilty of both charges.

City of Tulsa vs. Michael Ohman & Vanessa Sorja, 2000.

Dr. Halverson worked with Tulsa City Prosecutor Patrick Boulden and Officer Carl Willis on a case involving a serious dog attack. The defendants were the owners of the dog that allegedly attacked and seriously injured Wanda Cox. The owners claimed mistaken identification of the dog. STR profiles from hair from the woman's socks could not be excluded to the defendants' dog; they were found guilty of harboring a vicious animal.

Twelfth Judicial District State of New Mexico, State vs. Charles Martinez (Cause No. CR-99-108) and State vs. Chris Faviel (Cause No. CR-98-64), 1998-1999.

Dr. Halverson worked with Prosecuting Attorney Canon Stevens and Detective Jim Biggs on a homicide case. STR profiles from hair on the socks of the victim could not be excluded to the dog owned by one of the suspects. Dr. Halverson provided analysis and expert witness testimony for the trial of Charles Martinez. He was convicted. Chris Faviel filed a guilty plea.

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New Jersey Division of Fish and Game Case#4-244-99/#5-244-99, 1999.

Dr. Halverson worked with Dr. Douglas Roscoe and Alan Keel of Forensic Science Associates to DNA profile an escaped Bengal tiger (deceased). The tiger was alleged to have escaped from a private facility in New Jersey; the owner of the facility claimed the tiger had come from a nearby safari park. The evidence sample was a clump of fur found within the perimeter fence of the private facility. Dr. Halverson used domestic cat STR markers to profile the case samples and 20 tiger samples provided by Dr. Stephen O'Brien as a small database for the case. The clump of fur matched the deceased tiger. The facility has lately been closed and the tigers moved to a reserve in Texas.

Tom O'Connor vs. Irish Coursing Club, 1998.

Dr. Halverson worked with Pat Dalton, a prominent breeder of racing greyhounds, to vindicate Tom O'Connor of misrepresentation in the registration of a litter of puppies. In 1993, Serology Ltd., the Club's DNA testing laboratory, had purported that one puppy in the litter was excluded to the dam. DNA testing by four other laboratories worldwide, including Zoogen, Inc. had found no evidence of exclusion. Dr. Halverson testified at the 1998 hearing. Serology LTD was found to be in error. Tom O'Connor was awarded substantial financial compensation.

Office of the Prosecuting Attorney of King County Washington, 1998. The State Vs. Leulualahi (97-C-08256-9) and State vs. Tuilefano (97-C-01391-3) for the murder of Jay Johnson and Raquel Rivera.

Dr. Halverson worked with Prosecuting Attorney Tim Bradshaw and Detective Kenneth O'Keefe on a double homicide case. STR profiles from bloodstains found on the clothing of the suspects could not be excluded to the victim's dog. Dr. Halverson provided analysis and expert witness testimony. Both suspects were convicted.

Royal Canadian Mounted Police Detachment File Number 91-0693 (reference: Schraeder, Daniel Fred-Murder of), 1996-1997.

Dr. Halverson and colleague Eric Johnston worked with Dr. Gary Shutler of the RCMP Forensic Laboratory in Winnipeg, Manitoba. Forensic samples of mixed canine/human bloodstains from a 1991 unresolved homicide case were analyzed. STR profiles from the non-human blood on the suspect's jeans could not be excluded to the victim's dog. The evidence was used by the Canadian Royal Counsel to assign murder charges against the primary suspect. In September 1997, the suspect filed a guilty plea.

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