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828 P.2d 1274
73 Haw. 130
STATE of Hawaii, Plaintiff-Appellee,
v.
Charles MONTALBO, Defendant-Appellant.
No. 15302.
Supreme Court of Hawai'i.
March 27, 1992.

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Syllabus by the Court

1. Court did not abuse discretion by lifting discovery sanction precluding introduction of DNA evidence based on computer program where defendant's right to discovery of computer program was conditioned on materiality to preparation of defense, defendant failed to show a specific need for the program itself, and there was evidence that defendant had adequate alternate access.

2. Admissibility of novel scientific evidence is determined by application of modified standard in State v. Kim, 64 Haw. 598, 645 P.2d 1330 (1982) that requires the court to balance several factors including factor articulated in Frye v. United States, 293 F. 1013 (D.C.1923), of general acceptance of evidence in particular field to which it belongs, then determine if the evidence will be more probative than prejudicial.

2. [73 Haw. 131] Whether novel scientific evidence should be admitted at trial rests within the sound discretion of the trial court and will not be overturned unless there is a clear abuse of discretion.

3. FBI genotype frequency statistics would assist the trier of fact to understand the evidence and would add to common knowledge of jury who would not ordinarily know of the frequencies and would otherwise find it difficult to evaluate the significance of the FBI's observed match between defendant's DNA and that found at the scene of the crime.

Statistical or sampling theory is not novel or controversial.

4. DNA paradigm is not controversial and is widely accepted in the relevant scientific community.

The basic techniques underlying the FBI laboratory's "restriction fragment length polymorphism" DNA analysis, or RFLP analysis, are widely accepted in the relevant scientific community.

In case where State sought to admit DNA profiling evidence at trial, court did not abuse its discretion in finding evidence of the FBI laboratory's genotype frequencies reliable enough to admit at trial where there was evidence that FBI laboratory's protocols and techniques were reliable, and that FBI's statistical approach was reliable, generally accepted, conservative, and favored the defendant.

In case where State sought to admit DNA profiling evidence at trial to give jury an idea of population frequency of a match between DNA profiles, court did not abuse its discretion in finding evidence of FBI laboratory's genotype frequencies admissible where court could have concluded that jury could place appropriate weight on frequencies for various ethnic groups given FBI failed to place defendant in a single ethnic category, statistics themselves were conservative, and therefore, court could have concluded that probative value of the evidence would not be outweighed by prejudice.

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5. Defendant's claim of ineffective assistance of counsel was meritless where defendant failed to show that counsel's failure to call [73 Haw. 132] expert witness to rebut DNA profiling evidence introduced at the motion in limine would have allowed him to exclude any or all DNA evidence or that this exclusion would have potentially affected the verdict.

[73 Haw. 146] Carolyn Burton, Parton & Burton, Wailuku, for defendant-appellant.

James T. Carter, Deputy Pros. Atty., Office of Pros. Atty., Wailuku, for plaintiff-appellee.

Before LUM, C.J., and PADGETT, HAYASHI, WAKATSUKI, and MOON, JJ.

[73 Haw. 132] LUM, Chief Justice.

Defendant-appellant Charles Montalbo (appellant) was convicted of Assault in the Second Degree, Hawaii Revised Statutes (HRS) § 707-711(1)(d), Attempted Sexual Assault in the First Degree, HRS §§ 705-500 and 707-730(1)(a), and Sexual Assault in the First Degree, HRS § 707-730(1)(a). On appeal, he claims that Circuit Court Judge Boyd P. Mossman improperly lifted a discovery sanction previously imposed by Judge E. John McConnell. Appellant also maintains the trial court should have granted his motion in limine to exclude evidence showing that

his DNA 1 matched DNA from the scene of the crime, and that he was denied effective assistance of counsel because counsel failed to call expert witnesses to rebut the evidence introduced at the hearing of his motion. We affirm.

I.

Appellant was indicted on March 23, 1990, on charges that he had sexually assaulted California resident Kristi Vest while she was sunbathing alone at Waihee Beach Park, on the island of Maui. Trial was set for July 23, 1990. On October 4, 1990, appellant [73 Haw. 133] moved under Rule 16 of the Hawaii Rules of Penal Procedure (HRPP) to compel discovery of:

1. FBI manuals of procedures and protocols for DNA typing and interpretation.
2. Lab notes and case files with respect to all samples in the case.
3. Autoradiographs reflecting the patterns or absence of patterns at each genetic loci.
4. Method for declaring an inclusion or match, including protocols, papers, and hard and soft copies of the computer program used.
5. FBI method of calculating probabilities of a match in different ethnic populations.
6. Copies of scientific studies ("validation of enzyme 'HAE III' ").
7. Copies of scientific validation of probes used by the FBI.
8. FBI laboratory accreditation.
9. Quality control records of FBI material and equipment.

Appellant's motion was granted.

On November 5, 1990, appellant moved to impose sanctions on the State for failure to comply with his discovery motion, alleging that the sixty-five pages of information produced did not satisfy his discovery requests four through nine, and that State's noncompliance had prevented him from "obtaining independent expert review of the DNA profiling evidence in the case." The court, Judge McConnell presiding, awarded sanctions precluding the use of evidence based on the computer program listed under request four. This sanction was subject to reconsideration upon continuance of trial past November 13, 1990. The trial was continued to December 10, 1990, and the court, Judge Mossman presiding, lifted the discovery sanction.

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[73 Haw. 134] On December 14, 1990, appellant filed a motion in limine to exclude all DNA profiling evidence. This included evidence that DNA recovered from the scene of the assault matched DNA taken from appellant, and that the probability of such a match was one in 1,000 in the hispanic population. At the hearing, the court heard testimony from Michael Vick, special FBI agent assigned to the DNA analysis unit of the FBI laboratory in Washington, D.C.; Dr. Bruce Budowle, a research chemist with the FBI who coauthored a manuscript 2 describing the FBI's procedures and reasoning in establishing frequencies of particular alleles 3 in the population; and Dr. David Goldman, the Director of the National Institute on Alcohol Abuse and Alcoholism genetics laboratory, attempting to identify genes involved in alcoholism and other behaviors. At the close of the hearing, the court denied appellant's motion.

II.

Appellant argues that he was not afforded discovery of the computer program and was therefore unable to defend himself at trial. He asserts that Judge Mossman "ignored" Judge McConnell's prior ruling ordering production of the program, when he lifted the sanction precluding admission of evidence obtained through the use of the FBI's computer program.

[73 Haw. 135] HRPP Rule 16(e)(8) provides that if a party has failed to comply with a discovery order, the court may "order such party to permit the discovery, grant a continuance, or it may enter such other order as it deems just under the circumstances." A court has broad discretion in the decision to impose discovery sanctions. State v. Marzo, 64 Haw. 395, 641 P.2d 1338 (1982).

Appellant was entitled to discovery either under HRPP Rule 16(b)(1)(iv), which encompasses tangible objects, or Rule 16(b)(1)(iii), which includes reports or statements of experts. Both rules give appellant a right to discovery conditioned on the materiality of the item to the preparation of the defense, and it is clear from our review of the record that Judge McConnell also considered appellant's right to discovery of the computer program, conditional. When appellant moved for sanctions, Judge McConnell informed appellant that he had not sufficiently justified his allegation that discovery was inadequate, and that he should provide specific support by submitting an affidavit from his expert. However, the judge stated that as trial was a week away, he would impose a sanction precluding introduction of evidence based on the computer program. Judge McConnell issued an order imposing sanctions expressly subject to reconsideration if trial were continued to a date past November 13, 1990. Thus, Judge Mossman's reconsideration was proper as it followed on continuance of the trial to December 10, 1990.

At the hearing, Judge Mossman was told that appellant had been provided additional materials concerning the computer program, and that appellant's expert, Dr. Ford, was a defense consultant in another case set for trial that month in which the program had been produced to the defense. Appellant, however, did not provide further clarification of his allegation that discovery was defective. We therefore find no abuse of discretion in Judge Mossman's decision to lift the sanction precluding introduction of evidence based on the computer program.

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[73 Haw. 136] III.

Appellant objects to the court's decision to deny his motion to suppress DNA profiling evidence. Appellant's objection is focused on the statistical evidence that was introduced to show the probability of a coincidental match. Appellant argues that this evidence did not meet the standard for admissibility set forth in Frye v. United States, 293 F. 1013 (D.C.Cir.1923) and in cases adopting and modifying the Frye rule. He maintains that this court had previously adopted the Frye test. State v. Chang, 46 Haw. 22, 374 P.2d 5 (1962).

Whether scientific evidence is reliable depends on three factors, the validity of the underlying principle, the validity of the technique applying that principle, and the proper application of the technique on the particular occasion. P. Giannelli, The Admissibility of Novel Scientific Evidence Frye v. United States, a Half-Century Later, 80 Colum.L.Rev. 1197, 1200-01 (1980) (citations omitted). The test of admissibility of scientific evidence set forth in Frye is whether the scientific procedure upon which expert testimony is based, is "sufficiently established to have gained general acceptance in the particular field in which it belongs." Frye, 293 F. at 1014. Thus the focus of the test is not the validity of the underlying theory or the procedure itself, but the opinions of experts within the relevant scientific field. See United States v. Addison, 498 F.2d 741, 743-44 (D.C.Cir.1974) (test seeks to assure that those most qualified to assess the general validity of a scientific method will have the determinative voice). At a "rather early stage in the use of scientific evidence" at trial, most courts adopted the standard in Frye. Giannelli, supra at 1204.

Frye has been subject to scathing attacks. Id. at 1206 (citations omitted). It has been criticized as causing unacceptable delays in the admissibility of reliable evidence due to the lag between the development of new techniques and their [73 Haw. 137] acceptance in the scientific community. 4 Id. at 1223. Another criticism of the test is that it is ambiguous and difficult to apply. Id.; see generally, id. at 1208-23. Some courts using the Frye test have focused on whether the scientific community accepts the theory underlying the technique. See, e.g., Addison, 498 F.2d at 743. Others have focused on acceptance of the technique itself, or on scientific acceptance of the technique used on specific types of samples. See, e.g., People v. Young, 425 Mich. 470, 485-501, 391 N.W.2d 270, 277-84 (1986). Finally, Frye has been criticized as obscuring the critical question of the relevance of scientific evidence to the issues in dispute. Giannelli, supra at 1226. See generally, McCormick, McCormick on Evidence, § 202 at 605-09 (1984).

A number of jurisdictions have abandoned Frye in favor of a more flexible approach that treats reliability as an aspect of relevancy. Giannelli, supra at 1203. McCormick, supra at 605-06 (1954). Further, the current status of the Frye test is difficult to assess, as courts have deviated from strict application of the test, have developed variants, or have selectively applied the test. Giannelli, supra at 1228; McCormick, supra at 605-06.

Although appellant argues that this court adopted the Frye test in State v. Chang, 46 Haw. 22, 374 P.2d 5 (1962) a decision in which the admissibility of a polygraph test was at issue, Chang relied primarily on precedent from other jurisdictions and merely [73 Haw. 138] quoted New York authority similar to the Frye rule. Appellant also indirectly suggests that Frye should be adopted because this court's analysis in

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State v. Kim, 64 Haw. 598, 645 P.2d 1330 (1982), is consistent with Frye. We agree that Kim is broad enough to encompass the Frye test. In Kim, we stated that:

The critical inquiry with respect to expert testimony ... is whether such testimony 'will assist the trier of fact to understand the evidence or determine a fact in issue....' Rule 702, Haw.R.Evid. Generally, in order to so assist the jury an expert must base his testimony upon a sound factual foundation; any inferences or opinions must be the product of an explicable and reliable system of analysis; and such opinions must add to the common understanding of the jury. See Rule 703, Haw.R.Evid.

Id. at 604-05, 645 P.2d at 1336 (footnotes and citations omitted). Therefore, the reliability prong of Kim could include the Frye test, but Kim is not necessarily limited to general acceptance in the scientific community. Under the reliability prong of Kim, it is possible that a court could also consider the scientific procedure itself, as well as other evidence of the procedure's reliability.

We believe the standard articulated by this court in Kim remains the proper standard to apply to the admission of scientific evidence. Although general acceptance in the scientific field is highly probative of the reliability of a scientific procedure, there are other indicators of suitability for admission at trial. 5 Examination of either the principle underlying scientific evidence, or of the [73 Haw. 139] procedure itself, may be a sufficient basis upon which to admit or deny evidence at trial, depending upon the procedure as well as upon the relevance of the evidence to issues at trial. 6 Moreover, admission of scientific evidence is not solely a question of reliability. See McCormick, supra, § 202 at 604 (question is whether scientific evidence on balance will assist the jury). A court must consider whether the evidence presented at trial would add to the common knowledge of the jury, would usurp the jury's function as a finder of fact, or would be likely to confuse and prejudice the jury. These determinations may only be made on examination of the scientific procedure itself. See McCormick, supra, § 203 at 609 (traditional balancing method treating general acceptance as one indication of validity, accuracy, and reliability, focuses court attention where it belongs, on actual usefulness of evidence).

[73 Haw. 140] We therefore "adopt" the Frye test of general acceptance in the relevant scientific community under the reliability prong of the Kim analysis. We hold that a court should weigh general acceptance along with the other factors listed below in order to determine, under Hawaii Rules of Evidence (HRE) Rules 702 and 703, whether scientific evidence should be admitted at trial. These factors include whether:

1) the evidence will assist the trier of fact to understand the evidence or to determine a fact in issue;

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2) the evidence will add to the common understanding of the jury;

3) the underlying theory is generally accepted as valid;

4) the procedures used are generally accepted as reliable if performed properly;

5) the procedures were applied and conducted properly in the present instance.

The court should then consider whether admitting such evidence will be more probative than prejudicial. Cf. United States v. Two Bulls, 918 F.2d 56 (8th Cir.1990) (court in a circuit recognizing Frye states that the test for DNA evidence is whether evidence is generally accepted by the scientific community, testing procedures are generally accepted as reliable if performed properly, test was performed properly in this case, evidence is more prejudicial than probative, statistics are more probative than prejudicial under Rule 403); State v. Brown, 297 Or. 404, 687 P.2d 751 (1984) limited by 308 Or. 259, 780 P.2d 215 (1989) (court adopts "strengthened" relevancy test in which general acceptance test is one of seven factors to be considered in admissibility).

We now turn to the question of whether the evidence of DNA profile frequencies should have been admitted at trial. Whether expert testimony should be admitted at trial rests within the sound discretion of the trial court and will not be overturned unless there [73 Haw. 141] is a clear abuse of discretion. Kim, 64 Haw. at 607, 645 P.2d at 1338.

State was attempting to introduce evidence of the statistical probability of a coincidental DNA match for persons who were either caucasian, black, or hispanic, in order to give the jury some idea of how frequently a match like the one found by the laboratory would happen as a matter of chance. This information, if it were reliable and valid, would certainly add to the common knowledge of the jury, who would not ordinarily have knowledge of these frequencies, and who would otherwise find it difficult to evaluate the significance of the observed match between appellant's DNA and that found at the scene of the crime.

We find little basis for concern over the theory underlying the statistical evidence. It suffices to say that statistics and the underlying sampling theory are not novel or controversial. We take judicial notice that the DNA paradigm is not controversial and is widely accepted in the relevant scientific community. We also recognize that the basic techniques underlying the analysis used by the FBI are widely accepted. W.C. Thompson & S. Ford, DNA Typing: Acceptance and Weight of the New Genetic Identification Tests, 75 Va.L.Rev. 45, 60-61, 64-76 (1989). See, e.g., People v. Castro, 144 Misc.2d 956, 545 N.Y.S.2d 985, 988-90 (1989) (Theory is unanimously accepted amongst scientists and lawyers and techniques are not novel but it is the transfer of the technique to the context of DNA forensic identification which has generated much of the dispute); Commonwealth v. Curnin, 409 Mass. 218, 565 N.E.2d 440, 441 (1991) ("Everyone agrees that the underlying theory and at least the general processes used are accepted in the scientific community").

We note that there was no evidence of how the FBI actually practiced the techniques it used to compile the data that was the basis for its statistics. Further, appellant objects that the failure to present information regarding the data base used by the FBI to [73 Haw. 142] compile its statistics was disturbing "given the admission that the frequency of finding a match ... declines as the size of population sample increases." However, the court was provided with evidence showing that the FBI testing protocols themselves protected against the possibility of error in compilation of data. This evidence was strengthened by the report of the Office of Technology Assessment, an agency of the Federal government which periodically assesses new technology. This report, prepared by a panel of experts,

evaluated forensic uses of DNA tests and found them valid and reliable. We also note that the court in United States v. Jakobetz, 747 F.Supp. 250 (D.Vt.1990), examining the FBI protocols, found them "rigorous" and "exceptionally 'fail-safe' ",

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id. at 259, and that DNA profiling evidence from Cellmark laboratory was rejected in State v. Schwartz, 447 N.W.2d 422 (Minn.1989) after Cellmark's procedures were compared with the validation protocols developed by the FBI, and the director of Cellmark stated that the "FBI likely would not consider [Cellmark's] test results ready for use in court." Id. at 426-27.

Contrary to appellant's assertion, the court below was provided with information about the population data bases, including their size and source, and also heard testimony that the FBI's statistical approach was reliable, generally accepted in the scientific community, and extremely conservative. There was testimony that the FBI's conservative procedures were sufficient to compensate for the possibility of error in data collection and sample size, and that these procedures resulted in statistics that were actually incorrect, in that they greatly overestimated the probability of chance matches within any population. Dr. Budowle indicated that this bias in favor of the defendant increased as the size of the data base, and thus certainty, decreased, and that this overestimation was designed to compensate for error and uncertainty in the process of collecting the data, as well as in the underlying [73 Haw. 143] assumption of randomness upon which the statistics were based. Dr. Goldman testified that in his opinion the FBI's approach was too conservative, and that any variations that occurred between different ethnic groups made little difference in the probabilities. Dr. Goldman stated that the difference between the one in 1,000 figure for hispanics versus one in 8,000 for blacks, was largely due to FBI procedures in compiling the hispanic data that amplified the conservative bias in favor of the defendant, and accordingly, resulted in the higher frequency for the hispanic population. Thus, when appellant objects to the variability of the statistic relative to the size of the sample population, he objects to a change in frequency that reflects a conservative bias in his favor. Cf. Jakobetz, 747 F.Supp. at 260 (conservative procedure compensated for any substructuring, i.e., dependent relationships between observed matches, within ethnic populations that might increase the actual frequency of matches); People v. Axell, 235 Cal.App.3d 836, 867, 1 Cal.Rptr.2d 411, 430 (1991) (citing other courts that have recognized that conservative or reduced calculations may correct for substructuring); Curnin, 565 N.E.2d at 445 (1991) (statistic of one in 59,000,000 was not obtained through an inherently rational or generally accepted process but the scientific community may possibly arrive at a conservative estimate and resolve all uncertainties in favor of the defense); People v. Wesley, 140 Misc.2d 306, 533 N.Y.S.2d 643 (1988) (expert believes that there is population substructuring but that this could be accounted for by adjusting the claimed power of identity of Cellmark test by a factor of ten to one in 140,000,000 for caucasians and one in 84,000,000 for blacks).

We conclude that the court did not abuse its discretion in determining that the statistical evidence was a reasonable estimate of population frequencies, and reliable enough to admit into evidence. If valid, defendant's objections would go to the weight rather than the admissibility of the evidence at trial. See McCormick, supra, § 120 at 655 (when reasonable estimates of population[73 Haw. 144] frequencies are available they should not be kept from the jury).

Appellant also is disturbed by the fact that the State did not place him in any ethnic group, and that they initially characterized him as hispanic, but later, as caucasian. We assume that appellant is attacking the statistical evidence as being more prejudicial than probative. At the hearing of the motion in limine, the court heard evidence that a match was a rare event regardless of a person's ethnic category, and that it was not absolutely necessary to classify the appellant into any one racial category. The court was told that if the court or jury was uncomfortable with applying a particular ethnic data base to a given case, the FBI would supply probabilities for all three data bases on file (black, hispanic, and caucasian), and would allow the jury to make their own decision as to the weight to give the match. There was also evidence that the probability of a chance occurrence in the hispanic data base into which appellant had initially been classified, was the highest of the three, followed

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by the caucasian and then the black data bases.

The court could have concluded that the jury, informed of the doubt as to appellant's ethnicity, would be able to place appropriate weight on the statistics. Further, if there were questions as to jury confusion given the complexity of the material, the court could still have concluded that the jury would be able to understand that the statistics and matching procedure were not, themselves, infallible. Finally, the court could have concluded that the jury would not be unduly influenced by the statistics because of their conservative nature and the high frequencies used. On balance, considering the undoubted relevance of the evidence, as well as the State's showing of its general reliability

and conservative nature, we find that the court did not abuse its discretion when it denied appellant's motion in limine. 7

[73 Haw. 145] IV.

Appellant claims he was denied effective assistance of counsel because counsel failed to call expert witnesses to rebut the State's evidence during the motion in limine. He finds it noteworthy that the only cases in which DNA evidence has been excluded have been in those cases in which experts have testified.

Appellant had a right to effective counsel under the Hawaii Constitution, art. I, § 14 and the U.S. Constitution, Sixth and Fourteenth Amendments, Powell v. Alabama, 287 U.S. 45, 71, 53 S.Ct. 55, 65, 77 L.Ed. 158 (1932); State v. Kahalewai, 54 Haw. 28, 30, 501 P.2d 977 (1972). Appellant carries the burden of establishing ineffective assistance of counsel. Strickland v. Washington, 466 U.S. 668, 687-89, 104 S.Ct. 2052, 2064-65, 80 L.Ed.2d 674 (1984); State v. Antone, 62 Haw. 346, 348, 615 P.2d 101 (1980). Under Antone, appellant must show that there were "specific errors or omissions ... reflecting counsel's lack of skill, judgment or diligence[,]" and "these errors or omissions resulted in [73 Haw. 146] either the withdrawal or substantial impairment of a potentially meritorious defense." Antone, 62 Haw. at 348-49, 615 P.2d at 104.

Appellant does not say what an expert witness would have done to alter the court's decision to admit the DNA profiling testimony. In each of the cases that defendant contends were reversed because of the presence of experts, there existed a proper basis for the court to exclude the evidence. Appellant has not shown that this basis exists in this case. Appellant has also failed to carry his burden of showing that exclusion of any or all of the DNA profiling evidence would have resulted in the withdrawal or substantial impairment of a potentially meritorious defense. We therefore reject appellant's claim of ineffective assistance of counsel as meritless.

V.

Affirmed.

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1 Deoxyribonucleic acids are the molecular basis of heredity in many organisms, including man. These acids are localized in cell nuclei. No two individuals, other than identical twins, have the same DNA. The FBI as well as several commercial laboratories in the U.S., have imported techniques used in molecular biology into the forensic context, in order to determine whether DNA left at the scene of the crime by the crime's perpetrator, matches that of the defendant.

2 Fixed Bin Analysis for Statistical Evaluation of Continuous Distributions of Allelic Data from VNTR Loci for Use in Forensic Comparisons.

3 The structure of DNA is similar to a long, twisted ladder, the sides of which are composed of phosphate and sugar molecules linked by "rungs" consisting of pairs of molecules. The order of these pairs constitutes the DNA sequence or genetic code which carries information required to produce the proteins that make up the human body. A sequence of bases responsible for producing a particular protein is called a gene. Although the majority of these genes are the same in every human, there are variable or polymorphic sections that take different forms in different individuals and which are important in DNA typing. Genes that are polymorphic in that they have two or more different versions are called "alleles."

4 In United States v. Williams, 583 F.2d 1194 (2d Cir.1978) cert. denied, 439 U.S. 1117, 99 S.Ct. 1025, 59 L.Ed.2d 77 (1979) the court rejected a strict application of Frye ... stating:

[U]nanimity of opinion in the scientific community, on virtually any scientific question, is extremely rare. Only slightly less rare is a strong majority. Doubtless, a technique unable to garner any support, or only miniscule support, within the scientific community would be found unreliable by a court. In testing for admissibility of a particular type of scientific evidence, whatever the scientific 'voting' pattern may be, the courts cannot in any event surrender to scientists the responsibility for determining the reliability of that evidence.

Id. at 1198.

5 The court in Williams delineated the following factors that would be relevant to determine whether a scientific technique is reliable: (1) the potential rate of error; (2) the existence and maintenance of standards; (3) the care with which the scientific technique has been employed and whether it is susceptible to abuse; (4) whether there are analogous relationships with other types of scientific techniques that are routinely admitted into evidence; and (5) the presence of failsafe characteristics. Williams, 583 F.2d at 1198-99. In United States v. Jakobetz, 747 F.Supp. 250 (D.Vt.1990) aff'd, 955 F.2d 786 (2d Cir.1992) the court listed the following:

(1) the expert's qualifications and stature; (2) the existence of specialized literature; (3) the novelty of the technique and its relationship to more established areas of scientific analysis; (4) whether the technique has been generally accepted by experts in the field; (5) the nature and breadth of the inference adduced; (6) the clarity with which the technique may be explained; (7) the extent to which basic data may be verified by court and jury; (8) the availability of other experts to evaluate the technique; and (9) the probative significance of the evidence. See, e.g., J. Weinstein

and M. Berger, 3 Weinstein's Evidence p 702 (1988); McCormick, Scientific Evidence: Defining a New Approach to Admissibility, 67 Iowa L.Rev. 879, 911-12 (1982).

Id. at 255.

6 Cf. Coppolino v. State, 223 So.2d 68 (Fla.App.1968) cert. denied, 399 U.S. 927, 90 S.Ct. 2242, 26 L.Ed.2d 794 (1970), a newly developed scientific test was held admissible although it had been accepted by only one expert. Defendant was a doctor accused of killing his wife with succinylcholine. The prosecution expert developed a test to detect this chemical in tissues and used it to prove its presence in the victim.

7 We note that we have found no decision in which evidence from the FBI laboratory has been found inadmissible at trial. Prater v. State, 307 Ark. 180, 820 S.W.2d 429 (1991); United States v. Yee, 134 F.R.D. 161 (N.D.Ohio 1991); Trimboli v. State, --- Tex.App. ----, 817 S.W.2d 785 (1991) review granted Jan. 3, 1992; People v. Lipscomb, 215 Ill.App.3d 413, 158 Ill.Dec. 952, 574 N.E.2d 1345 (1991); Jakobetz 747 F.Supp. 250 (D.Vt.1990); People v. Castro, 143 Misc.2d 276, 540 N.Y.S.2d 143 (1989). Further, of 38 reported decisions examining the admissibility of DNA evidence at trial, only six have found the evidence inadmissible. Ex parte Perry, --- Ala. ----, 586 So.2d 242 (1991) (Lifecodes lab made performance or interpretation error during its tests); Commonwealth v. Curnin, 409 Mass. 218, 565 N.E.2d 440 (1991) (Cellmark lab's statistic of one in 59,000,000 possibility of coincidental occurrence was not conservative estimate and was not generally accepted or inherently rational); State v. Pennell, --- Del.Super. ----, 584 A.2d 513 (1989) (Cellmark lab procedure for obtaining population frequency statistic could result in an unjustifiably low frequency); State v. Schwartz, --- Minn. ----, 447 N.W.2d 422 (1989) (Cellmark failed to follow adequate validation protocols and failed to disclose information about methods and population data base); People v. Castro, 144 Misc.2d 956, 545 N.Y.S.2d 985 (1989) (Lifecodes used a contaminated probe and did not follow its own procedures); State v. Woodall, 182 W.Va. 15, 385 S.E.2d 253 (1989) (laboratory could not isolate a DNA print from evidence at the scene of the crime).