

SUPREME COURT OF LOUISIANA

NO. 93-KO-1644

STATE OF LOUISIANA

versus

STEVEN B. QUATREVIINGT

**ON WRIT OF CERTIORARI
FOURTH CIRCUIT COURT OF APPEAL**

VICTORY, Justice.¹

Steven Quatrevingt was indicted by the grand jury for the first degree murder of Carol Pauline Bissitt, in violation of La. R.S. 14:30. After trial by jury in January 1990, defendant was found guilty as charged. The jury, however, deadlocked on the penalty to be imposed, and on March 9, 1990, the trial judge sentenced defendant to life imprisonment without the benefit of parole, probation, or suspension of sentence. The Louisiana Fourth Circuit Court of Appeal affirmed.² *State v. Quatrevingt*, 617 So.2d 484 (La. App. 4th Cir. 1992). We granted writs to address the admissibility of DNA evidence in Louisiana, 93-1644 (La. 6/16/95); 655 So.2d 351, and now affirm Quatrevingt's conviction and sentence.

FACTS

Our review of the record indicates that the court of appeal's recitation of the facts is accurate. Thus, we borrow it for this opinion:

Testimony at trial established that the victim and her parents lived at the Mark VII Apartments, located at 4508 Papania Drive in New Orleans, Louisiana, and that defendant, Stephen Quatrevingt, was employed by Mark VII as maintenance man for the apartment complex. According to the parents, the victim was a mentally-handicapped,

¹Judge Lemmie O. Hightower, Court of Appeal, Second Circuit, participating as Associate Justice Pro Tempore, in place of former Associate Justice James L. Dennis.

Calogero, J., not on panel. Rule IV, Part 2, § 3.

²Judge Plotkin concurred, finding the DNA evidence inadmissible but harmless error. He voted to grant a rehearing however, claiming the error was not harmless, and would have reversed the conviction and remanded for a new trial.

twenty-two (22) year old [sic] who performed daily household chores for her parents while they were operating a family restaurant catering business. It was the practice of the parents to wake the victim in the morning so that she could chain the door after they were gone.

At or about ten o'clock on the morning of June 13, 1988, the victim's mother spoke with her on the telephone. At that time, the victim informed her mother that she was going for a bicycle ride later in the day. State's witness, Wendy Robin, testified that she observed the victim outside of her apartment around noon. Also, Freddie Jean Deboss, the manager of the apartment complex, testified that he [sic] spoke with the victim around noon when she complained that the electricity in her apartment was off. At that time, Quatrevingt accompanied the victim to her apartment to determine the cause of the electrical problem. Returning at or about 12:35, Quatrevingt informed Ms. Deboss that the main breaker was merely turned off. Eight-year-old Gerald Dorsey further testified that, while riding his bike in front of the victim's apartment, he observed Quatrevingt and the victim walking towards the victim's apartment, and that he heard loud noises emanating from the apartment "like jamming on the walls." Gerald Dorsey stated that he did not see the victim later in the day.

At or about 5:00 p.m., the parents returned home, and the father remarked that, although the door was locked, the door's chain was unlatched. Entering the apartment, the parents observed their daughter's disrobed body near the door, her face covered with a white towel. Lifting the towel, the mother saw a blue cast on the victim's face, dried blood under her eyes, and something around her neck. At that point, the parents attempted to call the police; however, the telephone was off the hook. Eventually, the police were called regarding the murder.

Detective Steven Nicholas ("Nicholas") of the Homicide Division of the New Orleans Police Department arrived on the scene to direct the investigation in the preliminary phase. Upon entering the apartment, Nicholas observed that the victim was nude from above the breasts [sic], that her legs were partially spread, that her eyes were partially open, and that a telephone cord, leading from a kitchen receptacle, was roped around the victim's neck.

Testifying that the physical evidence revealed no sign of forced entry, Detective Nicholas believed that the victim knew her assailant. Coroner Paul McGarry testified that he examined the victim's body and determined the time of death to be between 12:00 and 12:30 p.m. that day. According to Dr. McGarry, her face was dark purple and had hemorrhages in the skin and in the eyes. Around the victim's neck were three wraps of a robe sash, tightly tied in two double knots under the victim's chin; beneath the sash, Dr. McGarry found a telephone cord wrapped three times around the neck, indenting the skin. The bruising on her throat revealed that the victim was first strangled by hands. Although her genital area was intact, revealing no trauma to the vagina, the victim's

rectum had been dilated to more than one inch, causing eight tears in the rectal tissue. Smearred fecal matter was observed along the periphery of the rectum, along with what appeared to be seminal fluid. After moving the body slightly, a small piece of rubber-like black material was retrieved from underneath the victim's right thigh.

On the same day, Quatrevingt was questioned by Detective Nicholas on the scene. According to Nicholas, Quatrevingt was advised that he was under investigation for the murder of the victim, and informed of his rights. During the interview, Quatrevingt stated that he had gone to the apartment with the victim, and explained that, as he was leaving the victim's apartment, he tripped over the telephone cord. However, the victim was fine when he departed. Being suspicious of Quatrevingt's knowledge of certain details of the crime, a search warrant was obtained to seize his shoes and clothing. At approximately 3:00 a.m., on June 14, 1988, Quatrevingt was brought to Charity Hospital where samples of his hair, blood and saliva, were taken and a penile swab performed. Thereafter, all of the samples taken from Quatrevingt were sent to various laboratories for analysis.

At trial, testimony was received from New Orleans Police Department criminologist, Edgar Dunn, who stated that the bermuda shorts taken from Quatrevingt tested positive for both semen and fecal matter. Also, the penile swabs of Quatrevingt further revealed the presence of fecal matter. Further evidence consisted of a match between Quatrevingt's shoe sole and a print found outside the victim's apartment, as well as the fact that the piece of rubber found under the victim matched a gouge in the bottom of Quatrevingt's shoe.

Additionally, several doctors and technicians testified, despite defense objections, that the DNA testing revealed that the seminal fluid found on the towel near the victim's leg "matched" the DNA imprint of Quatrevingt.

In response, the defense presented evidence that other suspicious males were in the area at the time of the rape/murder: Specifically, the state received a call from a woman who identified another individual as the murderer. Regarding the DNA testing, the defense offered Dr. James Cohen. Dr. Cohen stated that, although the methods of DNA testing fell well within the bounds of accepted protocol in the scientific community, the testing done in this matter did not adequately control for an occurrence known as "bandshifting." According to Dr. Cohen, "the match referred to by the State was only obtained after adjusting for the bandshifting."

As noted, the jury found the defendant guilty of first degree murder; but could not agree on the sentence, so defendant was sentenced to life imprisonment without

probation, parole, or suspension of sentence as provided by law. The court of appeal affirmed. Defendant advances six assignments of error:

- (1) The trial court and court of appeal erred in finding that the evidence was sufficient to convict.
- (2) The trial court and court of appeal erred in finding that the DNA evidence was admissible.
- (3) The trial court erred in allowing the introduction of hearsay evidence.
- (4) The trial court erred in limiting the cross-examination of a state witness.
- (5) The trial court erred in defining reasonable doubt.
- (6) The trial court erred in allowing the prosecution to refer to a non-existent confession during its opening statement.

**SUFFICIENCY OF THE EVIDENCE
(ASSIGNMENT OF ERROR I)**

The defendant was indicted with first degree murder for the killing of Carol Pauline Bissitt while engaged in the perpetration or attempted perpetration of aggravated rape. The relevant portions of La. R.S. 14:30 define first degree murder as follows:

A. First degree murder is the killing of a human being:

- (1) When the offender has specific intent to kill or to inflict great bodily harm and is engaged in the perpetration or attempted perpetration of . . . aggravated rape. . .

Louisiana R.S. 14:42 provides, in pertinent part, that:

A. Aggravated rape is a rape committed upon a person . . . where the anal or vaginal sexual intercourse is deemed to be without lawful consent of the victim because it is committed under any one or more of the following circumstances:

- (1) When the victim resists the act to the utmost, but whose resistance is overcome by force.³

³Louisiana R.S. 14:41 defines rape as follows:

In order to affirm a conviction, an appellate court must determine that the evidence, viewed in the light most favorable to the prosecution, was sufficient for a rational fact finder to conclude that every element of the crime was proved beyond a reasonable doubt. *Jackson v. Virginia*, 443 U.S. 307, 99 S.Ct. 2781 (1979); *State v. Martin*, 93-0285 (La. 10/17/94); 645 So.2d 190; *State v. Captville*, 448 So.2d 676 (La. 1984). In a case involving circumstantial evidence, assuming every fact to be proved that the evidence tends to prove, in order to convict, it must exclude every reasonable hypothesis of innocence. La. R.S. 15:438.

The defendant does not seriously dispute that a first degree murder occurred in this case. He contends, however, that the state failed to exclude the hypothesis that the murder was committed by another man. He points to the following evidence as creating a hypothesis of his innocence: two unidentified finger/palm prints found on the window of the victim's apartment; an unidentified pubic hair found on the bathroom soap dish; a dark blue synthetic fiber found in the victim's perianal area which could not be matched to the defendant's cotton clothing; evidence that a black man was in the area at the time of the murder; and, the tip that the murder was committed by Frank Wright.

The circumstantial evidence presented at trial, as will be detailed more fully in our harmless error review to follow, excluded any reasonable hypothesis of innocence. Nevertheless, we now discuss defendant's specific argument that the evidence requires a finding of insufficient evidence to support his conviction.

A. Rape is the act of anal or vaginal sexual intercourse with a male or female person committed without the person's lawful consent.

B. Emission is not necessary and any sexual penetration, vaginal or anal, however slight is sufficient to complete the crime.

Latent fingerprint expert Officer Virgil McKenzie of the New Orleans Police Department testified that of the prints found at the scene, only two palm prints, recovered from the master bedroom window of the apartment, were suitable for comparison. He concluded that those prints did not appear to be recent. While the blue synthetic fiber found on the victim did not appear to match the cotton material of defendant's clothing, this item of evidence alone does not raise a reasonable hypothesis of innocence. Neither does the presence of an unidentified single pubic hair found on a bar of soap in the bathroom shoulder defendant's claim of innocence. Criminalist Dunn testified that, although the single strand of hair did not appear similar to the sample taken from the defendant, the victim or her parents, he was unable to come to the ultimate conclusion that the hair did not belong to either a member of that group or an unknown person. None of these items of physical evidence are even necessarily connected to the crime, and do not require a finding of a reasonable hypothesis of innocence.

In support of his claim that a black man named Frank Wright committed the murder, the defendant points to a memorandum introduced into evidence by the defense from Officer Louis Berard to Detective Nicholas. The memorandum concerned a telephone call from a woman in Texas who stated that her daughter told her that a black man named Frank Wright had killed the victim. According to the woman, Wright had also told her daughter that he had killed a man named Bennie Lee in the New Orleans' Uptown area on the Friday before the murder. During the state's rebuttal, Detective Nicholas testified that he called the daughter who told him that Frank Wright was her ex-boyfriend, that Wright had not told her he committed this crime, but she felt that the murder of the victim was "just the type of thing" that Wright would do. Detective Nicholas testified that further investigation revealed no indication that a Bennie Lee had

been killed in the Uptown area on the Friday before the murder. Although Nancy Morgan provided independent testimony that a black man was in the area approximately 8 hours prior to the murder, no evidence was presented which connected this man to the murder.⁴ This assignment of error is without merit.

DNA EVIDENCE (ASSIGNMENT OF ERROR II)

The defendant asserts that the trial court erred in allowing evidence of DNA testing to be introduced at trial. Specifically, he contends that under the standard of admissibility for determining reliability of novel scientific evidence set forth in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, ___ U.S. ___, 113 S.Ct. 2786 (1993), as adopted by this Court in *State v. Foret*, 628 So.2d 1116 (La. 1993), the procedure employed by Lifecodes to correct for band shifting is not a reliable methodology and should have been inadmissible.⁵

At trial, following the seating of the jury and during the opening statements, the defense requested a hearing seeking to block the admission of the DNA evidence. It requested that, due to the overwhelming prejudicial effect of the evidence, the trial court should determine whether the DNA evidence was both reliable and admissible under the Code of Evidence. Outside of the presence of the jury, the court conducted

⁴Morgan also told the jury that the defendant came into her store between 4:00 and 4:30 p.m. on the day of the murder and discussed the fact of the murder with her. Since the body was not discovered until about an hour later, this testimony, if true, could mean that the defendant was the murderer or at least had knowledge of the murder before the body was discovered. However, it could also be that Morgan was confused about the day the defendant came into her store. Further, she could be confused about the day the black man was there.

Defendant, in his statement to the police which was played to the jury at trial, said he saw a sloppily dressed black man trying to open apartment doors in the complex shortly after 1:00 p.m. on the day of the murder. He claimed he yelled at the man, who ran away. Defendant claimed he saw the man again about 1:45 p.m. on the same day around some bushes on the Papania Drive side of Building 4512, but the man ran away again.

⁵Additionally, defendant argues that his defense was prejudiced because of the late disclosure of some of the DNA results and other requested information from the state. However, the Court of Appeal's finding that the defense was provided with all relevant discovery and adequate time to review that evidence is supported by the record.

an admissibility hearing. Expert testimony on the principles, methodology and evaluation of DNA testing was adduced from two state witnesses, Dr. James Malter a molecular geneticist from Tulane University, and Dr. Kevin McElfresh of Lifecodes Laboratory, an expert in molecular and population genetics. The defendant called no witnesses at this hearing. The trial court denied the defense motion to exclude the DNA evidence and the trial continued.⁶

Scientific Background of DNA Profiling

Before examining whether the trial court erred in admitting the DNA evidence, it is important to understand the DNA profiling technique employed in this case. The following description of the specific steps of Restriction Fragment Length Polymorphism (RFLP) analysis is summarized from *United States v. Jakobetz*, 955 F.2d 786 (2nd Cir. 1992), and *Caldwell v. State*, 260 Ga. 278, 393 S.E.2d 437 (1990).

1. *Extraction of DNA.* The DNA is first extracted from the evidentiary sample by using chemical enzymes and then purified.
2. *Restriction or digestion.* The DNA is then "cut" with chemical scissors called "restriction endonucleases". These endonucleases recognize certain base pairs and sever the DNA molecule at specifically targeted base pair sites to produce RFLPs.
3. *Gel electrophoresis.* The cut fragments of DNA molecules are next placed in an agarose gel which is later electrically polarized to sort the fragments by length. Because DNA is negatively charged, the RFLPs will migrate toward the positive end of the gel. The distance traveled will depend upon the length of the fragment, with the shorter fragments, which are lighter, traveling further in the gel. Fragments of known base-pair lengths, called molecular weight markers, are placed in separate lanes to allow the measurement of RFLPs in units of base pairs. Several different samples are run on the same gel, but indifferent tracks or lanes.
4. *Southern transfer.* Because the agarose gel is cumbersome to work with, the RFLPs are transferred to a more functional surface by a method called southern transfer. A sheet of nylon membranes, called a nitrocellulose sheet, is placed in contact with the gel, and through

⁶The trial court's ruling on DNA preceded the testimony of defense experts Cohen and Jazwinski to the jury complaining about Lifecodes' method to correct for band shifting. Thus, the trial court ruling did not take their testimony into account.

capillary action, the RFLPs move onto the membranes. The RFLPs then become permanently fixed in their respective positions on the sheet, commonly referred to as a "blot". Also during this step, the RFLPs are unzipped into two strands by a process called denaturization.

5. *Hybridization.* Next, a genetic probe, which is a single-stranded segment of DNA designed to complement a single-stranded base sequence of RFLP on the blot, is used to locate a specific locus of a polymorphic region of the DNA. The probe will bond with RFLPs of all sizes containing that particular core sequence or VNTR. The genetic probe is tagged with a radioactive marker, which attaches to the probe and emits radiation without altering the function of the probe. The marker is used to determine the probe's position on the blot after it hybridizes with a polymorphic segment.

6. *Autoradiography.* Autoradiography is the photographic process that allows us to see the position of the polymorphic DNA segments. The nylon membrane, with hybridized polymorphic segments, is placed against a piece of x-ray film where the radioactive probes expose the film at their respective locations. After the film is processed, black bands appear where the radioactive probes have bonded to the RFLPs, producing the "DNA print". The position of each band indicates the location of a polymorphic segment on the blot, and location, in turn, indicates the length of the DNA fragment that contains the segment. Because individuals vary in the length of the DNA fragments that contain the polymorphic DNA segments, individuals tend to differ in the position of their bands on a DNA print. The hybridization process is then repeated using different probes to locate different VNTRs, which are put on separate autoradiographs. The FBI usually uses four or five different probes on a single sample. Several probes are necessary because although the degree of individualization for the two alleles (one from each parent) that occur at one locus is not high, it is extremely rare for two people to have eight or ten matching alleles across four or five different loci.

7. *Interpretation of autoradiographs.* The final step is to determine if a match exists in the two lanes of the autoradiograph between a known sample of a suspect and the unknown sample taken from the crime scene or victim. The FBI uses a two-stage procedure for deciding whether a match exists. First, the FBI looks for a visual match. If no visual match exists, the FBI decides whether the non-match should be interpreted as inconclusive or as excluding the suspect. If a visual match is declared, however, the FBI takes a mechanical measurement to verify that a match does, indeed, exist. A computer imaging process is used to reference the bands to the molecular weight markers on the autoradiograph. Because these reference points have a known value in base pair units, the number of base pairs in the polymorphic sequence represented by the band on the autoradiograph can be measured. If the two bands differ in the number of base pairs they have by less than 2.5 percent, the FBI will proclaim a match for that particular RFLP. If the difference between the two exceeds

2.5 percent, the autoradiograph is considered either inconclusive or as an exclusion of the suspect. Once matches are declared for the respective RFLPs, the FBI calculates the statistical significance of a match between two DNA profiles using tools from the field of human population genetics. The statistical significance is measured by the frequency with which a pattern of alleles occurs in a specific population.

Samples from the same person will not run at exactly the same speed every time. The buffer, the agarose gel and the salt solution are all manufactured and can vary minutely between one batch and the next. Moreover, the gel may not be absolutely consistent across its length, and the lanes into which the samples are poured can have minor variations and imperfections which can affect speed from one lane to the next. The result is called band shift: The banding patterns of two different samples containing the same DNA may not line up exactly -- they will be close, but not exact.

Standard for Admitting Scientific Evidence

The general rule for the admissibility of expert testimony in Louisiana is set forth in La. Code Evid. art. 702 which provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

In *Foret, supra*, this Court examined and adopted the United States Supreme Court's recently established new standard for the admission of scientific evidence in *Daubert, supra*. In *Daubert*, the Supreme Court held that Federal Rules of Evidence 702, rather than the "general acceptance" standard established by *Frye v. United States*, 293 F. 1013 (D.C.Cir.1923), controls the admissibility of expert scientific evidence in federal court. Under this new standard, the trial court is required to act in a "gatekeeping" function to "ensure that any and all scientific testimony or evidence admitted is not only relevant but reliable." *Id.*

The reliability of scientific evidence is to be ensured by a requirement that there be a "valid scientific connection to the pertinent inquiry as a precondition to

admissibility.” This connection is to be examined in light of a “preliminary assessment” by the trial court “of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether the reasoning or methodology properly can be applied to the facts at issue.” *Foret*, 628 So.2d at 1112, citing *Daubert*, *supra*.

In considering whether scientific evidence is reliable, the trial court should consider the following factors suggested in *Daubert*:

- (1) The “testability” of the expert’s theory or technique;
- (2) Whether the theory or technique has been subjected to peer review and publication;
- (3) The known or potential rate of error; and
- (4) Whether the methodology is generally accepted in the scientific community.

Daubert, 113 S.Ct. at 2796-97.

We noted in *Foret* that past decisions of this court had already espoused similar sentiments regarding the admission of scientific evidence. In *State v. Cantanese*, 368 So.2d 975 (La. 1979), this Court rejected *Frye*’s “general acceptance” test in the scientific community as the only test for the admissibility of polygraph results in criminal trials. We noted that scientific evidence should be admitted in those proceedings whenever the trial court, after balancing the probative value of the evidence against its prejudicial effect, determines that “the evidence is reliable and will aid in a decision.” The admission of the evidence was subject to the “discretion of the trial judge.” *Foret*, at 1123, citing *Cantanese*, 368 So.2d at 978-79, 983.

As we noted in *Foret*, *Daubert* goes further than *Cantanese* in that it sets forth clearer guidelines for determining the reliability of scientific evidence in its consideration of the probative value aspect of the balancing test set forth in *Cantanese*.

The similarity between La. Code Evid. art. 702 and its federal counterpart, along with the fact that *Cantanese* had already provided similar guidelines for the admission of scientific evidence, persuaded this Court to adopt *Daubert's* requirement that, in order to be admissible under La. Code Evid. art. 702, scientific evidence must rise to a threshold level of reliability. *Foret*, at 1123. ***Application of The Standard***

With regard to the relevance of DNA testing, La. R.S. 15:441.1 provides:

Evidence of deoxyribonucleic acid profiles, genetic markers of the blood, and secretor status of the saliva offered to establish the identity of the offender of any crime is relevant as proof in conformity with the Louisiana Code of Evidence.

It is clear from this provision that the Louisiana legislature intended DNA evidence to be admissible absent a showing that the evidence is unreliable. Thus, the first part of the *Daubert/Foret* analysis, the question of relevancy, is satisfied.

Louisiana courts have recognized that DNA typing is sufficiently scientifically reliable to cross the admissibility threshold. See *State v. Stelly*, 94-306 (La. App. 3d Cir. 11/2/94); 645 So.2d 804, *writ denied*, 94-3103 (La. 4/28/95); 653 So.2d 589; *State v. Brossette*, 93-1036 (La. App. 3d Cir. 3/2/94); 634 So.2d 1309, *writ denied*, 94-0802 (La. 6/24/96); 640 So.2d 1344. In addition, both federal and other state courts have found that, in general, DNA profiling is a reliable technique and is admissible.⁷ We agree that the principles of DNA profiling and RFLP analysis are both relevant and reliable and are thus admissible.

Band Shifting Correction

The defendant acknowledges that DNA profiling in general and RFLP analysis are admissible, but argues that the specific method employed by Lifecodes to "correct"

⁷E.g. *United State v. Jakobetz*, 955 F.2d 786 (2nd Cir. 1992); *Hayes v. State*, 660 So.2d 257, 1995 WL 368405 (Fla. 6/22/95); *Commonwealth v. Rodgers*, 605 A.2d 1228 (Pa. Super Ct. 1992); *Trimboli v. State*, 817 S.W.2d 785 (Tex. App. Waco 1991), *aff'd*, 826 S.W.2d 953 (Tex. Cr. App. 1992); *Caldwell v. State*, 260 Ga. 278, 393 S.E.2d 437 (1990).

for band shifting is unreliable because there is no scientifically accepted protocol of how to adjust the bands.⁸ Dr. McElfresh testified, at the admissibility hearing and at trial, that band shifting is a common phenomenon in DNA analysis. He explained that Lifecodes uses monomorphic probes, a method of correction which allows the technician to resituate the bands where they would have appeared had they not shifted. Dr. McElfresh maintained that, using this method, the laboratory can still declare a match where band shifting had occurred.

Following the trial court's ruling allowing the state to present the expert scientific testimony, Dr. McElfresh and Forensic Scientist Vining testified to the jury that Lifecodes declared a match between the defendant's DNA imprint and the seminal fluid found on the towel near the victim's leg even though the autorad showed evidence of band shifting. Dr. McElfresh testified that Lifecodes is the only laboratory which attempts to correct for band shifting and still declare a match. He maintained that the correction procedure was valid and reliable, and reviewed by the scientific community. As of the date of the trial, Lifecodes had submitted one paper for publication in *The Journal of Forensic Science* on the use of monomorphic probes to correct for band shifting. That paper had not yet been published and was undergoing peer review.

The defendant's experts, Drs. Cohen and Jazwinski, disputed Lifecodes' claims in their testimony before the jury. Dr. Cohen testified that there was no way to correct for band shifting and that generally scientists disregarded such results. He remarked that he was extremely disturbed that Lifecodes independently created a correction factor "their own personal fudge factor that no one else accepts," noting it had not even been documented. Dr. Cohen observed that without the correction some of the bands in this case would be outside of Lifecodes' "match" criterion of 2% deviation. Dr.

⁸The issue of Lifecodes' correction for band shifting appears to have played little or no role in the majority and concurring opinion of the Court of Appeal.

Jazwinski further informed the jury that no valid methods existed to correct the bands and that Dr. McElfresh's claim that Lifecodes' method had been peer reviewed was unfounded.

The defendant cites jurisprudence from other jurisdictions which has applied the "general acceptance" *Frye* standard, and has deemed inadmissible DNA results which have employed correction for band shifting.⁹ In addition, defendant points to the findings stated in *DNA Technology in Forensic Science*, National Research Council, National Academy Press (1992).¹⁰ The NRC report, which was not available at the time of trial in 1990, provides an in-depth analysis of the forensic use of DNA evidence and associated areas, including band shifting. Although we need not rely upon the conclusions of the report in deciding the assignment of error presented in this case, the report is nevertheless illustrative of the issue. The NRC directly addresses the problem of band shifting as follows:

Testing for band shifting is easy, correcting for it is harder. The best approach is to clean the samples ... and repeat the experiment in the hope of avoiding band shifting. When that is impossible because too little sample is available or it fails ..., it is possible in principle to determine the molecular weights of polymorphic fragments in a sample by comparing them with monomorphic human bands in the same lane - so called internal molecular weight standards. These monomorphic fragments are expected to have undergone the same band shift, so they should provide an accurate internal ruler for measurement....

In practice, however, the use of internal standards presents serious difficulties. Accurate size determination requires a number of internal

⁹*People v. Keene*, Misc. 2d 108, 591 N.Y.S.2d 733 (N.Y. Sup. Ct. 1992); *Hayes v. State*, 660 So.2d 257, 1995 WL 368405 (Fla. 6/22/95), in which the Florida Supreme Court rejected Lifecodes' correction method for band shifting under the *Frye* test, relying in part on the NRC report.

¹⁰Because this report had not yet been published, it was not available at the time of trial. Amicus defense counsel, Mr. Barry Scheck, attached a prepublication edition of the report to his amicus curiae brief to this court and later provided the court with the final bound copy of the NRC report. In response, the state filed a motion to strike the exhibit on the basis that it was not introduced at trial. We deny the motion to strike. As previously noted, we do not rely on the conclusions of the report in deciding the defendant's assignment of error regarding the admission of the DNA evidence as the report was unavailable to the trial court at the time of trial.

standards. If band shifting caused all fragments to change their mobility by the same percentage, one would need only a single monomorphic fragment to determine the extent of shift. But band shifting appears to be more complex than that. Different regions of the gel shift by different amounts.

Little has been published on the nature of band shifting, on the number of monomorphic internal control bands needed for reliable correction, and on the accuracy and reproducibility of measurements made with such correction. For the present, several laboratories have decided against attempting quantitative corrections; samples that lie outside the match criterion because of apparent band shifting are declared to be “inconclusive.” The committee urges further study of the problems associated with band shifting. Until testing laboratories have published adequate studies on the accuracy and reliability of such corrections, we recommend that they adopt the policy of declaring samples that show apparent band shifting to be “inconclusive.”

Id. at 60-61.

Under the *Daubert/Foret* test, and even under the more rigid *Cantanese* test in use at the time of trial, the expert testimony elicited at trial shows that the practice of using monomorphic probes to correct for band shifting had not been proven reliable. The proponent of the evidence, the state, failed to demonstrate at the admissibility hearing: (1) the “testability” of the technique; (2) that the technique has been subjected to peer review and publication; (3) the known or potential rate of error; and (4) that the methodology is generally accepted in the scientific community. *Daubert*, 113 S.Ct. at 2796-97. While the results of DNA and RFLP analysis are generally admissible in Louisiana so long as the trial court’s “gatekeeping” function has been performed in accordance with *Daubert/Foret*, Lifecodes’ use of monomorphic probes to correct for band shifting was not shown to be reliable in the trial court, and the trial court erred in admitting the DNA evidence.¹¹

HARMLESS ERROR

¹¹We do not mean to overly criticize the trial court. At the time of its ruling, the defense experts had not testified and the thrust of the defendant’s objection was not the band shifting correction used by Lifecodes, but DNA evidence generally.

Having determined that the DNA evidence should not have been admitted, we must examine if the error was harmless. The proper analysis for determining harmless error “is not whether, in a trial that occurred without the error, a guilty verdict would surely have been rendered, but whether the guilty verdict actually rendered in *this* trial was surely unattributable to the error.” *Sullivan v. Louisiana*, 508 U.S. 275, 113 S.Ct. 2078, 2081 (1993); *State v. Johnson*, 94-1379 (La. 11/27/95); 664 So.2d 94. Under this standard of review, we examine if the error in admitting the DNA evidence was harmless beyond a reasonable doubt.

The physical evidence and testimony introduced by the state at trial points to no reasonable conclusion but that the defendant is guilty of the commission of this crime. The coroner testified that the victim died between 12:00 and 12:30 p.m. According to the apartment complex manager, Ms. Freddie Jean Deboss, and defendant’s statement, the victim came into the office at 11:58 a.m. to complain that there was no electricity in the apartment. The defendant volunteered to check on the problem and accompanied the victim to the apartment. Gerald Dorsey, who was riding his bicycle around the area, saw the two enter the apartment and heard what he described as “jamming on the walls” emanating from the apartment shortly thereafter. The victim was last seen alive entering the apartment with the defendant a little after noon. She was raped and murdered in the apartment within 30 minutes of Dorsey’s sighting.

The defendant told police that he left the apartment at about 12:10 p.m. Ms. Deboss testified that at approximately 12:20 or 12:25 p.m. the defendant came to her apartment and interrupted her lunch to tell her that the electrical breaker to the victim’s apartment had merely been turned off. There is no independent evidence accounting for the defendant’s whereabouts until 12:20 p.m. There were no signs of forced entry into the apartment and nothing was stolen. The short time period alone reduces the

likelihood that an unknown man gained entry into the apartment within 15-20 minutes of the defendant's departure. This possibility is further lessened by the fact that Pauline had been rigorously trained by her parents to refuse anyone entry into the apartment unless one or more of her parents was at home. It was established at trial that Pauline had even refused to allow her mother's best friends to come into the apartment when she was alone. From the evidence there is no other reasonable conclusion but that Pauline allowed the man who ultimately raped and murdered her into the apartment. There is no doubt she allowed the defendant into the apartment.

During the police interview, the defendant denied twice that he had ever had any type of relations with the victim or that he had ever kissed her. When pressed as to whether he had kissed the victim in the last few days, the defendant remembered that on the Friday before the murder, he told the victim that his birthday was coming up and she kissed him.

The defendant told the police that he did not see the victim again after leaving the apartment on the day of the murder. However, Mildred Green, Pauline's sister, testified that at approximately 1:05 p.m., she walked up to the apartment and observed the defendant outside banging on an electrical meter box. He asked her who she was, if she lived there, and if she was going to the Bissitts' apartment. When Mrs. Green replied, "yes, my mother lives there," the defendant stated "she's gone off on her bike." Accepting defendant's statement that her sister had gone on a bike ride, Mrs. Green decided to visit a friend, Jane Alphonso, who had recently moved into the apartment complex. When she asked defendant for directions, he grabbed her by the shoulder, walked her a few feet away and pointed out Ms. Alphonso's apartment.

It is obvious that the defendant lied about the victim riding off on her bicycle. At the latest, Pauline was dead by 12:30 p.m. She could not have been seen by the

defendant or anyone else riding her bicycle after that time. This statement, coupled with the defendant's physical actions in steering Mrs. Green away from the victim's door, suggests the defendant's desire to prevent the body from being discovered for as long as possible; particularly when it was known that he had been in the apartment within the hour.

Ms. Jane Alphonso testified that Mrs. Green had only just arrived at her apartment shortly after 1:00 p.m., when the defendant knocked on the door and inquired as to whether she needed anything done in the apartment. Ms. Alphonso recalled that as the defendant changed out a few electrical socket covers and made a few minor repairs in the apartment, his "behavior was out of the ordinary for the behavior [she] had seen [him] display earlier." She remembered that on the six or so other occasions when she had contact with the defendant he was on the quiet side. However, on that particular day he "acted nervous, shifting from one foot to the other, could not make eye contact and was acting kind of giddy, trying to tell jokes." That the defendant came to Jane Alphonso's apartment shortly after speaking with Mrs. Green thereafter suggests he may have been concerned that she did not believe him about the bike ride; and wanted to be near her in case she wanted to return to the Bissitt apartment.

Elements of the defendant's statement to the police point strongly to his guilt. Before the interview, the defendant was told only that Pauline had been found murdered and that there had been no forced entry into the apartment. Yet, in his statement the defendant appeared to be trying to establish an alibi in advance for why his prints might be on items found disturbed in the apartment. Without any prompting, the defendant explained in detail how he tripped on a telephone cord in the room and pulled it loose from the base which moved only slightly. He remembered that he replaced the receiver

and grabbed the last four feet of cord still hooked on the front of his foot and plugged it back into the base of the telephone. When police examined the crime scene they found the telephone receiver on the floor. The telephone cord, detached from the base but still plugged into the receptacle in the kitchen, was wrapped tightly around the victim's neck. The defendant recalled, also without prompting, that he may have touched a white medium sized bathroom towel hanging on a door knob. A white towel was found over the victim's face.¹² When asked if he had been behind Apartment #22 near the air conditioning units at some time during the day, the defendant stated that he went back there later in the afternoon to check the air conditioning unit for an adjacent apartment. He described the unit as being located just before Mr. and Mrs. Bissitt's bedroom window and right under a small bathroom window. A footprint, matching the defendant's shoe sole, was found outside the Bissitt's bedroom window suggesting he may have exited the apartment by the window to escape detection.

The coroner's testimony showed that the victim had been strangled and anally raped. Her rectal area was smeared with fecal matter and fluid indicative of semen. A small piece of rubber was found beneath the victim's right thigh and a white towel containing fluid indicative of semen was found next to her leg. When questioning the defendant, Detective Nicholas noticed that the lower portion of the defendant's knee had distinct circular pink areas, suggesting that the defendant may have been on his knees. The defendant was examined at Charity Hospital by Dr. Amid Sheyesteh at 3:00 a.m. on the morning after the murder still wearing the clothing that he was wearing on the previous day. Dr. Sheyesteh testified that he observed and smelled what appeared to be fecal matter crusted on the corona and meatus of the defendant's penis. Penile swabs were taken from these areas and sent for testing. However, no fecal

¹²The victim's mother testified that the white towel did not belong to the family, that she could be mistaken, but she did not think so.

matter was observed in the defendant's anus. Criminalist Dunn testified that there were stains consistent with fecal material on the defendant's blue Bermuda shorts and on the lower area of the zipper front. He determined that the swab taken from the penile corona was consistent with fecal material. As the court of appeal noted, a blue fiber found in the victim's perianal area was of the same color and composition as the fibers from the defendant's shorts and a red fiber found on the victim's shorts was of the same color, size, and composition as the fibers from the defendant's underwear. Criminalist Dunn testified that the piece of black rubber material found beneath the victim precisely matched a tear in the sole of one of defendant's tennis shoes.

The jury heard experts on both sides testify as to the reliability of the DNA testing procedures, particularly whether the correction for band shifting employed by Lifecodes was considered an acceptable and reliable technique in the scientific community. The defendant's experts testified that the reports from Lifecodes should be considered "inconclusive" because the method used to correct for band shifting was unreliable. Dr. McElfresh of Lifecodes admitted no other DNA lab attempted to correct for bandshifting. During closing arguments, the state and the defense argued to the jury that they should disregard and ignore the DNA evidence in the case if they felt that it was confusing. The state concentrated its argument on the other evidence in the case as establishing proof beyond a reasonable doubt. Of course, the defense argued that the evidence in the case did not exclude every reasonable hypothesis of innocence. From the testimony and the arguments, the jury was well aware that a serious dispute existed over the DNA testing by Lifecodes and that other DNA labs, including the FBI, would not have attempted to correct the bandshift, but would have declared the results inconclusive. The jurors were well aware that they were free to

diregard the DNA evidence altogether, and were in fact encouraged to do if it was confusing.

We have carefully considered all of the other evidence in this case and conclude that the jury's verdict of guilty of first degree murder was surely unattributable to the error in admitting the DNA testimony. Defendant's second assignment of error is without merit.

HEARSAY EVIDENCE (ASSIGNMENT OF ERROR III)

The defendant complains that the trial court erred in allowing the introduction of prejudicial hearsay evidence. Ellen Bissitt, the victim's mother, testified, over defense objection, regarding an incident involving the defendant and her daughter that occurred approximately one month prior to the murder. She testified that Pauline told her that she was sleeping in the apartment one day and awakened to find the defendant sitting on her bed. The defendant explained that he was in the apartment to repair the air conditioning unit. According to Mrs. Bissitt, Pauline was frightened by the incident. Testimony was also elicited on this subject from the victim's father. George Bissitt stated that he learned that the defendant had let himself into the apartment and "Pauline awoke while he was in her room and it startled her and it frightened her." The court of appeal found that the testimony was inadmissible hearsay as it did not fall within any of the exceptions to La. Code Evid. art. 802 and the trial court erred by allowing its introduction. However, the court also found that the error was harmless because, with the exception of the facts that defendant sat on the victim's bed and she became frightened, the statements were merely cumulative of the defendant's statements made to police.

We agree. The prosecution admitted into evidence a tape recording of the defendant's statement given to police late on the night of the murder. In the statement,

the defendant recalled that he had been to the apartment about a month and a half earlier to fix a frozen air conditioning unit located in the victim's bedroom closet. Pauline let him into the apartment and he made some repairs and stayed for about twenty minutes waiting for the unit to defrost. Although he returned about three to four times that day to check on the thawing, the air conditioner was still not defrosted by the end of the work day. The next morning, the defendant returned and entered the apartment using the master keys after receiving no answer at the door. The defendant stated that Pauline, who was asleep in her bedroom, woke up as he came into the room. He told her that he was there to check on the air conditioning unit. The next morning, the defendant again entered the apartment after knocking and receiving no answer to check the air conditioning coils for oil spots. On this occasion, the defendant recalled that Pauline, who was still asleep in the bedroom, awoke as he came down the hall and he informed her that he had to check the unit one more time. In the statement, the defendant denied sitting on the victim's bed. While it can be argued the statements concerning the defendant sitting on the victim's bed and her resultant fear could have been prejudicial to the defendant, the jury had before it evidence that on the day of the murder, Pauline had apparently allowed the defendant into the apartment to check on the electricity while she was alone. Since there was no forced entry, the defendant could reasonably argue to the jury that Pauline would not have allowed him inside the apartment if she had really feared the defendant as a result of the prior incidents, as opposed to fear from the prior incident alone. Given the amount of other credible evidence pointing to the defendant's guilt and the defendant's admission of the prior incidents, we agree with the court of appeal that the trial court's error was harmless. *State v. Johnson, supra; State v. Code*, 91-0998 (La. 11/29/93); 627 So.2d 1373. This assignment has no merit.

CROSS-EXAMINATION OF STATE WITNESS (ASSIGNMENT OF ERROR IV)

The defendant asserts that the trial court erred in limiting the cross-examination of the victim's father regarding the filing of a 1.6 million dollar lawsuit against the defendant and the Mark VII Apartments. He argues that he should have been allowed to elicit details about the civil suit in order to show bias on the part of the victim's mother and father. Particularly, the defendant contends that the jury should have been aware that the Bissitts had a financial interest dependent upon obtaining a guilty verdict in the criminal trial.¹³

Mr. Bissitt admitted during cross-examination that he and his wife had filed such a suit. The state objected when defense counsel sought to question him further about the lawsuit, and following a bench conference and argument, the trial court sustained the objection. The court of appeal found no error in restricting the cross-examination as the existence of the lawsuit was sufficient to show possible bias on the part of the victim's parents, and any further questioning about the details of the lawsuit would be marginally relevant to the case.

Extrinsic evidence to show a witness' bias, interest, corruption, or defect of capacity is admissible to attack the credibility of the witness. La. Code Evid. art. 607 (D). In particular, counsel may inquire into the existence of a civil suit involving the witness or the possibility of civil liability on the part of the witness when such facts indicate that the witness has an interest in the criminal case or is otherwise not totally impartial. *State v. Nolan*, 341 So.2d 885 (La. 1977); *State v. Randolph*, 334 So.2d 687 (La. 1976). The broad right to impeach the witness for bias or interest is dictated

¹³Of course, due to the lesser burden of proof, success in a civil suit does not depend on obtaining a guilty verdict in a criminal trial. In a recent high profile case in California, the O.J. Simpson matter, the families of the murdered victims, Nicole Brown Simpson and Ronald Goldman, are proceeding against Mr. Simpson in a civil matter despite a jury verdict of not guilty in the criminal case against Mr. Simpson.

not only by R.S. 15:492, but also by the statutory right to full cross-examination (R.S. 15:280) and the constitutional right of confrontation. *State v. Kellogg*, 350 So.2d 656, 658 (La. 1977), citing La. Const. Art. I, § 16; U.S. Const., Amend. VI; *Davis v. Alaska*, 415 U.S. 308, 94 S.Ct. 1105 (1974).

Relevant evidence, however, may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, or waste of time. La. Code Evid. art. 403. Defendant has not shown prejudice by the ruling curtailing further questioning into the specifics of the civil suit filed. Such questioning may have only confused the jury and wasted the court's time. The fact and the amount of the civil suit had been elicited and the jury had been apprised of the Bissitts' possible bias. The specifics of the civil lawsuit were not crucial to the case and we find no abuse of the trial court's discretion. This assignment has no merit.

JURY CHARGE (ASSIGNMENT OF ERROR V)

Despite the absence of a contemporaneous objection at trial, defendant contends that the trial court's jury instruction on reasonable doubt requires reversal under *Cage v. Louisiana*, 489 U.S. 39, 111 S.Ct. 328 (1990), and *Sullivan v. Louisiana*, 508 U.S. 275, 113 S.Ct. 2087 (1993). The jury was instructed as follows:

This doubt must be a reasonable doubt that is one founded upon real, tangible and a substantial basis, and not upon a mere caprice or fancy or a conjecture. It must be such a doubt as would give rise to grave uncertainty raised in your mind by the reason or the unsatisfactory character of the evidence, one that would make you feel that you had not an abiding conviction to a moral certainty of the defendant's guilt. ... A reasonable doubt is not a mere possible doubt. It should be an actual and substantial doubt. It is such a doubt as a reasonable man would seriously entertain.

The reading of this charge, with its use of the terms "grave uncertainty," "moral certainty," and "actual and substantial doubt," no longer mandates relief. *See State v.*

Smith, 91-0749 (La. 5/23/94); 637 So.2d 398, *cert. denied*, ___ U.S. ___, 115 S.Ct. 641 (1994). According to the United States Supreme Court’s reexamination of its reasonable doubt jurisprudence undertaken in *Victor v. Nebraska*, 511 U.S. ___, 114 S.Ct. 1239 (1994), and this Court’s implementation of *Victor* in *Smith, supra*, the instruction in the instant case did not allow the jury to convict without satisfying the reasonable doubt requirements of *In re Winship*, 397 U.S. 358, 90 S.Ct. 1068 (1970). The foregoing terms do not suggest a higher degree of doubt than is required for acquittal under the reasonable doubt standard. Nor do the foregoing terms suggest that “reasonable doubt” is mere speculation. *Smith, supra*, at 12-13.

**OPENING STATEMENT
(ASSIGNMENT OF ERROR VI)**

Defendant complains that the trial court committed reversible error in allowing the prosecution to refer to a non-existent confession during its opening statement made by Assistant District Attorney Wendy Baldwin. The court of appeal found no merit in this assignment as a review of the transcript revealed that the opening statement was made by Mr. Harry Connick, not Ms. Baldwin, and that no mention was made of a confession purportedly made by defendant. The transcript of the opening statement does not reveal that Ms. Baldwin participated in addressing the jury at this stage of trial or that any reference was made to a confession. There exists a presumption of regularity in judicial proceedings. *State v. Leon*, 93-2511 (La. 6/3/94); 638 So.2d 220; *State v. Davis*, 559 So.2d 114 (La. 1990). There is no error in the ruling of the appellate court. This assignment has no merit.

CONCLUSION

For the reasons expressed, Mr. Quatrevingt’s conviction and sentence are affirmed.

AFFIRMED.