

AFFIDAVIT OF CHARLES MICHAEL BOWERS

I, Dr. Charles Michael Bowers, declare under the penalty of perjury:

1. I am a licensed dentist (CA), a Board Certified Forensic Dentist (American Board of Forensic Odontology, ABFO), licensed attorney (CA) and am currently self-employed as a dental practitioner in Ventura, CA. I have been a dentist for 36 years, Board certified for 22 years (the American Board of Forensic Odontology (ABFO), a certified Senior Crime Scene Analyst (IAI) for over 11 years and licensed as a California attorney for 19 years. I am an Associate Clinical Professor at the University of Southern California Ostrow School of Dentistry (since 1978) and a Deputy Medical Examiner for the Ventura County (CA) Coroner/Medical Examiners Office (since 1986). My education, training, peer reviewed publications, forensic textbooks and manuals, licensures, university and governmental appointments are detailed in the attached *curriculum vitae*.

2. I have received a 1995 report (Dr. Marden Alder), a trial transcript (testimony of Dr. Marden Alder) and post-conviction transcript (testimony of Dr. Paul Stimson) of the forensic dental evidence and opinions in State v. Humberto Leal.

3. I have examined the materials sent to me and have concluded that in order for reasonable medical certainty and scientific support for Dr. Alder's claims that Mr. Leal's teeth marks could be matched to the marks on the decedents body to the exclusion of all other humans, the following must be true:

1. Mr. Leal's natural teeth and his bite pattern are unique, have remained unique throughout the course of his life and these assumptions have been scientifically established;

2. When a perpetrator bites a victim's body, these unique characteristics of the perpetrator's teeth and bite pattern are accurately transferred to the victim's skin;

3. The ability of the dentition to transfer a unique pattern to human skin and the ability of the skin to maintain that uniqueness have been scientifically established for the following factors:

i. The ability to analyze and interpret the scope or extent of distortion of bite mark patterns on human skin has been demonstrated by scientific means.

ii. The effect of skin distortion on comparison techniques is fully understood and therefore has been quantified and is controllable by reproducible and approved methods.

4. The procedures and methods utilized by qualified bite mark experts have been tested for scientific validity, are reproducible by multiple dental examiners and can accurately, with a published error rate, identify the unique teeth and bite pattern characteristics that have been inflicted onto the victim's skin;

5. The procedures used by Dr. Alder to expose, capture, compare, and positively identify the bite mark on the victim's body to Petitioner's dental features are valid and reliable; and

6. It is scientifically possible to conclusively link an unknown bite mark (on human skin) to a known bite pattern to the exclusion of all others in this case.

4. None of the above bitemark comparison principles can be considered as scientifically validated. In fact, significant skepticism about the scientific validity and basis for bite-mark matching has existed since it was accepted into evidence in *People v. Marx*, 126 Cal. Rptr. (Cal. Ct. App. 1975), but this evidence has come under even more substantive scrutiny and criticism over

the past decade. The primary source of controversy relates to the absence of scientific and empirical underpinnings associated with real scientific disciplines.

Iain A. Pretty & David J. Sweet, *The Judicial View of Bite-marks Within the United States Criminal Justice System*, J. Forensic Odonto-Stomatology, June 2006, at 91. Where other sciences, and in particular other forensic sciences like DNA typing, are based on statistical data and probabilities, no such information exists for bite-mark matching. Real science is marked by factors that include a reliance on the scientific method, the ability for other researchers to replicate the tests conducted, clear statements of operational definitions, full exposition of research methodology and statistical analysis, and limits on the extent to which subjectivity plays a role in rendering conclusions. Michael J. Saks & David L. Faigman, *Failed Forensics: How Forensic Science Lost Its way and How It Might Yet Find It*, Ann. Rev. L. Soc. Sci., at 150-51 (2008).

5. When asked about the foundation of bite-mark evidence, experts generally cite to the ability of forensic odontologists to identify victims of disaster or homicide. See, e.g., *People v. Mattox*, 237 N.E.2d 8445, 846 (Ill. App. Ct. 1968) (identifying homicide victims from dental records). In this kind of identification, a dentist armed with a full set of dental records, can probably identify an unknown victim with a fair degree of certainty – although just how much certainty has never been studied, and is therefore still unknown. Using such a technique, the dentist examines thirty-two teeth, with five surfaces each, making 160 possible surfaces which can each contain specific characteristics, and any fillings, decay, lost teeth, and mis-positioning. In addition, the forensic

odontologist examines number, shape, type and placements of dental restorations, root morphology, bone patterns, and sinus morphology. Because each of these factors provides for some individualization, there is little controversy about the ability of a dentist to put them together to accurately identify a dead person from a *complete* set of dental records, especially if there are anomalies in the teeth. National Academy of Sciences Report, at 173; Paul Gianelli, *Bite Mark Analysis*, 43 Crim. L. Bull. 5, 5 (2007).

6. Thirty-two teeth, however, are not used in bite-mark comparisons because at most, four to eight teeth are usually visible in bite-marks. Iain A. Pretty & David J. Sweet, *The Scientific Basis for Human Bitemark Analysis – A Critical Review*, 41 Sci. & Just, 85, 89 (2001). Unlike the identification of catastrophe victims from a full set of dental records, bite-mark identification consists of “comparing and matching” a mark or marks on a victim with the anterior teeth of a known suspect. Bite-mark experts only look at marks that are essentially bruises and compare them with a model (or tracing of a model) of the suspect’s teeth. Iain A. Pretty, *Unresolved Issues in Bitemark Analysis*, in *Bitemark Evidence* 554, 557 (Robert Dorian, ed., 2005). So, although the use of dental records in identifying catastrophe victims is often cited in validation, bite-mark comparison bears little resemblance to identifying an unknown victim using a *complete* set of dental records.

7. In contrast to real forensic science, bite-mark analysis is utterly lacking in this empirical basis and instead relies upon three related presumptions which are utterly lacking in any scientific support: first, that the “dental characteristics of

anterior teeth involved in biting are unique among individuals;” *The Scientific Basis for Human Bitemark Analysis*, at 89, second, that this “asserted uniqueness is transferred and recorded in the injury;” and, third, that human skin can maintain the accuracy of marks over time, after the death of the victim. *Unresolved Issues in Bitemark Analysis*, at 557. With such demonstrably non-scientific assumptions, there is no actual basis for a forensic odontologist to conclude that bite-marks match a specific human dentition or that a bite-mark “would have to have been made by” a particular individual, or, as in this case, that a particular person “inflicted the bitemark injury”.

8. Moreover, unlike dental radiographs and records of all teeth – which are commonly used by forensic odontologists to identify unknown remains, *see, e.g., Ex parte Dolvin*, 391 So.2d 677, 679 (Ala. 1980) – skin injuries on dead victims tend to be fragmentary and diffuse. As a surface for analysis, skin is malleable; bitemarks can move, especially when made during a struggle, and often fade quickly. Jane Campbell Moriarty & Michael J. Saks, *Forensic Science: Grand Goals, Tragic Flaws, and Judicial Gatekeeping*, Judges’ J., Fall 2005, at 21. This ultimately means that a bite mark may have shifted or changed in appearance since being inflicted. *Id.* Simply put,

[s]kin is a poor registration material since it is highly variable in terms of anatomical location, underlying musculature, fat, curvature, and looseness or adherence to underlying tissues. Skin is highly viscoelastic, which allows stretching to occur during the biting process or when evidence is collected.... [A]ny bitemark on skin will have some degree of distortion, due to edema, recoil or other factor.

Robert B.J. Dorion, *Bitemark Evidence* 549 (Marcell Dekker, 2005). In one study, examiners found distortion in skin up to 60%, depending on the location of the body. *Id.* See also 3 *Modern Scientific Evidence* 548-49 (“Skin is a poor impression material Recognition that the bruising is actually subcutaneous bleeding requires that the investigator not assume that the areas that appear to be teeth are an accurate representation of individual teeth.”).

9. Forensic odontological identification involves two steps: (1) comparing a mark or imprint to a known source to determine if they are similar or a “match; and (2) assessing the probability that the imprints came from the same source. Michael J. Saks & Jonathan J. Koehler, *The Individualization Fallacy in Forensic Science Evidence*, 61 Vand. L. Rev. 199, 199 (2008). Risks are inherent in both of these steps: a purported match might not actually be a match, or the reason for a so-called match might be coincidence rather than the sharing of a common source. *Id.* at 200. Virtually no research has been conducted into either of these variables in bite-mark matching. *Id.* Without an agreed upon scientific basis or statistical calculation accepted by experts in within the field, the standards on which courts and verdicts rely are those dictated by the individual examiners; and in forensic odontology, the standards for calling a bite-mark a match are merely those used by the testifying odontologist. *Id.* at 200-01.

10. Complicating matters even more, forensic odontologists encounter “observer effects,” which means that when presented by police with a suspect’s dentition, they may be more likely to find a match given their – albeit subconscious – predisposition that there should be a match. D. Michael Risinger,

et al., *The Daubert/Kumho Implications of Observer Effects in Forensic Science: Hidden Problems of Expectation and Suggestion*, 90 Cal. L. Rev. 1 (2002). That is, because the police have indicated that the dentition to be compared to a bitemark is from the person whom they suspect is the perpetrator, the odontologist is not blinded when analyzing a dentition to a bitemark. Studies have indicated that when forensic odontologists conduct an analysis, where they know that the subject exemplar belongs to a suspected perpetrator, they are more likely to find a “match.” *Id.* at 28-30. As the National Academy of Sciences recently observed:

As with other “experience-based” forensic methods, forensic odontology suffers from the potential for large bias among bite mark experts in evaluating a specific bite mark in cases in which the police agencies provide the suspects for comparison and a limited number of models from which to choose from in comparing the evidence. Bite marks often are associated with highly sensationalized and prejudicial cases, and there can be a great deal of pressure on the examining expert to match a bite mark to a suspect. Blind comparisons and the use of a second expert are not widely used.

Strengthening Forensic Science in the United States: A Path Forward (hereinafter “Report”), National Academy Report at 175 (2009). Additionally, the more confirmation a forensic scientist receives before and after his analysis that the suspect should be a match, the more confident his testimony is likely to be at trial. *Op. cit.* at 30.

11. Dr. Alder’s June 5, 1995 report concludes that there are “explainable inconsistencies” in the comparison between the bitemark injury and Mr. Leal’s teeth. This indicates there are areas of mismatch in the comparison. Indeed, Dr. Alder fails to consider these obvious mismatches as indicators of a

non-match of Mr. Leal and the bite mark injury. This is scientifically unacceptable and is indicative of pro-prosecutorial expectational bias. He was not present during the attack, yet feels competent to recreate a scenario in his mind and, in doing so, to eliminate his observation of patent inconsistencies between the patterns on the victim's body and his exemplars of Mr. Leal's teeth. Further, Dr. Alder terminology is confused. "Explainable inconsistencies" only exist for use in comparison of dental radiographs and records to postmortem dental exams of unknown persons. This is not proper usage in bite mark comparisons. If there are inconsistencies in a bite mark comparison, the default result is a mis or non-match.

12. Dr. Alder also is speaking incorrectly in a later statement from his June 5, 1995 report:

(3) The bite marks on ME #94-0770 are consistent with the dentition of Humberto Leal and therefore were inflicted by him.

"Are consistent" is not proof of a positive match (i.e. "therefore were inflicted by him"). Moreover, Dr. Alder provides no analytical nexus to connect the two conclusions in this statement. The only forensically acceptable means of making a positive identification of a biter is through the use of DNA obtained from swabbing the injury for saliva.

13. In fact, it is now widely recognized that bite mark analysis – when used to make "positive" matches - masquerades as a reliable scientific discipline. Dr. Alder's report and testimony in 1995 does not meet the standards set out in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923), because it has no empirical or scientific support. None of the trappings of science, the scientific sounding titles,

group “certification” and publication in journals put out and reviewed by other members of the group, can serve to make bite mark evidence helpful in deciding a perpetrator’s identity unless the theory and assumptions on which the identification is based, the data supporting the theory, and the methodology used are sound. *Daubert*, 509 U.S. at 591 (noting the requirement that expert testimony assist the trier of fact “goes primarily to relevance.”).

14. Bite mark testimony fails on each of these fronts: the theory is based on unsupportable assumptions, the data is absent and the methodology lacks science-based professional guidelines and standards, and its conclusions are entirely subjective. Absent empirical support, the testimony can have no tendency to make a disputed issue of identity more or less probable.

15. To date, only three studies have “examined the ability of odontologists to utilize bitemarks for the identification of biters,” *Bitemark Evidence* 543, and each has revealed the inherent reliability problems. In the first of these studies, the percentage of incorrect identifications ranged from 24% under ideal laboratory conditions immediately after biting, to 91% incorrect identifications after only 24 hours. David A. Whittaker, *Some Laboratory Studies on the Accuracy of Bite Mark Comparison*, 25 Int’l Dental J. 166 (1975). This shockingly high error rate led the lead researcher to observe that “the inability of examiners to correctly identify bitemarks in skin ... under *ideal* laboratory conditions and when examined immediately after biting suggest that under sometimes adverse conditions found in an actual forensic investigation it is unlikely that a greater degree of accuracy will be achieved.” *Id.*

16. A second study, performed at an American Board of Forensic Odontology (“ABFO”) Bitemark Workshop in 1999, and involving examiners’ attempts to match four bite marks to seven dental models, resulted in an error rates reaching 63.5%. 3 *Modern Scientific Evidence* 543-46.

17. Finally, in the most recent study, ABFO certified examiners registered a false positive error rate of 15.9%, with many fairing far worse. Iain A. Pretty & David J. Sweet, *Digital bitemark overlays – an analysis of effectiveness*, 46(6) J. Forensic Sci. 1385, 1389 (2001). This study, the last known to have been conducted in this forensic subdiscipline, cautioned that the “[p]oor performance” is a cause of concern because of its “very serious implications for the accused, the discipline, and society.” *Id.* at 1390.

18. As such, Dr. Alder, as pointed out by Dr. Stimson at the post-conviction hearing, used methodologies, and created claims and opinions derived from the dental evidence presented in Mr. Leal’s trial that are flawed and scientifically unacceptable.

19. On February 17, 2009, at the request of the United States Congress, the National Academy of Sciences issued their report *Strengthening Forensic Science in the United States: A Path Forward*. The report examines the scientific foundations of virtually all areas of forensic science, including bite mark identification. I am also familiar with the Report, My work was referenced in the Report regarding the unacceptable error rates in bitemark proficiency testing. The report included a highly critical assessment of the use of bitemark evidence in making identifications (i.e. “matches”), determining that there is an inadequate

scientific basis for concluding that “bitemark comparisons” can result in a “conclusive match”. (Report at p. 175). While this report makes clear that bitemark identification lacks a scientific basis, it is only the most recent and authoritative instance where this dubious evidence has been discredited. My opinion about Dr. Alder’s work and the scientific principles at issue noted in Section 3 in this affidavit are consistent with the findings in the Report. I concur with the study’s structure, findings and conclusions as discussed in the Report.

20. My opinion is based on recent research data and research results which answer many of the relevant questions involved in assessing the scientific validity of bitemark identification. This body of work is relevant to Mr. Leal’s case and supports the final opinions of the Report which led to its conclusion that bitemark analysis is non-probative, not scientifically proven and therefore prejudicial and inadmissible. My synopsis of the Report (2009) follows.

21. The Report section directly addressing bitemark analysis found that there is no scientific research proving any particular uniqueness to human dentition. Starting in 2006 and culminating after the NAS proceedings on bitemarks, large dental populations have been measured in 2 dimensions (2D) and 3 dimensions (3D) and revealed, using shape comparison statistical methods, that significant random match rates of the anterior dentition are present in the human species. This indicates that multiple individuals make the same dental indentations with their biting teeth (1).

1. Bush MA, Bush PJ, Sheets, HD. (January 2011) Statistical Evidence for the Similarity of the Human Dentition. *Journal of Forensic Sciences*.

Sheets HD, Bush PJ, Brzozowski C, Nawrocki LA, Ho P, and Bush MA. (July 2011). Dental Shape Match Rates in Selected and Orthodontically Treated Populations in New York State: A 2 Dimensional Study. *Journal of Forensic Sciences*.

This refutes the first and most fundamental assumption of bite mark uniqueness which is item 1 of the Report's concerns. Human dentition is not unique, and as study population database expands in size, the probability of finding a random match increases geometrically. This random matching data directly refutes and invalidates a 1984 study in which uniqueness of the dentition was claimed using flawed statistics which ignored the possibility of random matches present in its own study population (2).

22. As often stated in the scientific literature on bite marks, even if such uniqueness could be established, it is even less clear that said uniqueness would be transferred when human teeth bite down on human skin. Recent study finds that due to the elasticity of human skin, swelling and healing, and unevenness of the skin's surface, the marks made from a bite can be physically distorted. The bulk of bite mark cases involve bruise injuries on skin. Skin is not an accurate material to record and to replicate the dental impression of the biter (3). Recent articles present experimental data from bite marks in human skin that

Bush MA, Bush PJ, Sheets HD. Similarity and Match Rates of the Human Dentition In 3 Dimensions: Relevance to Bite mark Analysis. International Journal of Legal Medicine, submitted June 2010.

Sheets HD, Bush MA. Mathematical Matching of a Dentition to Bite marks: Use and Evaluation of Affine Methods. Forensic Science International, submitted June 2010.

2. Rawson RD, Ommen RK, Kinard G, Johnson J, Yfantis A. Statistical evidence for the individuality of the human dentition. J Forensic Sci 1984;29(1):245-53.

3. S.S. Atsu , K. Gokdemir , P.S. Kedici , Y.Y. Ikyaz , Bite marks in forensic odontology , J. Forensic Odontostomatol. 16 (1998) 30.

T.J. Stoddart, Bite marks in perishable substances, Brit. Dental J. 135 (1973) 85.

have determined that human skin is incapable of consistently replicating features of a known biter's dentition (due to anisotropic skin distortion) (4).

23. Characteristics of the skin have been studied and the ability of the skin to replicate fine detail has been demonstrated to be unreliable (5). Further studies using cadaver bitemark models have shown only gross characteristic transfer and even then, it often occurs with significant distortion. The properties of skin anisotropy and visco-elasticity combined with the anatomy of the site bitten are the principal causes of distortion. Postural distortion (victim and assailant movement) further adds uncertainty. The distortion present can allow unrelated dentitions to 'fit' the bitemark, sometimes better than the perpetrating dentition, resulting in significant false positive rates (6). The studies referred to here involved bites inflicted in unembalmed cadaver skin, resulting in fresh indentations which were relatively easy to visualize and analyze. If a bruise is assumed to be the result of a bitemark and is the subject of examination, higher error is certain because of diffused pattern detail present in bruises. Unlike DNA analysis, which is a direct transfer of a statistically quantifiable biological

4. M.A. Bush , R.G. Miller , P.J. Bush , R.B.J. Dorion , Biomechanical Factors in Human Dermal Bitemarks in a Cadaver Model, J. Forensic Sci. 54 (1) (2009).

R.G. Miller , P.J. Bush , R.B.J. Dorion , M.A. Bush , Uniqueness of the Dentition as Impressed in Human Skin: A Cadaver Model, J. Forensic Sci. 54 (1) (2009).

5. Bush PJ, Bush MA. (June 2010). Scanning methods as applied to bitemark analysis. SPIE Journal.

6. Op. cit 5.

M.A. Bush , K. Thorsrud , R.G. Miller , R.B.J. Dorion , P.J. Bush , The Response of skin to Applied Stress: Investigation of Bitemark Distortion in a Cadaver Model , J. Forensic Sci. 55 (1) (2010).

material, a bitemark is a blurred facsimile of a dentition on a poorly registering substrate.

24. And while bitemark testing has fared poorly within the confines of a controlled laboratory, its impact in the real world – i.e., criminal cases – has been nothing short of atrocious because numerous wrongful convictions have been based solely or primarily on this bogus evidence. In fact, bitemark testimony purporting to link or include a suspect as the biter has frequently been contradicted by subsequent DNA or other evidence, and this has led to numerous overturned convictions or abandoned prosecutions. These and other bitemark cases with similar scenarios have provided empirical testing on the validity of prosecutorial uses of bitemark testimony. The numerous forensic dentists in these cases were also medically certain of the identity of the assailant as was Dr. Alder in 1995. The following is merely a sample of the numerous cases where forensic odontologists have called a match only later to have been proven wrong:

- *State v. Krone (AZ)*: After being sentenced to death, Krone served over a decade on death row before DNA testing led to his exoneration and the indictment of another man. The State acknowledged that Krone was convicted principally upon the opinion testimony of a forensic odontologist who stated that “the teeth of Ray Krone did cause the injuries on the body of Kimberly Ancona to a reasonable degree of medical certainty. This represents the highest order of confidence that no other person caused the bite mark injuries.” *Senator Helped Send Innocent Man to Death Row* (Las Vegas Rev. J., Nov. 30, 2003). The perilous and subjective nature of the “direct comparison” method is illustrated by observing Krone’s teeth next to the bite mark – they clearly appear to “match” even though Krone’s teeth did not make those bite marks. Michael Saks & John Kohler, *The Coming Paradigm Shift in Forensic Science*, 309 *Science* 892, 893, Fig. 2 (Aug. 5, 2005).

- *State v. Morris (FL)*: Dale Morris Jr., was arrested in 1997 based on bite mark analysis matching his dentition to a mark on a nine-year-old murder victim. Morris was a neighbor to the little girl who was found stabbed, sexually assaulted, and bitten in a field near her Florida home. He spent four months in jail until he was exonerated by DNA evidence. *Two Forensic Dentists Added to Wrongful Arrest Lawsuit*, St. Petersburg Times, Dec. 24, 1999, at 1.

- *State v. Starks (IL)*: Bennie Starks was exonerated for a rape he did not commit after serving the first 20 years of a 60 year sentence. At Stark's trial, the critical evidence was the testimony of a local dentist who "matched" a bitemark from the victim body, to a case made of Starks' teeth, and a falsified forensic blood testing report that erroneously included Starks as a possible contributor of the semen. Maurice Possley, *New Trial in '86 Rape Conviction*, Chicago Tribune, March 24, 2006. DNA testing of the semen deposited by the assailant, exonerated Starks in 2006. Dave Wischnowsky, *Prison door swings open: Rape conviction overturned*, Chicago Tribune, Oct. 5, 2006, at 1.

- *State v. Young (IL)*: Twelve years after being convicted for rape and murder based on testimony from a forensic odontologist purportedly linking Young to a bite mark on the victim, prosecutors agreed to drop all charges after DNA testing excluded Young. *12 Years Behind Bars, Now Justice at Last*, Chicago Tribune, Feb. 1, 2005, at 1; Tonya Maxwell, *Man freed in murder dies short of dream*, Chicago Tribune, April 28, 2006, at 1. The odontologist who aided Young's conviction later admitted that the prosecution pressured him to exaggerate his results. The Innocence Project, *Cases Where DNA Revealed Bite Mark Analysis Led to Wrongful Convictions*, <http://www.innocenceproject.org/Content/394.php> (hereafter "The Innocence Project")

- *State v. Jackson (LA)*: DNA testing exonerated Willie Jackson in 2006 and implicated his brother in a Louisiana rape. The victim identified Jackson as the assailant in a photo array and also in a live lineup. His brother also appeared in the lineup but was not identified by the victim. Although numerous factors tied the brother to the crime – proximity, opportunity, clothing, car observed at the crime scene – and appeared to clear Mr. Jackson, the prosecution ignored such exculpatory evidence and instead placed blind faith in a forensic odontologist who claimed that bite marks left on the victim "matched" Jackson's teeth. Just six days after Jackson was convicted in 1989, his brother finally confessed,

but was not charged. Instead, Jackson went to prison for 16 years until he was cleared by DNA testing in 2005. At the time of Jackson's exoneration, his brother was serving a life sentence for another rape. Paul Purpura, *Long nightmare ending for wrongly convicted man; DNA brings dismissal of case after 16 years*, The Times-Picayune, May 26, 2006, at 1; The Innocence Project.

- *Commonwealth v. Burke (MA)*: A police dog led officers to the home of Edmund Burke during an investigation in the murder of a 75-year old woman in Massachusetts. The assailant bit the victim on her breast, which led an odontologist to compare photos of the wound to a mold of Burke's teeth and conclude he had made the bite "to a reasonable degree of scientific certainty." However, just weeks after his arrest, DNA taken from the saliva from the bite mark was tested and Burke was released. The Innocence Project. He subsequently sued for false arrest. *Burke v. Town of Walpole*, 405 F.3d 66, 73 (1st Cir. 2005).

- *State v. Otero (MI)*: Forensic odontologist testified at preliminary examination that Otero was "the only person in the world" who could have inflicted the critical bite marks at issue. After spending five months in jail awaiting trial, the State dismissed the charges after a newly developed DNA test conclusively excluded Otero as the source of the saliva and bite mark on the victim. *Otero v. Warnick*, 241 Mich. App. 143 (Mich. Ct. App. 2000).²

- *State v. Brewer (MS)*: Brewer was found guilty and sentenced to death based primarily upon bite mark testimony, the only evidence the jury considered that allegedly connected him to crime. After many years on death row, Brewer was exonerated in 2008 following the databank identification and subsequent confession of the real perpetrator. At the time of his exoneration, Brewer was awaiting a retrial. *Brewer v. State*, 819 So.2d 1169 (Miss. 2002); Craig M. Cooley & Gabriel S. Oberfield, *Increasing Forensic Evidence's Reliability and Minimizing Wrongful Convictions: Applying Daubert Isn't the Only Problem*, 43 Tulsa L. Rev. 285, 358-59 (2007).

- *People v. O'Donnell (NY)*: O'Donnell became a suspect in a sexual assault case based on a police sketch, and was later identified as the assailant by the victim. Despite a contradictory eyewitness account, O'Donnell was arrested and convicted based upon the conclusions of a forensic odontologist who claimed that bite mark impression left on the victim matched his teeth. Subsequent DNA testing of the saliva left on the bite mark and

fingernail scrapings disproved this conclusion, but not before O'Donnell spent several years in prison. Kiawana Rich, *Story of Innocence: 21 years, a crime he didn't commit*, Staten Island Advance, Oct. 23, 2007, at A4; The Innocence Project.

- *People v. Brown (NY)*: Roy Brown was convicted for a 1992 murder based almost entirely upon the testimony of a local dentist who testified that his teeth matched marks left on the victim's body during the attack. This "expert" provided this conclusion even though Brown was missing two front teeth and the "bite marks" had all the front teeth intact. Brown proved his own innocence from a jail cell when he confronted the actual perpetrator by letter. The actual perpetrator killed himself five days later, but it took the courts another three years to complete DNA testing that both exonerated Brown and implicated the then-deceased killer. Brown was finally released in 2007. The Innocence Project, *Proven Innocent by DNA, Roy Brown is Fully Exonerated* (March 5, 2007), at <http://www.innocenceproject.org/content/424.php>.

- *State v. Washington (TX)*: Calvin Washington was convicted of murder and sentenced to life in prison in Texas in 1987. Washington allegedly robbed, raped, and murdered the victim. A forensic odontologist testified that certain bruises on the victim's body were bite marks that matched Williams' teeth. Washington served thirteen years in prison before DNA testing exonerated him in 2001. DNA testing of bodily fluids conclusively established the culpability of a different perpetrator, since deceased.

25. In 1995, Dr. Alder's methodology and conclusions in Mr. Leal's case and, particularly, his unwavering certainty of confidence is similar to the pattern and practices employed in the numerous erroneous conviction cases. These exonerations from bitemark misidentification cases have produced a myriad of negative reactions to bitemark comparisons by the larger forensic community, members of the ABFO, the United States Congress and the courts.

26. It is my opinion and conclusion from the research data and actual casework I have cited that bitemark analysis is unreliable, especially so when used, as Dr. Adler did in this case, to "match" or positively identify the alleged

biter. Dr. Alder assumptions, methods and opinions in this case are scientifically unsupportable and are wholly unreliable.

Date: June 14, 2011

C Michael Bowers

Charles Michael Bowers