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COUNTY OF STANISLAUS
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SUPERIOR COURT OF CALIFORNIA, COUNTY OF STANISLAUS

PEOPLE OF THE STATE OF

CALIFORNIA,

Plaintiff,

VS.

SCOTT LEE PETERSON,

Defendant.

Case No.: 1056770

MITOCHONDRIAL DNA

EVIDENTIARY RULING

The Court has considered the Defendant's motion to exclude the mitochondrial DNA evidence, filed October 7, 2003; the People's Points and Authorities in Support, filed October 14, 2003; the testimony of the People's expert, Dr. Constance Fisher, the testimony of the Defense expert, Dr. William Shields, and, lastly, the testimony of the People's rebuttal expert, Dr. Bruce Budowle. The Court has also read all of the documents submitted (People's No. 1 to 43 and 83, 96, and 97; and Defendant's A to K).

The admissibility of mtDNA evidence is new and novel in California as there is no appellate decision involving its use. Therefore, the Court required a full Kelly hearing (People

1 v. Kelly (1976)17 C3d 24). This Court must determine whether
2 the test is generally accepted in the relevant scientific
3 community, whether the testimony is given by a properly
4 qualified expert, and whether correct scientific procedures have
5 been applied in this case.

6 Extensive testimony was elicited from the three
7 experts and the Court has also read all of the daily transcripts
8 in reaching the following FINDINGS:

9 The Court has considered the criticisms and issues
10 specific to mtDNA testing, specifically, hetroplasmcy,
11 contamination, paternal leakage, mutation, instrument
12 malfunctions, false inclusions, false exclusions, validation,
13 confidence interval, self-reporting for the database, and
14 insufficient database; and the Court is satisfied that the
15 testing and comparison of hair samples is generally accepted in
16 the relevant scientific and forensic community.

17 The testing is based on well-established
18 decontamination and extraction methods and then amplification
19 procedures by way of PCR (polymerase chain reaction) technology
20 in order to obtain sufficient DNA for examination. Then
21 standard capillary-electrophoresis is performed in order to
22 quantitate the amount of DNA available and to validate the
23 result. Next, the substance is sequenced where the order of the
24 chemicals, or bases, is determined. Lastly, this sequence is
25 compared to other samples to determine if it is similar or
26 different.

27 All of these procedures are neither new nor novel, as
28 they have been utilized for many years in the analysis of

1 nuclear DNA. There is established California case law attesting
2 to their admissibility in court. (People v. Morganti (1996) 43
3 CA4th 643 and People v. Reilly (1987) 196 CA3d 1127). The
4 procedures and techniques used in the analysis of mtDNA are the
5 same that have been used and approved involving nuclear DNA.
6 The only difference is that the mitochondrial area is being
7 examined rather than the nuclear area. This type of examination
8 was necessary in this case as the hair sample (contained in
9 People's No. 35) possessed no nuclear material. This type of
10 evidence has been approved by courts in at least ten other
11 jurisdictions.¹ No case was cited in which this evidence has
12 been disallowed.

13 The Court has considered the testimony of the Defense
14 expert, Dr. Shields, and also the writings of Dr. Bandelt
15 (Defense G) and finds that their positions are untenable in face
16 of the testimony of the People's experts, plus the transcript of
17 Dr. Mitchell Holland in People v. Lamont Johnson on November 21,
18 2001 (Peoples No. 21A). Not only were the People's experts
19 better qualified to render such an opinion, but they did so
20 firmly and unequivocally. On the other hand, Dr. Shields

21
22 ¹ New York, People v. Ko (2003) 304 A.D. 2d 451
23 Michigan, People v. Holtzer (2003) 660 N.W. 2d 405
24 Florida, Magaletti v. Florida (2003) 847 So. 2d 523
25 Arkansas, Ware v. State (2002) 75 S.W. 3d 165
26 Federal Court, United States v. Coleman (2002) 202 F. Supp. 2d 962
27 Connecticut, State v. Pappas (2001) 776 A. 2d 1091
28 Mississippi, Adams v. State (2001) 794 So. 2d 1049
Tennessee, State v. Scott (2000) 33 S.W. 3d 746
South Carolina, State v. Council (1999) 515 S.E. 2d 508
North Carolina, State v. Underwood (1999) 518 S.E. 2d 231.

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1 refused to provide such an opinion. Therefore, the weight of
2 the evidence is that these procedures are reliable and have
3 gained general acceptance in the relevant scientific and
4 forensic community. The Court further finds that Dr. Fisher was
5 qualified to testify and that she and the FBI laboratory
6 utilized correct scientific procedures in this case.

7 The main issue is the manner in which the comparison
8 is to be reported. The Court has considered People's No. 30,
9 the April 2003 SWGDAM guideline titled "Mitochondrial DNA
10 Interpretation" where the following guidelines are offered:

- 11 1. Exclusion - if there are two or more nucleotide
12 differences between the questioned and the known
13 sample - the sample can be excluded as originating
14 from the same person or maternal linkage.
- 15 2. Inconclusive - if there is one nucleotide
16 difference between the questioned and known sample.
- 17 3. Cannot exclude - if the sequences from questioned
18 and known samples have a common base at each position
19 or a common length variant in the HV2 C-stretch, the
20 samples cannot be excluded as originating from the
21 same person or maternal linkage.

22 In this case, Dr. Fisher testified that the Defendant
23 was excluded as the contributor of the hairs on the pliers and
24 that Laci Peterson cannot be excluded as a contributor. She
25 further added that only one in every 112 Caucasians with an
26 upper bound frequency estimate of .89% would be expected to have
27 this sequence. These calculations were based on a database of
28 5,071 individuals (Defendant's F) with only 1,833 being of
Caucasian origin. It is noted that other courts have allowed
similar calculations with smaller databases.

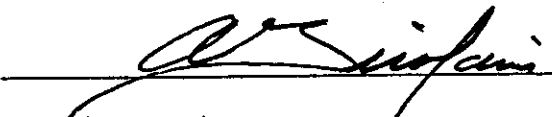
Under the evidence submitted, the Court is satisfied

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1 that these figures are reliable and scientifically valid and
2 objectively verifiable. They are also probative as to identity
3 and will assist the trier of fact in a meaningful way, and the
4 evidentiary value clearly outweighs any prejudicial effect. The
5 Court is mindful of the instruction that was given in State v.
6 Pappas (2001) 776 A. 2d 1091, where the jury was admonished of
7 the significant difference between mitochondrial DNA and nuclear
8 DNA. Any issues in this regard clearly go to the weight and not
9 to the admissibility.

10 On the basis of all of the foregoing, the Defendant's
11 motion to exclude the mitochondrial DNA evidence is denied. The
12 People have met their burden by a preponderance of the evidence.
13 (People v. Ashmus (1991) 54 C3d 932). The Court will exclude
14 Dr. Fisher's reference to the comparison of the Hispanic
15 database, namely that one in every 159 Hispanics would have the
16 same sequence, as that is not relevant to this proceeding.

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18
19 Dated: November 18, 2003


A. Girolami
Judge of the Superior Court