

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
WESTERN DIVISION

No. 3:75-CR-26-F
No. 5:06-CV-24-F

UNITED STATES OF AMERICA

v.

AFFIDAVIT OF
JOSEPH A. DIZINNO

JEFFREY R. MacDONALD,
Movant

Joseph A. DiZinno being duly sworn does depose and say:

1. I am currently employed as the Technical Director, Law Enforcement and Homeland Security, BAE Systems, a global company engaged in defense and security systems, headquartered in Arlington, Virginia, and have been employed in this capacity since May 2008.
2. In 2008 I retired from the Federal Bureau of Investigation (FBI) after 22 years of service as a Special Agent.
3. At the time of my retirement I held the position of Assistant Director for the FBI's Laboratory Division. My responsibilities as Assistant Director included: leading more than 550 FBI Laboratory personnel, providing forensic examinations, technical support, expert witness testimony,

and training to federal state and local law enforcement agencies.

I am a member of the American Academy of Forensic Sciences.

4. After being appointed as a Special Agent of the FBI in 1986, I served in the following positions in the field, and at FBI Headquarters, during my career: Special Agent (1986-1989); Supervisory Special Agent, FBI Laboratory (1989-1997); Unit Chief, Mitochondrial DNA Unit, FBI Laboratory (1997-2000); Section Chief- Scientific Analysis Section, FBI Laboratory (2000-2002); Deputy Assistant Director, FBI Laboratory (2002-2006); and Assistant Director Laboratory Division, FBI.

5. I have received the following awards for my service with the FBI: Numerous incentive awards and the 1996 FBI Director's Award for Technology and Scientific Advancement.

6. I have authored, or co-authored, the following articles in relation to DNA testing and procedures:

2002 DiZinno, J., Lord, W., Collins-Morton, M., Wilson, M., Goff, L., "Mitochondrial DNA Sequencing of Beetle Larvae (Nitidulidae: Omosita) Recovered from Human Bone", Journal of Forensic Science, (2002) 47:, 1337-1339.

1999 DiZinno, J., Wilson, M., Budowle, B., "Typing of DNA Derived from Hairs", Forensic Examination of Hair, (1999) Chapter 3, 155-170.

1997 Wilson, M., Polanskey, D., Replogle, J., DiZinno, J., Budowle, B., "A family exhibiting heteroplasmy in the human mitochondrial DNA control region reveals both somatic mosaicism and pronounced segregation of mitotypes," Human Genetics, (1997) 100: 167-171

1996 Sweet, D., DiZinno, J., "Personal Identification through Dental Evidence - Tooth Fragments to DNA," California Dental Association Journal, May 1996.

1995 Smith, B., Holland, M., Sweet, D., DiZinno, J., "DNA and Forensic Odontology," Manual of Forensic Odontology, Chapter 10, Third Edition, 1995.

1995 Wilson, M., DiZinno, J., Polanskey, J., Replogle, J., and Budowle, B., "Validation of Mitochondrial DNA Sequencing for Forensic Casework Analysis," International Journal of Legal Medicine, 108: 68-74.

1995 Wilson, M., Polanskey, D., Butler, J., DiZinno, J., Replogle, J., and Budowle, B., "Extraction, PCR Amplification and Sequencing of Mitochondrial DNA from Human Hair Shafts," Biotechniques, April 1995, Vol. 18, No. 4.

1993 Stoneking, M., Holland, M., Fisher, D., Budowle, B., Wilson, M. and DiZinno J., "Guidelines for the use of Mitochondrial DNA Sequencing in Forensic Science," FBI Crime Laboratory Digest, October, 1993.

1991 Owsley, D., Ubelaker, D. and DiZinno, J., "Unknown to Positive ID: A Forensic Anthropological Investigation," Journal of Forensic Identification, November, 1992.

7. In 1975, I graduated from the University of Notre Dame, with a Bachelor of Science, Pre-Professional Degree. In 1980, I graduated from the Ohio State University, College of Dentistry with a Doctor of Dental Surgery (DDS) Degree.

8. Prior to joining the FBI I owned and operated a family dental practice in Mayfield Heights, a suburb of Cleveland, Ohio.
9. In 1986, I entered onto duty with the FBI at the FBI Academy, Quantico, Virginia, and was appointed as a Special Agent of the FBI.
10. After completing new agent training, I was assigned to the FBI Washington Field Office. From 1986 to 1989 I was assigned as a Special Agent where my duties included: enforcing a wide range of federal statutes involving organized crime, white collar crime, bank robbery, kidnapping and extortion cases.

11. In 1989 I was assigned to the Hairs and Fibers Unit of the FBI Laboratory in Washington, D.C. as a Supervisory Special Agent, and began my training to become an Agent-Examiner of questioned hairs and fibers. Following a one year period of instruction I was qualified as an Agent-Examiner for hairs and fibers.
12. During my service with the FBI Laboratory's Hair and Fiber Unit I conducted an estimated tens of thousands of examinations and comparisons of questioned hairs.
13. I was qualified as an expert witness in the field of hair and fiber examinations and testified in Federal and State criminal cases across the country. I also served as an investigative resource on high profile cases involving the dental identification of human remains.
14. In 1992, as the potential applications of mitochondrial DNA testing were actively being explored by the FBI Laboratory, I was assigned to work in this field. I was part of a team which researched and validated forensic mitochondrial analysis capabilities. When mitochondrial DNA analysis was first applied to forensic case work in 1996, the FBI Laboratory gained the ability to characterize a DNA profile from evidence containing small or degraded quantities of DNA from hair, bone,

teeth and bodily fluids. During this period, I also participated in various interagency and scientific community working groups studying the potential applications and limitations of DNA testing. In 1997, I was appointed as the Unit Chief, DNA Unit 2, responsible for supervising forensic mitochondrial DNA testing. In 2000, I was appointed as the Chief of the Scientific Analysis Section, and supervised 200 case-working personnel handling a broad range of forensic investigations, including both nuclear and mitochondrial DNA, chemistry and trace evidence examinations.

15. In 1989, the FBI Laboratory began accepting cases for nuclear DNA testing. In 1996, **the** FBI Laboratory began accepting cases for mitochondrial DNA testing.

16. In February 1991, prior to the availability of mitochondrial DNA testing at the FBI Laboratory, as a means of confirming microscopic associations between questioned (Q's) and known (K's) hairs, and while assigned to the Hairs and Fibers Unit as a Supervisory Special Agent- Examiner, I was asked to confirm by microscopic examination the prior association found by Supervisory Special Agent- Examiner Michael P. Malone between a pubic hair found in specimen Q79, with the known pubic hair exemplars (K6 through K22) of Jeffrey Robert

MacDonald, in Lab No. 10201005. Special Agent Malone had concluded, based upon his microscopic comparisons that the Q79 pubic hair exhibited the same microscopic characteristics as the pubic hairs of Jeffrey Robert MacDonald. In accordance with the standard FBI Laboratory protocol in effect then, and at the time of my retirement, another Examiner not involved in the case was routinely asked to independently confirm the microscopic association. Hair associations, unlike fingerprints, have never been considered an absolute or positive basis for identification by the FBI Laboratory. The most that could be said was that a questioned hair, which had the same microscopic characteristics as a known exemplar, was consistent with, or could have, come from an identified individual.

17. I conducted microscopic examinations of four pubic hair specimens identified as being the known exemplars of Jeffrey MacDonald, and confirmed Special Agent Malone's association of the Q79 pubic hair with the known exemplars and reported this on the Confirmation Form (Exhibit 1) in Lab No. 10201005, which I signed on February 4, 1991. By this process, I independently determined that the Q79 pubic hair exhibited the same microscopic characteristics as the exemplar pubic hairs reported to be from Jeffrey Robert MacDonald, and consequently, was consistent with having

originated from Jeffrey Robert MacDonald. I have been furnished with a copy of the February 4, 1991 Report of the FBI Laboratory, Lab No. 10201005, to the Special Agent in Charge of the Charlotte Division, Re: Jeffrey Robert MacDonald, CGR-Murder (Exhibit 2), that reflects that the Q79 pubic hair " ... exhibits the same individual microscopic characteristics as the pubic hairs of JEFFREY MACDONALD, and accordingly, is consistent with having originated from JEFFREY MACDONALD." This statement is consistent with the results of my own examination as reflected in Exhibit 1. Further, the wording of the conclusion in the Report (Exhibit 2), with respect to the Q79 pubic hair, is in accord with standard FBI protocols then, and at the time of my retirement. Particularly in light of the next sentence in the Report: "It is pointed out that hair comparisons do not constitute a basis for absolute personal identification."

18. I have been advised that in March of 2006, the Armed Forces DNA Identification Laboratory (AFDIL) of the Armed Forces Institute of Pathology (AFIP) reported, based upon mitochondrial DNA analysis of AFDIL Specimen 75A, that the Q79 hair was not consistent with any other sample tested, including the known mitochondrial DNA reference sample (AFDIL 199A) of Jeffrey MacDonald. I do not find this conclusion

at odds with my determination in 1991 that the Q79 pubic hair exhibited the same microscopic characteristics as the known pubic hair exemplars of Jeffrey MacDonald. Microscopic comparison of hairs and the subsequent development of mitochondrial DNA extraction and sequencing are based upon entirely different technologies, with different capabilities to discriminate between donors. It has long been recognized by the FBI that hair associations are not an absolute basis for personal identification. This is also true of mitochondrial DNA comparisons, since mitochondrial DNA sequences are not unique to individuals. Mitochondrial DNA sequences can, however, be used to exclude an individual as the donor of a hair. This is apparently what has occurred in regard to the Q79 pubic hair; Jeffrey MacDonald is not the donor of this hair if his mtDNA sequence doesn't match that of the Q79 hair.

19. Although not common, as later research has shown, it is possible for two hairs to exhibit the same microscopic characteristics, although subsequent DNA comparison demonstrates they originated from different donors. In 2002 the Journal of Forensic Science published *Correlation of Microscopic and Mitochondrial DNA Hair Comparisons* by Max

Houck, M.A.¹ and Bruce Budowle, Ph.D.² (J. Forensic Sci. Sept.20002, Vol.47, No.5). The research involved a review of 170 hair examinations conducted by the FBI between 1996 and 2000. The authors found that "of the 80 hairs that were microscopically associated, nine comparisons were excluded by mtDNA analysis." (Id. , p.3). One of the nine hairs that was previously associated by microscopic comparison was a brown Caucasian pubic hair. (Id.,p 3, Table 4).

The authors further state:

These nine mtDNA exclusions should not be construed as a false positive rate for the microscopic method or a false exclusion rate for mtDNA typing: it displays the limits of the comparison of hairs examined in this sample only and not for any hairs examined by any particular examiner in anyone case. The microscopic comparison is not an absolute identification and therefore some small number of individual hairs that have a congruence of certain characteristics, even though they originated from separate individuals, may exist. (Id., 3).

In January 2004, the FBI Laboratory published:

Microscopy of Hair Part 1: A Practical Guide and Manual for Human Hairs, by Douglas W. Deedrick, Supervisory Special Agent, Scientific Analysis Section and Sandra

1 Project Director, Forensic Science Initiative, West Virginia University.

2 Then Senior Scientist, Federal Bureau of Investigation Laboratory.

L. Koch, Physical Scientist, Trace Evidence Unit.³At page 13, the manual states:

DNA Examinations

Hairs that have been matched or associated through a microscopic examination should also be examined by mtDNA sequencing. Although it is uncommon to find hairs from two different individuals exhibiting the same microscopic characteristics, it can occur. For this reason, the hairs or portions of hairs should be forwarded for mtDNA sequencing. The combined procedures add credibility to each.

In February 1991, when I performed my confirmatory microscopic examination of the Q79 pubic hair, the FBI Laboratory did not have mitochondrial DNA sequencing capability as a means of further confirmation of hair associations.

20. In February 1999 I was serving as the Chief of the Mitochondrial DNA Unit of the FBI Laboratory. In that capacity, I was asked by Department of Justice Attorney (DOJ) Brian Murtagh to provide assistance in determining the potential suitability and divisibility for DNA testing purposes of hairs mounted on glass microscope slides, submitted by the Charlotte Field

³Forensic Science Communications, January 2004, Volume 6, Number 1.

Office. These hairs had been the subject of court ordered DNA testing in USA v. Jeffrey MacDonald. Consistent with standard operating procedures in the FBI Laboratory, the slides were first be examined by the Trace Evidence Unit (the successor to the Hair and Fiber unit) to identify any human hairs on the slides. In this case the Trace Evidence Agent Examiner assigned in 1999 was Robert Fram, and the FBI Lab No. was 990111018.

21.

After Special Agent Fram had conducted his examinations I received a number of slides which were already marked with FBI "Q" numbers. (Once a "Q" number is assigned and marked on a specimen in the FBI Lab, that "Q" number is never re-assigned to a different specimen in the same case.) Although my purpose in examining any hairs present on the slides was to determine their potential suitability and divisibility for DNA testing, as a qualified hair examiner, I also described in my notes the characteristics of the hairs as to race, body origin site, or root type that I observed. (Exhibit 3). In noting the characteristics of a hair, I used the "Q" number marked on the slide, and the abbreviations employed by hair examiners in the FBI Laboratory. For

example, "COHH" I used to describe a Caucasian origin head hair and "COPH" I used to describe a Caucasian origin pubic hair. Similarly, I used the term "club" to refer to the root of a hair whose observable characteristics indicated that the hair had been naturally shed; I used "FR" to record observable characteristics of a hair root that indicated that the hair had been forcibly removed. In addition to recording in my notes what I observed and concluded with respect to suitability and divisibility for MtDNA testing, I also marked the slides examined (and the slide mailers) with my initials "JAD".

22. My notes (Exhibit 3) for February **11**, 1999, in Lab No. 990111018, reflect the following observable characteristics for the two hairs present in Specimen Q87:

~1" CO body, club [approximately 1 inch body hair of Caucasian origin, which was naturally shed];
~ 1/8", CO frag, club [approximately 1/8 inch Caucasian origin hair fragment, which was naturally shed] .4

41 have followed the actual quote with a translation in brackets.

23. My notes (Exhibit 3) for February 11, 1999, in Lab No. 990111018, reflect the following observable characteristics for Specimen Q79:
- 2", COPH, club [approximately 2" inch Caucasian origin pubic hair, which was naturally shed].5
24. My notes (Exhibit 3) for February 11, 1999, in Lab No. 990111018, reflect the following observable characteristics for Specimen Q137:
- 3/4", CO, club (very fine) [approximately 3/4 inch, Caucasian origin , naturally shed, very fine hair] .
25. My notes (Exhibit 3) for February 11, 1999, in Lab No. 990111018, reflect the following observable characteristics for one of the four hairs present on Specimen Q96:
- 19" , COHH, FR [approximately 19 ~ inch Caucasian Origin Head Hair, which had been forcibly removed] .

s Although I probably did not recognize it as such at the time, the Q79 pubic hair I examined for DNA testing purposes in 1999, is the same Q79 pubic hair that I compared with Jeffrey MacDonald's known exemplars in 1991. I make this statement because, as I indicated above, "Q" numbers are not repeated in the same criminal case.

26. My notes (Exhibit 3) for February 11, 1999, in Lab No. 990111018, reflect the following observable characteristics for Specimen Q125:


- 2", body, FR [approximately 2 inch body hair which had been forcibly removed].

Further your affiant sayeth not.



Joseph A. DiZinno, DDS

Subscribed and sworn before me this 18.. day of November, 2011.



Notary Public,
State of Virginia

County of Arlington

Fairfax

