

Edward Russell Dubose v. State

CR-89-359

COURT OF CRIMINAL APPEALS OF ALABAMA

662 So. 2d 1156

September 10, 1993, Released

SUBSEQUENT HISTORY: First Correction. Rehearing Denied March 4, 1994. Rule 39(k) Motion Denied March 4, 1994. Certiorari Denied May 19, 1995. Rehearing Denied May 19, 1995. Released For Publication October 31, 1995.

PRIOR HISTORY: Appeal from Escambia Circuit Court. Joseph P. Brogden, TRIAL JUDGE. (CC-89-39).

DISPOSITION: REVERSED AND REMANDED.

COUNSEL: For Appellant: William H. Allen, Arvid E. Roach II, Timothy C. Hester, Seth A. Tucker, Alane C. Weixel, Jeffrey B. Coopersmith, of Covington & Burlington, Washington, D.C., and Robert C. Campbell III, Mobile.

For Appellee: James H. Evans, atty. gen., and Sandra Stewart and Robert Lusk, Jr., asst. attys. gen.

JUDGES: PATTERSON, BOWEN, TAYLOR, McMILLAN, MONTIEL

OPINIONBY: PATTERSON

OPINION:

PATTERSON, JUDGE

The appellant, Edward Russell Dubose, was charged, in a three-count indictment filed on February 3, 1989, for the capital offenses of the murder of Stephanie Marie King during a kidnapping in the first degree or an attempt thereof, § 13A-5-40(a)(1), Code of Alabama 1975; during a rape in the first degree or an attempt thereof, § 13A-5-40(a)(3); and during sodomy in the first degree or an attempt thereof, id. The three counts specifically charged the appellant with the victim's murder by asphyxia due to ligature strangulation. On February 24, 1990, a jury convicted the appellant on all three counts and subsequently recommended, by a vote of 11 to 1, that the appellant be sentenced to death by electrocution.

Pursuant to § 13A-5-47, the trial court held a sentencing hearing and found the following aggravating circumstances: (1) the capital offense was committed while the appellant was engaged in the commission of, or an attempt to commit, a rape and a kidnapping, § 13A-5-49(4); and (2) the capital offense was especially heinous, atrocious, or cruel when compared to other capital offenses, § 13A-5-49(8). The court found no statutory mitigating circumstance, § 13A-5-51. It noted that it had "carefully considered all aspects of the [appellant's] character or record as revealed by the evidence presented at trial and during the sentence hearing, and the pre-sentence investigation report and any evidence submitted in connection with it" and that it had "also considered any other relevant mitigating circumstance offered by the [appellant]." After finding that the aggravating circumstances "far outweigh any mitigating circumstances" and after considering the jury's recommendation, the court found that the only appropriate sentence for the appellant was death by electrocution. The appellant filed a motion for a new trial; that motion was denied on July 3, 1990.

The evidence at trial established the following facts.

At approximately 10:20 a.m. on Saturday, October 22, 1988, the victim, who was 16 years old, went to the Alco Baptist Church, where, in addition to being a member and the organist, she worked part-time as custodian. At approximately 10:35 a.m., the victim telephoned her mother and discussed some cleaning instructions left by Rev. Bobby Rone, the minister. At approximately 10:45 a.m., the victim telephoned the minister and told him, "There is a man here by the

name of Robert who wants to talk with you." Then, a male, who in the minister's opinion sounded like a black man, n1 asked the minister if the church would be open that day, and the minister said no. The man then asked if the church would be open on Monday. The conversation politely concluded.

n1 The appellant is black.

When the minister arrived at the church about noon on Saturday, he did not observe a car parked in the lot. When he approached the church, he noticed that the double doors leading to the administrative offices were ajar. He went through the doors and noticed that a light was on in the secretary's office. He further observed that the door to his office was open, that the light was on, and that the plastic bag that lined his wastebasket was on his desk. Because it was unusual for the victim to leave the building in such a manner, the minister telephoned the victim's house and was informed that the victim was not there.

At 12:35 p.m., Brewton Police Lieutenant David Lovelace received a telephone call from the victim's father, who said that his wife had telephoned him and told him that the victim was supposed to be cleaning the church but that she was not there. He asked Lovelace to check Hardee's restaurant and McDonald's restaurant. When Lovelace did not see the victim's car at either place, he went to the Alco Baptist Church about 12:45 p.m.

Brewton Police Chief Grover Smith, upon receiving a telephone call at approximately 12:53 p.m. that the victim was missing, went directly to the church. Around 1:00 p.m., a search was organized at the church. One of the members of the search party, Wayne Overstreet, started his search on Pea Ridge Road, turned off onto Cunningham Road, and then turned off onto another road. When that road forked, Overstreet stopped his vehicle, got out, and walked down the road to the right. He noticed some recent tire tracks so he continued walking another 50 to 100 yards, at which point he saw the 1976 Ford Maverick automobile that the victim had been driving that morning. It was parked off the road in a heavily wooded area. When he approached the car, he saw the victim in the front seat. She was slumped over toward the passenger side. All the vehicle's doors were locked, so he beat on the front passenger window, but he got no response. He then left to get help. At approximately 1:50 p.m., Chief Smith received a telephone call that the victim's body had been found.

Approximately 15 minutes later, Overstreet returned to the victim's parked car with Chief Smith and Lieutenant Lovelace. Chief Smith used a tool to unlock the driver's door. A cord was wrapped around the victim's neck. One end was wrapped around one post of the driver's headrest. This cord appeared to be the drawstring cord from the victim's sweatpants, which she was still wearing. The victim was declared dead at the scene.

At around 2:45 p.m., that afternoon, Fountain Correctional Center's canine dog handler, Burley Townson, arrived at the crime scene with tracking dogs. He was shown tennis shoe tracks near the victim's vehicle. Two dogs were taken to the tracks and when they indicated that they had picked up the scent, Townson turned them loose. They followed a sandy road until it forked; they took the right fork, which led to a graded road. There the dogs turned right, and after approximately 100 yards, they turned left onto another graded road. At one point, the dogs left the road, went about 15 yards into the woods to a junk pile, and then returned to the road. When that road intersected with Pea Ridge Road they turned right and tracked for approximately 20 yards. There, the dogs stopped. While he was running after the dogs, Townson saw footprints, which appeared to be the same type of tennis shoe tracks, in sandy spots. For example, he saw footprints where someone had left the road at the junk pile and had then returned to the road. The last visible footprints were two feet off of Pea Ridge Road.

The following day, October 23, an examination and autopsy were performed on the victim's body. The victim wore braces on her teeth. Her bruised and swollen lips were consistent with her lips having been pushed up against her braces by a hand or a mouth. There were three abrasions on her upper back that were consistent with injuries inflicted by fingertips. A four-inch injury to her head indicated that either her head had struck or had been struck by an object. While there was no visible damage to her brain, the head injury may have caused her to lose consciousness. Her right forearm was bruised where she could have been grabbed, and the back of her left elbow was also bruised. Her external genitalia had a one-half inch laceration, as large as any seen by the medical examiner up until that time, and her anus was bruised and had a five-eighths inch tear, all of which were consistent with forced entry. Her panties had dark bloodstains from these lacerations. Her vagina had an "obvious fair amount" of seminal fluid, possibly from more than one person and more than the medical examiner usually sees in a rape victim.

The victim's face had petechial (pinpoint) hemorrhages. Her face was a dark purple compared to the skin below the ligature mark because the blood flow had been stopped by the cord. The cord had been tied with two overhand knots, which were below her left ear. In regard to the character of these knots, the medical examiner noted at trial that the first overhand knot could have slipped before the second one could have held it into place, unless something was holding the first knot. The tightness of the cord produced a ligature furrow where the cord had "bitten" into the skin. The circumference of that part of the ligature that was around the victim's neck was 10 inches while the circumference of her neck was 11 1/4 inches. The injuries to the neck also indicated that the cord had been moved up and down on the neck. The medical examiner concluded that the victim had died as a result of strangulation. During the victim's strangulation, toxic products in the blood coming from the brain via the jugular veins remained in the brain; the blood flow to the brain via the carotid arteries was cut off; the nerves in the neck that govern the heartbeat were compressed; and the tongue was pushed upwards and backwards, covering the airway and thus stopping any oxygen from going to the lungs. The medical examiner concluded that it took the victim at least three minutes or "a little bit" longer to die, but that because the wounds also showed that the cord might have been moved up and down, the cord could have been around the victim's neck longer than three minutes.

Also on October 23 Chief Smith returned to the area where the dogs had left the road. This property is owned, in part, by the appellant's mother. There he found two white, heavily soiled rags and the remains of a burned purse. Another officer, who was with Chief Smith, found a comb some yards from the purse. The victim's mother identified the purse and the comb as those the victim was carrying the morning of her murder. A forensics document examiner subsequently examined the purse and removed from it a small portion of a burned photograph. He compared this with the left-hand corner of a photograph of the victim and her date at her junior prom and concluded that the two were exactly alike or very similar.

Several latent fingerprints were lifted from the victim's vehicle. An examination for fingerprints on the telephones at the church produced no print of any value. The victim's vehicle, the victim's body, and the victim's clothing were also examined for fibers and hairs. Early in the investigation, prints and hair samples were taken from individuals such as members of the victim's family (in the case of prints) and various suspects, not yet including the appellant. These known prints and samples were submitted to forensics examiners to compare with the gathered evidence. In regard to the hair, the trace evidence criminalist concluded that all the unknown hairs, including the two from the victim's clothing, were Caucasian; that some were similar to each other and that the two hairs on the victim's clothing were dissimilar to each other; that the only known hair sample to match any of the unidentified hairs was the victim's; and that the two hairs recovered from the victim's clothing did not belong to the victim. In regard to the loose fibers collected from the automobile and from the body and the clothing, the criminalist concluded that they were the same type of fibers as the fibers of her clothing and of her vehicle. Finally, no known prints submitted at the time matched any of the latent prints.

A forensic serologist determined that one of the two rags found near the scene by Chief Smith was soiled by seminal fluid and that the other had both blood and seminal fluid stains. The crotch area of the victim's sweatpants was also stained by seminal fluid and blood. The expert was unable to determine the ABO blood type of the bloodstains on the rag or the pants. An examination of the swabs from the sexual assault kit completed on the victim showed the following: the presence of seminal fluid and blood on the vaginal swabs; blood on the oral swabs; and blood on the rectal swabs. Spermatozoa were not found on the rectal smear slides but were found on the vaginal smear slides.

On October 29, one week after the offenses, Lieutenant Lovelace asked the appellant to come to the police department to give a statement concerning the instant offenses. The appellant was clearly not a suspect at this time. However, Chief Smith had been told that the appellant had been seen on the day of the murder at the Jefferson Davis Junior College, which is near the Alco Baptist Church, so he wanted Lovelace to take the appellant's statement to determine if the appellant had seen anyone or noticed anything near the school or the church.

The appellant abided by investigative request and gave the following tape-recorded information. On the night before the murder, he stayed at the home of John White, his brother-in-law, because he had been riding around in somebody's van and "drinking whiskey and drinking beer and shit." He had parked his truck at someone's house, so his fellow party-goers dropped him at White's house sometime before daylight. He stayed there until White took him to get his truck. Later that morning, he parked his truck by the duck ponds at the junior college and cleaned his truck. While he was sitting in his truck, he talked with Robert Martin until approximately 7:00 a.m. He then went to his house on Pea Ridge Road where he fell asleep and that he did not get up until late afternoon or early evening.

In this statement, the appellant also stated that a lot of people were walking on the college's running track, but that he did not recognize any of them. He would not disclose with whom he had been riding around, in his words, "all night and morning raising hell."

The investigation did not focus on the appellant until after Chief Smith talked with Nathaniel Nicholson, Jr., on December 21, 1988. Nicholson had talked to his brother, a Brewton police officer, who in turn notified Chief Smith. Nicholson claimed that, between 12:30 p.m. and 12:45 p.m. on the day of the murder, he had picked up the appellant at the intersection of Pea Ridge Road and the dirt road that leads to the area where the victim's burned purse was found -- the same intersection where the tracking dogs lost the scent they had been following. He further stated that the appellant had told him that he was going to play basketball at the college, so Nicholson took the appellant to the college gym. He also said that when the appellant got out in front of the gym, he walked between the gym and the tennis court toward the ponds. Nicholson gave this information to his brother after a \$ 10,000 reward had been posted, but before he knew of this reward.

On December 26, the appellant consented to the taking of a blood sample at the Brewton police station. At this time, the appellant was accompanied by a attorney Ed Hines, who indicated that the appellant would return the following day and give a statement, but that he would not represent the appellant any further.

At 7:30 a.m., December 27, the appellant's fingerprints were submitted for comparison with the latent prints lifted from the victim's automobile. On that same date, Chief Smith was notified of the results of that comparison: the appellant's right palm print matched the latent partial palm print lifted from the exterior back quarter panel on the passenger's side and his left palm print matched the latent palm print lifted from the inside of the rear vent window on the driver's side. On this latter match, the examiner noted more than 50 good points of identification -- more than he had identified in any other case. He also was of the opinion that this latter print, if undisturbed, could have been on the vehicle for several months. (The examiner could not identify the only other latent print of value, which appears to have been lifted from the inside rear vent window on the driver's side, with the 12 sets of known prints submitted to him.)

Later that same day, the appellant voluntarily returned to the Brewton police station at Chief Smith's request. He even arrived earlier than the 1:00 p.m. or 1:30 p.m. time to which they had agreed the previous day. When the appellant was asked to sign a Miranda rights waiver, he stated that he would like his wife to be present, so he telephoned her and she came to the station. The appellant then gave a tape-recorded statement, which began at 12:03 p.m. and ended at 12:28 p.m. During the tape recording of the appellant's statement, the following persons identified themselves as being present: Chief Smith, the appellant's wife, Alabama Bureau of Investigation (ABI) Agent Simon Benson, and ABI Corporal Robert Scheer. Before giving his statement, the appellant orally acknowledged his waiver of his Miranda rights and also signed a waiver form (which his wife also signed). He acknowledged that he had not been threatened into making a statement and that he understood the waiver of rights form. In this statement, the appellant stated that the night before the killing he had been drinking at Mike Booker's house "all night long" and that Booker's wife and brother-in-law were present; that before daylight, Booker took him to White's house, where he slept until White got off work; that they had a couple of drinks and talked; that then White took the appellant to get his truck, which was at Booker's house; that, on his way home, he stopped by the duck ponds at the college because he was nauseous; that he threw up there and then went to sleep; that Robert Martin woke him and they left at the same time; and that he went straight home, where he stayed the rest of the day. During the taping, the appellant's wife stated that the appellant arrived home between 9:30 a.m. and 10:00 a.m. The appellant further stated that there were a lot of people walking around the campus while he was there, but that he did not know any of them; that he paid no attention to any activity that might have been going on around the church; that he did not know the victim or the kind of car that she was driving; that he had never been in or around her car; and that he had never seen her before. After this statement, the appellant was arrested. At trial, Chief Smith noted that the appellant had answered every question during this interrogation.

n2 Miranda v. Arizona, 384 U.S. 436, 16 L. Ed. 2d 694, 86 S. Ct. 1602 (1966).

Chief Smith also testified that, although casts were made of the footprints found at the scene, he did not compare those prints with any of the appellant's shoes because, he said, the change in tread wear over even a matter of days would be so great as to destroy any possibility of a match. He did admit, however, that he could have investigated whether the appellant possessed the type of shoe that had made the imprints.

Finally Chief Smith testified that, on the day of the crimes, he questioned George Russell, who lived in a house located near where the dogs had lost the trial; that Russell said he had not seen anything; and that, on the following day, Russell told him that he had seen someone come from the dirt road, turn, and walk toward town. He further stated that Russell's description of this person changed every time he spoke with him: a man with a beard, a white man, and possibly "a light-skinned black man." He also explained that "if [Russell] had known it was Russell Dubose, he would have told me it was Russell Dubose."

In addition to the above-stated evidence, the prosecution also presented the testimony of Robert Martin. He testified that between 10:15 a.m. and 10:30 a.m. on the morning of the crimes, he saw the appellant slumped in his truck, which was parked at the Hines Building on the college campus; that during their three- to five-minute conversation, the appellant said that he was waiting on someone; and that, two to three weeks later, the appellant told him that if anyone asked him if he had talked with or seen the appellant at the college the morning of October 22, to "just say that [he] had seen him."

The prosecution also presented the testimony of Gladden Neal Hoomes. He stated that, around 11:15 a.m. on the morning of the crimes, he went to the duck ponds at the junior college for his lunch break; that, at that time, he saw the appellant's truck parked 75 to 100 yards away at the Hines Building, which is across the ponds from where Hoomes was parked and between the ponds and the church; that, when he left at approximately 11:45 a.m., the appellant's truck was still there; and that, during this time, he saw no activity around the appellant's truck. However, Hoomes admitted that because the appellant's vehicle's windows were tinted, he would not have known if the appellant was sleeping in his truck at that time.

Thereafter, the prosecution presented the testimony of Kevin C. McElfresh, Ph.D, the Director of Forensics of Lifecodes Corporation (hereinafter referred to as "Lifecodes") in Valhalla, New York, which tests deoxyribonucleic acid (hereinafter referred to as "DNA") for forensic purposes, i.e., to compare DNA left at a crime scene with DNA from a known suspect. He testified that he has a master's degree in molecular, cellular, and developmental biology and a doctorate in molecular and population genetics; that he has published 12 articles about DNA in scientific journals; that those articles were reviewed and approved by 2 other scientists in the appropriate field prior to being published; and that he has been recognized as a qualified expert in the fields of molecular biology and molecular and population genetics in courts in 15 to 20 states, including Alabama. He testified that the "Southern transfer technology," which has been recognized since 1975 as a standard procedure in laboratories around the world, was used in the present case to compare the DNA extracted from the sperm contained on the vaginal swabs taken from the victim and on the victim's sweatpants with the DNA extracted from white blood cells in the blood samples taken from various suspects. He further stated that John Coleman, an employee of Lifecodes who he considered qualified, performed the tests in this case; that he was familiar with the conditions under which the tests were performed; and that the tests conducted under those conditions would produce reliable results.

McElfresh described the testing procedure as follows: After the cells are isolated from the samples submitted, the nuclei of those cells are broken open and the DNA is spilled into solution. Then the cell debris is removed, leaving clean or purified DNA. Its structure is analogous to a ladder, the three billion rungs of which are made up of four types of bases designated as "G," "C," "A," and "T." These bases or rungs are put together in one very precise way -- one that does not allow deviation in the event the ladder is split down the middle, i.e., if the ladder is split down the middle, there is only one way it can be put back together: if everything is aligned precisely as it was before the split. Because the DNA molecule is very long (approximately six feet long) and winds up on itself, it is cut into short, useable pieces by subjecting the DNA molecule to a restriction enzyme that operates like a pair of molecular scissors to cut the DNA at a very defined point, a particular sequence of DNA, depending on what restriction enzyme is used. After the molecule is cut, the "many, many pieces" of DNA are subjected to a process known as electrophoresis which, in simple terms, arranges the pieces according to length. The DNA is then transferred to and permanently fixed to a nylon membrane, which looks like a white sheet of paper. A radioactive, synthetic single-stranded piece of DNA, which is called a probe, is then made as a complement of that specific base sequence of the isolated DNA on the nylon membrane that the examiner is seeking to find. When the isolated DNA is exposed to the probe, by pouring the radioactive liquid on the nylon membrane, the probe finds the specific sequence spot on the DNA -- its complement as defined by the DNA's original structure -- and attaches to it. Because the probe is radioactive, a little bit of radioactivity remains on the nylon membrane where the probe attached. Then x-ray film is laid over the membrane, patterns of black spots are made on the film by the film's exposure to the radioactivity, and these patterns are visually examined. This film is known as an autoradiograph or an autorad. Then, each band on the autorad is sized by a computer, and a record of these computer sizings is made.

n3 Although not testified to by McElfresh, we note that the next step in the process is the denaturing of the fragments, i.e., rendering them single-stranded, thus separating each base from its complement.

John Coleman, senior forensic scientist at Lifecodes, performed the procedure in this case. He testified that as of the date of his testimony, he had been working at Lifecodes for two years and, having attained a bachelor of science degree in chemistry, he was working on his master's degree in forensic sciences. He also acknowledged that he had testified 12 times in 8 states, including Alabama, as an expert in DNA identity testing. He explained that, after comparing the patterns of the DNA from the victim's vaginal swabs and sweatpants against the patterns of the DNA from the blood sample of the victim, from the two blood samples of the appellant, and from the blood samples of seven other named suspects, he concluded that the appellant's DNA matched the DNA in the semen on the swabs and sweatpants. In support of this conclusion, Coleman stated that each autorad "correctly and accurately depicts what was on [each] nylon membrane when [he] conducted [each] test"; that each sample was subjected to five probes, each probe looking at a different area of the DNA that is polymorphic or highly variable in each individual; and that each band on each autorad was sized by a computer and then the sizes were compared to verify the matches. n4

n4 For a further rendition of the general scientific theory underlying DNA print analysis, see *Ex parte Perry*, 586 So. 2d 242, 245-46 (Ala. 1991) (quoting *People v. Castro*, 144 Misc. 2d 956, 545 N.Y.S.2d 985 (N.Y. Sup. 1989)); for a further rendition of the techniques for implementing DNA print analysis based on this scientific theory, see *Ex parte Perry*, 586 So. 2d at 246-47 (quoting *State v. Schwartz*, 447 N.W.2d 422, 425 (Minn. 1989)); and for a further rendition of the explanation of the interpretation of the autorads, see *Ex parte Perry*, 586 So. 2d at 247 (quoting *Castro*, 144 Misc. 2d at 967, 545 N.Y.S.2d at 992).

McElfresh then returned to the stand and reiterated Lifecodes' finding of the match between the appellant's DNA and the DNA recovered from samples taken from the victim. McElfresh further testified that using an equation known as the "Hardy-Weinberg equilibrium" he had calculated the frequency of the random occurrence in the population of the DNA pattern identified as the appellant's; that the equation has been accepted in the scientific community; and that the methods used in computing frequency of occurrence are accepted and approved by scientists who study population genetics. He then estimated that there is a 1 in 500 million probability that the appellant's particular DNA pattern would appear in the North American black population and a 1 in 22 billion probability that that particular pattern would appear in the North American Caucasian population. McElfresh also stated that there are approximately between 15 and 20 million black males in North America. He explained: "What the statistics tell us here is you would only expect to find this pattern once and we have found it." Finally, he explained that the above probabilities of occurrence were calculated by using three standard deviations, thus producing conservative or significantly underestimated frequencies of occurrence that favor the appellant. He further stated that without the use of the standard deviations, the frequency of occurrence (presumably in the black male population) would be approximately 1 in 500 billion. On cross-examination, Dr. McElfresh stated that his statistics were based upon a database of 1,300 people.

The appellant testified in his own behalf as follows: On the evening prior to the instant crimes, the appellant was at a friend's house "all night mostly." Sometime before 6:00 a.m., he was taken to White's house. White took the appellant to get his truck, which he had left at Mike Booker's house. After he got his truck, he went to Blake Reynolds's house. There, Mary Ann, Blake's wife, said she wanted "some drugs or something, marijuana." He told her to meet him by the college. He then went to Colonial Manor Motel where he saw Aaron Patel and picked up "some drugs." From there, he went to a McDonald's restaurant where he got a sandwich and then to the duck ponds at the college. There, he ate, vomited, fell, and dozed off. He slept until Robert Martin woke him, and then they talked. Mary Ann did not show up to purchase the drugs so a few minutes after Martin left, the appellant left and went to the home of his cousin Leonard Odom. There, he watched a game. Then, he "went riding" up Highway 31 until he stopped his vehicle when he saw Nakita Wilson raking a yard. There, "Joe Blackburn and them came by and stopped and talked to [him] and the Reynolds boy stopped by and talked to [him]. Then, the appellant went to his home located on Pea Ridge Road about "12:00 or so."

During his direct testimony, the appellant admitted that 10 years prior to this trial, he had pleaded guilty to burglary. He also testified that he had to have been in the victim's car in the autumn. He explained that he had been stopped by some boys and girls to sell them drugs, and that he had "probably leaned against [the car] when [he] was talking to one

of the fellas, selling them some marijuana, and then [he] stepped inside of it and sold it to them ... like [he] always does." He said that he had not told the police that he had been in the victim's car because he had never been shown the car by the police and because he had been selling drugs at the time. Finally, he denied having raped, sodomized, or killed the victim.

During cross-examination, the appellant admitted that he had smoked "a little" marijuana at Odom's house; that he had seen Wilson since his arrest when Wilson was incarcerated in the same jail; and that he had called Wilson's father while he was incarcerated in the Baldwin County jail. He further explained the following: "It was a lot of people in the car when I sold them marijuana. I don't know who was driving. I sold it to some dude, some fellas, white boys."

Defense witness Cheryl Barton testified that, between 10:15 a.m. and 10:45 a.m. on the morning of the murder, she saw Rev. Rone, driving a late-model maroon Pontiac Bonneville automobile, pass her home and proceed in the direction of the church, which is on the same street as her residence. Defense witness Tom Reed testified that, while he was at Barton's residence on the morning of the murder "in the neighborhood of ten-something," he saw Rev. Rone, in a red, maroon Pontiac, pass Barton's residence and drive toward the church. He further stated that he saw Rev. Rone again pass the Barton residence around "eleven-something to 12:00," this time travelling in a direction away from the church.

Joanne White, the sister of the appellant's wife, testified that the defendant came to her house at 3:00 a.m. on the day of the murder; that she did not smell alcoholic beverages about him; and that, about 8:30 a.m., he left with her husband, who was taking him to get his truck. Her husband testified that he took the appellant to the house of one of the appellant's friends about 8:30 a.m. so that the appellant could get his truck.

Leonard Odom, who had a prior theft conviction, testified that, on October 22 the appellant was at his house and watching a football game from "a little" after 11:00 until "a little" after noon. Nakita Wilson testified that, on that morning, he was raking leaves at Platt Smith's residence on Highway 31 and that between 12:00 p.m. and 12:30 p.m. he saw the appellant and also Joe Blackburn with Blake Reynolds. Wendall Jacks confirmed that around lunchtime on October 22, Wilson was raking leaves for Smith. Joe Blackburn testified that he saw the appellant around noon on Highway 31.

Dudley Spratley testified that around 11:00 a.m. on October 22 as he was walking on Pea Ridge Road just before it intersects with Cunningham Road, he saw a girl driving a white Ford Maverick in a direction away from town; that she was driving recklessly; that he saw no one else in the vehicle; and that the girl was leaning forward in the vehicle. George Russell testified that on that date he saw a white man on the road that leads to the woods where the victim's body was found. On cross, Russell admitted that he had told the police that he had drunk some wine that morning.

John Earl Jefferson testified that on the morning of October 22 he was doing carpentry and maintenance work at the Dew Drop club, which is located on Pea Ridge Road beyond the Cunningham Road turn-off. He stated that around 11:00 a.m., he saw a "white Maverick go up the road and it didn't stay no time and came right back down the road," but he could not tell whether a male or a female was driving. He further testified that he had seen that same car on Cunningham Road earlier, the Thursday or Friday of that week, and that a young lady was driving. Jefferson also stated that a well-built, white male in a new, blue pickup truck with oversized tires was following the vehicle; that the driver of the truck stopped the vehicle as the vehicle was passing Jefferson; and that the driver "stared at him real hard" and then drove on.

In addition to the above testimony, the appellant presented the testimony of 15 character witnesses, all testifying that the appellant's reputation in the community for truthfulness and veracity is good.

After the defense rested, the prosecution called Blake Riddle (presumably the same man the appellant and Nakita Wilson referred to as "Blake Reynolds") who testified that, on October 22, he never left his house without taking his roommate Mayonda (presumably the same person the appellant referred to as Mary Ann, Blake Reynolds's wife); that he did not see the appellant that day; and that had the appellant talked with Mayonda that day, he would have seen him. Then Jackie Rone, the wife of Rev. Rone, testified that, on October 22, she stayed in Mobile until about 6:00 p.m. and that she was driving the family's burgundy Pontiac automobile. Finally, Sally King, the victim's mother, testified that, a week before the crimes, the victim's vehicle had been washed, but she did not know whether the interior had been cleaned. She also testified that, on the Wednesday before the murder, the victim went to school, returned home at 3:15 p.m., and did not leave again until 7:00 p.m. when she went to a prayer meeting.

The appellant first contends that the trial court erred in denying his motion to be declared indigent and for funds to retain expert assistance in the field of forensic DNA identification.

The attorney general counters this argument first by relying on *United States v. Robinson*, 718 F. Supp. 1582 (M.D.Ga. 1989), and asserting that the trial court's denial of the appellant's motion for indigent status was not an abuse of discretion. The *Robinson* court denied Robinson's motion to appeal in forma pauperis because of his ability to have his trial counsel paid in the substantial cash sum of \$ 9,000 in his behalf and because the court was unable to obtain any information about Robinson's financial status other than that an unidentified person had paid his trial counsel. The *Robinson* court's analysis allows for the consideration of whether there is available to a defendant funds from other sources such as family, friends, or defense funds. The state further asserts that, absent a finding of indigency, the trial court had no authority to grant funds to the appellant to obtain expert assistance.

The attorney general also argues alternatively that, assuming arguendo that the trial court erroneously denied the appellant indigent status, the court's consequential denial of funds for a forensic DNA identification expert was not error because, he argues, (1) the appellant's request for funds was untimely, coming almost nine months after his arrest; (2) the appellant failed to specifically describe any expert desired; failed to give any reasons for the necessity of an expert; failed to show a reasonable probability that an expert would be of assistance; and failed to show that denial of funds for expert assistance would result in a fundamentally unfair trial; (3) DNA identification evidence is no more damaging than fingerprint evidence, the presentation of which does not always require that the defendant be provided an independent fingerprint expert; (4) the defense could have obtained any necessary information from the state experts and other sources; and, finally (5) defense counsel "achieved extraordinary proficiency in his cross-examination of the state's DNA experts."

To address these contentions, it is necessary to set forth the pertinent procedural history of this case, although lengthy.

On December 30, 1988, three days after the appellant was arrested and during a hearing on the prosecution's motion to compel the appellant to be fingerprinted and palm printed and to provide blood samples, defense counsel noted that he had reason to believe that the prosecution intended to subject the samples to DNA testing, and he asserted that he also wanted a sample because he intended "to get experts to look at it also if they have something that it proves supposedly incriminating [his] client."

Also on December 30, the appellant filed a motion to inspect, examine, and test physical evidence in the prosecution's possession and control. The motion also requested that the time for examination be fixed by the trial court at a reasonable time in advance of trial. The appellant also filed a motion for discovery, requesting, among other things, "all records and reports of every kind reflecting the conduct or results of any medical, pathological, toxicological, chemical, biochemical, criminalistic, laboratory, forensic or scientific examination, investigations and analysis undertaken in connection with the investigation or preparation of this case." The motion further requested "[a] list of all expert witnesses the prosecution intends to call at trial, along with each expert's qualifications, the subject and a description of his or her contemplated testimony, and his or her report." By court order dated December 30, these two motions were continued.

During a hearing on January 31, 1989, on the appellant's motion to preserve the vaginal swabs, defense counsel noted that he intended to use a University of Alabama laboratory to test the vaginal swabs. He further stated that, while he did not know if the appellant could afford to have the testing done, he had not yet hired an expert because, he said, he was waiting for the prosecution's results. After defense counsel revealed in camera the specific laboratory where he intended to have the testing conducted, the trial court contacted the doctor in the genetics department identified by defense counsel, who told the court that the University's facilities were capable of testing the DNA of sperm collected by vaginal swabs, but that because such testing had never been done there before, the appellant might prefer having someone else conduct the test.

On February 1, the trial court ordered the prosecution to make available to the appellant all of the material and information requested by him that was discoverable pursuant to Rule 18, A.R.Cr.P. Temp.

On February 7, 1989, the court ordered that, upon the prosecution's receipt of certification from Lifecodes and the Alabama Department of Forensic Sciences that all necessary tests on the swabs had been completed, the prosecution was to notify defense counsel of the method, manner, time, and place by and at which defense counsel could receive all remaining swabs, parts thereof, or extracts or derivatives from the same.

On March 9, 1989, the appellant received the prosecution's first list in response to its discovery requests. No mention of a Lifecodes DNA report or of any DNA sample was made in the list provided the defense.

No mention of the appellant's possible indigency or of his intent to have any DNA testing done was made in a hearing held on May 23, 1989.

During a hearing on August 24, 1989, the prosecutor stated that he had provided defense counsel with a copy of the Lifecodes report. When the prosecutor asked defense counsel about his intentions to have any tests performed on the prosecution's evidence, such as the victim's vehicle, the trial court said to defense counsel, "I think you have had ample time to do all the testing you need to do, have you not?" Defense counsel responded that he had not because, he said, the DNA report was scientific and he had to find someone who understood it. He further stated that he planned to have tests performed on the substance extracted from the swabs "if they will get them together and return them to him." He also stated, "I want to have all the reports in my hand before I hire an expert to come do anything."

Also during this hearing, the trial court expressed its intent to have this case set for trial before January 1990, and to that end, it set August 30 as the deadline for discovery, unless good cause was shown for extending it. Defense counsel assured the court that the defense would be ready for trial the first week of October unless he had "some expert problems that [he was] not able to fixate on yet." He noted that he had not yet had any expert testing done. The prosecution stated that its readiness to try the case in October would depend on when its witnesses from Lifecodes could schedule their testimony.

On this date also, the appellant filed a motion for declaration of indigent status and for an order for the state to provide funds to retain expert witnesses and to perform independent testing of evidentiary samples. (The date of the certificate of service on this motion is June 24, 1989.) The motion alleged, in part, that the appellant had exhausted all of his assets; that he had been incarcerated since December 1988 and was totally without income; that the legal defense fund that had been set up by friends and relatives had been entirely exhausted; that he needed experts for the independent testing and analysis of the organic samples alleged to have been tested by the prosecution; and that his potential punishment is the most severe allowed in the United States. The appellant's affidavit submitted in support of his motion alleged that his last month of employment was December 1988 and that during that month he had earned \$ 600; that his common-law wife receives \$ 389 each month in Social Security disability payments; that he has no cash or any property of value; and that his dependents are his wife, his son, and his three stepsons. This motion was continued until September 5 to allow an investigation under § 15-12-5, and the findings of that investigation were to be promptly reported to the court.

The August 24 hearing continued to August 25. On that date, regarding defense counsel's futile attempt to hire an expert to compile evidence to be submitted in support of his motion for a change of venue, defense counsel explained, "I kept hoping I could find a professional who could do it at a cheaper rate and the [appellant]'s family would come up with the money to retain such a person [but t]hey were unable to do so." Also on that date, the court told defense counsel the following:

"Richard [(defense counsel)], I am not going to do anything that I think is prejudicial to your client, but I am just trying to stress that it comes as a surprise to the Court that you haven't made any more steps or progress toward getting these samples tested. I just assumed that [that] was something you would have probably [done] already. I assumed you probably some time ago had sent them off somewhere, [--that] they were being tested. Because it took the State a long time to get them tested, and I assumed that [that] was something you would do in the early stages. And if you are entitled to it, I mean, if you are entitled to get them tested, then certainly I am going to give you a reasonable opportunity to do it. But I am just encouraging you to do it as soon as you can. I know you have other cases to handle. We all do. But we need to go ahead and move this one as much as we can."

During a hearing on September 5, the appellant's motion for a declaration of indigency and his general assertion that he needed funds to hire experts were again discussed. Defense counsel filed a "Memorandum in Support of Hiring of Expert in Anticipation of Granting of Indigency," with the expressed purpose of putting the prosecution on notice that he was going to file an ex parte petition, to be considered in camera, requesting that the appellant, as an indigent, be provided funds to be used for expert witnesses and setting forth the necessary factual support for his request. Defense counsel expressed his intent to file this motion only if he was allowed to file it in camera so that the defense theories contained therein would not be disclosed to the prosecution. When asked what kind of experts the appellant desired, defense counsel stated that he thought he should not have to disclose that information in front of the prosecution, arguing that if the appellant was not indigent, the prosecution would not be privy to this information. Thereafter, the trial court stated the following:

"I am probably going to deny the motion to declare the Defendant indigent and also I am probably going to deny the motions for financial assistance to employ whatever experts you are talking about. I really can't say for sure until I know what experts you are talking about. Course, if I deny the motion to treat the Defendant as being indigent, then the rest of it is moot anyway."

Subsequently, defense counsel stated that he needed the funds to determine if the prosecution's DNA experts' results or conclusions were valid and reliable and that only an expert could review the state's tests. The trial court dismissed this reason, noting that "the courts," at that time, had already decided, based on expert testimony, that DNA identification test results are valid and reliable.

In regard to the question of indigency, defense counsel stated that, after he had informed the appellant's wife that his fee was \$ 10,000, as far as he knew, the appellant's wife "got it from friends, neighbors, holding luncheons and the parties at night." He further asserted that the money raised was now gone; that he expended some of his fee on expenses; and that he intended to spend some of the last installment of his fee (\$ 1,050) "as I can best see fit for this man."

Near the conclusion of this hearing, the prosecution argued that the defense's request for funds and factual support thereof should not be filed or argued ex parte, and the prosecutor requested an opportunity to brief and to argue these points. Defense counsel explained that no such request had yet been made because any request would be premature until the appellant was declared indigent and because he wanted to give the prosecutor an opportunity to be heard on it. The prosecutor argued that the appellant's "Memorandum in Support of Hiring of Expert in Anticipation of Granting of Indigency" was premature because the question of indigency had not been settled. The court, in response, ruled that defense counsel could not file his motion without leave of the court.

Also on September 5, the prosecution provided the defense its second collection of items in response to discovery requests. Included were cuttings from the victim's sweatpants; two white rags (presumably those found near the victim's burned purse); and one rape kit identified as being that of the victim. In addition, the list of provided items included the six-page Lifecodes report, and it noted that this report had also been mailed to defense counsel by letter dated May 17, 1989.

A letter, dated September 19, shows the following findings by a probation and parole officer in regard to the appellant's financial status: the appellant's family's home is a mobile home, purchased in 1982 by the appellant and his wife for \$ 13,500, on which the monthly mortgage payment is \$ 200, and which is located on property belonging to the his wife's parents; the appellant and his wife own a 1980 Chevrolet automobile, valued at \$ 600; they have no other assets; prior to his arrest on December 27, the appellant had earned, as a laborer and a farmhand, \$ 9,342.66 that year; as a member of the Alabama Army National Guard, he had earned \$ 1,906.30; the appellant's wife, in a job which terminated with the appellant's arrest, had earned \$ 7,872 in 1988; since then, she has received \$ 389 monthly in Social Security benefits and \$ 239 monthly in food stamps; and the appellant's wife appears to have adequate resources for her four children "but little is left for extras."

In regard to the payment of defense counsel, the probation and parole officer's letter stated the following:

"The Defendant's family appears to have adequate but modest means and his wife's family has provided considerable support by contributing to his legal costs. Mrs. Dubose and Russell's attorney, Mr. Alexander, are co-signers on a legal defense fund checking account at the Altus Bank of Brewton. Mrs. Dubose had a statement showing a balance of \$ 27.50. She reported that a total of about \$ 10,000.00 had been deposited to the account and all but the small balance had been paid to the defendant's attorney. Mrs. Dubose said that the money was contributions from her family and from Russell's former employer."

In a hearing on September 27, defense counsel informed the court that the most recent check made out to him in the amount of \$ 1,050 was returned for insufficient funds. The court refused to hear any testimony in regard to the appellant's financial status and denied the appellant's motion for declaration of indigency. Defense counsel then asked the trial court to allow him to include in the record the defense's sealed pleadings listing the experts desired and giving the reasons they were needed. He claimed that these pleadings would have been filed had the court declared the appellant

indigent and that the inclusion of these pleadings was necessary to document the harm to the appellant caused by the court's ruling and also to document the record in accordance with *Ake v. Oklahoma*, 470 U.S. 68, 84 L. Ed. 2d 53, 105 S. Ct. 1087 (1985). The prosecutor objected and the court sustained the objection. The trial court also sustained the prosecutor's objection to defense counsel's request to include the sealed pleadings in the record solely for purposes of appellate review.

By an order dated October 13, the trial court set the trial for February 12, 1990, after noting that all discovery had been completed and that all pending motions had been ruled upon. It ordered that any pre-trial motions be filed no later than 30 days prior to the trial date.

On January 10, 1990, the appellant filed a "Motion to Reconsider Providing of Monies for Hiring of Experts" wherein he asked the court to reconsider its denial of the appellant's motion for indigent status. Defense counsel asserted that, although he was not abandoning his position that he should not be required to disclose to the prosecution the type of experts needed and the cost, he would openly explain his reasoning for his claim that funds were required for experts "in regard to the new science of DNA testing." He stated, "The necessity of these experts does not contemplate testing of the materials, but simply showing to the Court that the tests as offered by the State are unreliable and should not be admitted into evidence." He further explained, "Once the Defendant has been declared indigent, we will estimate how much money and what type experts are needed ex parte to the Court so as not to prejudice the Defendant."

This motion referred to the attached December 4, 1989, affidavit of Peter J. Neufeld, a New York attorney, which read, in part, as follows:

"2. My qualifications in support of this affidavit include the following:

"a. I was co-counsel . . . on *People v. Castro*, 144 Misc.2d 956, 545 N.Y.S.2d 985 (N.Y. Sup. 1989), the first trial court in the nation to exclude DNA evidence of a match on the grounds that the evidence was not sufficiently reliable.

"b. I served as a member of the New York State Governor's task force on the implementation of DNA testing from 1988 through 1989.

"c. I am co-chair of the DNA subcommittee of the National Association of Criminal Defense Attorneys. In that capacity I communicate with attorneys throughout the country who are handling DNA cases. Consequently, I am quite familiar with the costs essential to the adequate defense of an action involving DNA evidence proffered by the prosecution.

"3. By way of background, it is useful and appropriate to appreciate that the question of DNA testing's reliability is still an open and hotly contested matter in this nation's courts. It is sometimes suggested by DNA's proponents that the need for often lengthy and costly pre-trial hearings in DNA cases has been all but eroded due to the first three state court appellate decisions, all of which affirmed trial court rulings admitting evidence of a DNA match. A brief review of the DNA litigation to date, however, will surely demonstrate that the need for these hearings and the retention of experts is greater than ever before.

"4. *Andrews v. State of Florida*, 533 So. 2d 841 (Fla. App. 1988), [cert. denied, 542 So. 2d 1332 (Fla. 1989)], stands as the nation's first appellate decision on DNA profiling. Regrettably, the Andrews court's affirmation of DNA technology was based on the review of a trial record in which the defense called no witnesses in opposition and the cross-examination of the prosecution witnesses was, at best, perfunctory. In the second and third appellate decisions, *Cobey v. [State]*, 80 Md. App. 31, 559 A.2d 391, cert. denied, 317 Md. 542, 565 A.2d 670 (1989), and *Spencer v. [Commonwealth]*, 238 Va. 275, 384 S.E.2d 775 (1989), cert. denied, 493 U.S. 1036, 107 L. Ed. 2d 775, 110 S. Ct. 759 (1990); *Spencer v. Commonwealth*, 238 Va. 295, 384 S.E.2d 785 (1990), cert. denied, 493 U.S. 1093 (1990)], once again

the defense mounted no challenge to the reliability of the techniques -- no defense witnesses were called and defense attorneys conceded on the record that none could be found.

"5. In contrast, in the Castro case, decided on August 14, 1989, the defense called six world renowned scientists to challenge the admissibility of Lifecodes DNA test results which had declared a match. . . . They testified . . . that Lifecodes methods of doing DNA typing were both unreliable and would be generally rejected by the scientific community. The Castro court expressly held that Lifecodes methods for declaring a match were not sufficiently reliable to be presented to a jury. I am informed by representatives of Lifecodes that many of their critical methods have changed this fall in response to the Castro decision. However, since the testing in your case occurred during late 1988 and early 1989, none of these improvements would have been in place at the time testing was completed for the April 27, 1989, Lifecodes report.

"6. Quite recently, as other lawyers rapidly realized that there was less to DNA profiling than was implied in the private company's hype, more defense challenges succeeded. Earlier this month, in a unanimous decision, the highest appellate court in Minnesota reversed a trial court order admitting DNA evidence and ruled that Cellmark Diagnostics (along with Lifecodes, the second key supplier of forensic DNA testing) had not demonstrated that their methods and results were sufficiently reliable to be presented to a jury in a criminal case. [State] v. Schwartz, [447 N.W.2d 422 (Minn. 1989)]. And, although not an appellate decision, the trial court in [State] v. Pennell, [No. Crim. A. IN88-12-0051, -0052, and 0053, 1989 WL 167430 (Del. Super., Nov. 6, 1989)], ruled that Cellmark had failed to demonstrate that its methods for calculating probabilities would be reasonably relied upon by the scientific community. The critical distinction between Schwartz, Pennell, and Castro on the one hand, and the first three appellate decisions on the other hand, is that in the three cases where the court heard from knowledgeable defense experts, the proffered evidence was found wanting and at least partially excluded.

"7. Moreover, the role of suitable defense experts cannot be overlooked in their ability to review the tests and at times compel the testing lab to withdraw the evidence. This in fact occurred recently in cases where Lifecodes had completed the DNA testing, i.e., at first Lifecodes declared a match and subsequently they opined that the evidence was inconclusive.

"8. The retention of suitable experts is a relatively expensive undertaking. In part this is due to the fact that DNA profiling is such a new technology that there are few scientists sufficiently expert not only in the biological sciences but in the forensic applications as well.

". . . .

"10. Unlike conventional fingerprinting, analysis of the raw data in DNA cases will often consume dozens of hours. Lab notebooks which detail more than a dozen steps in the procedure must be scrutinized; the autorads alone, which are rarely pristine and clear, require hours of analysis to assist in a meaningful interpretation. For instance, in the Castro case, prosecution experts after an initial review of the autorads, considered them of good quality, generating reliable results. But after numerous problems were pointed out by the defense experts, the same prosecution experts re-reviewed the autorads and acknowledged the existence of flaws they had not previously noticed. Not only is the assistance of a molecular biologist called for, but a population geneticist is equally indispensable. If the testing lab declares a match, the second question concerns the probability of such a match occurring at random in the population. . . . In the Castro case, the defense experts' combined time spent in out-of-court consultation exceeded 300 hours. Perhaps this is an extreme example, but in many of the cases about which I am personally familiar, where the defense retained experts, the out-of-court time frequently exceeded 100 hours.

"11. There is no question that without allocating several thousand dollars to the defense for challenging the DNA evidence, a pre-trial admissibility hearing can be conducted. But it is equally clear that

without the necessary expenditure of funds, the hearing will be a sham and a denial of due process will ensue."

Mr. Neufeld also set forth the range of expert witness fees and expenses as between \$ 10,000 and \$ 30,000.

In addition to his motion for reconsideration of the court's denial of his motion to declare him indigent, the appellant filed a motion to suppress any results of DNA testing, again requesting that the court declare him indigent and provide funds for expert witnesses so that defense counsel could be adequately prepared and have the necessary experts to testify in a hearing on this suppression motion. He asserted that, without such assistance, he would be denied his rights to due process and effective counsel. He further filed on January 10, a motion for discovery of the evidence upon which the opinions of the Lifecodes experts were based, including copies of the autorads and the originals; the original computer sizings for each of the appellant's samples; Polaroid pictures of the test gel and the yield gel for all gels compared; all laboratory notes; and the DNA fragment sizes for the DNA samples taken from the vaginal swabs and the sweatpants. Defense counsel asserted that the original autorads were needed because significant detail is lost in copying them. Counsel also offered to comply with any reasonable requests of the court to assure the protection of the originals.

On January 11, 1990, the prosecution filed its third list of discovery items provided to the defense, which included the following items, available for inspection at the assistant district attorney's office: the database of Lifecodes, consisting of 43 pages; determination of a DNA print pattern match, 2 pages; 10 Polaroid photographs; Lifecodes' lab notes, 36 pages; and copies of 13 autorads.

During a hearing on January 16, the trial court expressed its exasperation at defense counsel's late motion for discovery of Lifecodes' documents. According to the trial court, both parties represented to the court on or before October 13, 1989, that all discovery had been completed. Defense counsel admitted that this late motion was the first one asking for specific Lifecodes items and that the report from which he had concluded that these additional items were necessary, had been provided to him before October. However, defense counsel also explained that because he had had no funds with which to hire experts to assist him "to even understand the [DNA] evidence," he was forced to resort to "absolute favor of attorneys and experts," one of whom was Neufeld, who explained what items were necessary for defense counsel to have to effectively proceed in this case.

In response to the trial court's questioning of why defense counsel had not earlier filed a motion to reconsider the court's refusal to declare the appellant indigent, defense counsel explained that he had found Neufeld's name in an article published in October and that it had taken some time to contact him and work with him. The prosecutor countered that defense counsel had known about the Castro case "long before October" and that he could have easily found out who the Castro defense attorneys were. He further stated, "The Lifecodes people tell us that the problems that surfaced in the Castro case are not problems in this case; that the testing procedures had been corrected prior to the testing in this case." In response to the court's question of whether January 10 was the earliest counsel could give the court some idea of the experts needed, the cost, and the reasons they were necessary, defense counsel explained that all information had been provided in the pleadings that the court had refused to consider ex parte and had refused to seal and include in the record. He further assured the court that he was again prepared to provide the court with the DNA experts' names and addresses and the cost of securing the experts. Counsel again asked the court to permit into evidence the sealed pleadings that had been refused on September 27, 1989; again the prosecutor objected to their inclusion into the record as sealed or to their review ex parte; and again the court denied admission. The prosecution also informed the court that it was still taking the position that the appellant had not shown that he was indigent and thus that the motion for reconsideration should not be granted; and that the appellant had not met the Ake requisite. After defense counsel informed the court that the granting of his motion would probably not result in a continuance, the court commented that the best course of action for defense counsel to have taken was to have contacted his experts first and then he would have been prepared to furnish the pertinent information to the court. In response, counsel explained that he could not contact any experts until he knew whether he was going to be provided the original autorads. The court then took the motion for reconsideration under advisement. In an order dated February 5, 1990, the trial court denied the appellant's motion to reconsider.

On February 7, the prosecution filed a fourth list of discovery items provided the defense. The list includes the following items that had been received from Lifecodes and were available for inspection in Chief Smith's office: vaginal swabs (presumably of the victim's body); two samples of the appellant's blood; and one sample of the victim's blood. In regard to the request for the original autorads, the discovery response stated that because the Lifecodes laboratory policy prohibits the original autorads from leaving the lab except in the possession of a Lifecodes employee, the original auto-

rads were available for inspection in Valhalla, New York. Finally, the prosecutor informed defense counsel that all original computer sizings and lab notes were being forwarded to the prosecutor, who would immediately forward them to defense counsel and that test results of an additional test (with a different probe) then in progress would be provided as soon as possible. A fifth list, filed on the same date, documented that the prosecution was providing five pages representing the curriculum vitae of Kevin C. McElfresh and six pages representing Lifecodes' testimony.

On February 12, the prosecution, in its sixth discovery list, provided defense counsel 95 pages, representing an updated report from Lifecodes, the computer sizings, a summary of the forensic report, and lab notes.

Also on this date the parties began the jury selection process. The jury was seated on the morning of Friday, February 16.

During the prosecution's case-in-chief, immediately before the prosecution's presentation of the DNA testimony, defense counsel objected because, he argued, being indigent, the appellant was unable to hire experts to defend his position and to rebut the prosecution's expected testimony. Counsel also moved for a hearing outside the presence of the jury to determine whether the DNA analysis meets the test set out in *Frye v. United States*, 54 App. D.C. 46, 293 F. 1013 (D.C. Cir. 1923). The court initially said that it would allow the prosecution to present its evidence to the jury without any hearing, if the prosecution was so inclined. However, after defense counsel's strenuous objection and the prosecution's assertion that such a hearing would take only 15 to 20 minutes, the court allowed the hearing to proceed.

During this hearing, which comprises only 17 pages in the record (8 pages of direct testimony), only McElfresh testified. After giving his qualifications and a short history of the development of DNA testing in the general scientific community's, McElfresh testified that the test used in this case is known as the Southern blot, Southern transfer, or DNA print test, and is based upon scientific principles that have gained general acceptance by the authorities in the fields of molecular biology and molecular population genetics. In answer to whether the techniques required by the Southern transfer test were actually performed in this case, McElfresh answered that, although there are some variables within that technology, the same basic techniques were used. McElfresh also stated that John Coleman, who conducted the instant tests, was qualified and that the tests in this case were conducted under conditions that would render the results reliable. Upon conclusion of this evidence, the court declared McElfresh to be an expert in the fields of molecular biology and molecular population genetics, and the court found that forensic DNA identification testing has gained a general acceptance in those same fields.

During the testimony before the jury of chain-of-custody witnesses from Lifecodes, defense counsel attempted to cross-examine them as to their knowledge of particular articles that have been published in various media. One witness was asked if she was familiar with a news article that had appeared two weeks earlier on the front page of the *New York Times*, questioning the reliability of Lifecodes' DNA testing, or with an article in *Science and Nature* about the reliability of DNA testing. Prior to cross-examination of the next witness, the prosecutor made a motion in limine, seeking to prohibit defense counsel from "quoting from any source whatsoever." He argued as follows: "Your Honor, he is bringing in opinions and contents of articles that are written by someone else and that person is not available to testify. [Section 258.01 of *C. Gamble, McElroy's Alabama Evidence* (3d ed. 1977)] says how you can get them in, certain ways, but he doesn't have anyone here to do that. . . ." The court granted the motion and ordered defense counsel not to cross-examine the witnesses regarding news articles questioning the validity of forensic DNA testing, but allowed him to use learned treatises, essays, or pamphlets. In response, defense counsel stated that because his motions for indigent status and for expert funds had been denied, his only remaining tool for cross-examination was the use of articles and that because of the court's ruling, the appellant was being denied his constitutional right to confront his accusers. Then the prosecutor stated the following:

"I want to put things in the record since we are beating this dead horse. Back in August or September this Court advised Mr. Alexander if he brought [the Court] the names of the laboratories and the costs that the Court would consider it. To my knowledge he never brought you one name or one laboratory. You asked him for costs in that regard and he never provided it to this Court."

Thereafter, when defense counsel asked the second witness about the *Science and Nature* article "concerning the McCloud case wherein the testimony of Lifecodes was disallowed," the court sustained the prosecution's objection to the question on the ground that the witness was not an expert.

Then, McElfresh gave his first testimony before the jury. During this testimony, defense counsel objected to the admission of any statistical extrapolations offered by McElfresh on the grounds that they were so overwhelming that they invaded the province of the jury and take away its function and that they were based on "some 1300 factual findings." The prosecutor responded as follows: "Your Honor, I object. He is testifying. This is not before the Court. . . . He is presenting stuff and putting stuff in the record. He is not an expert."

After the jury found the appellant guilty and rendered its advisory sentence, and again after the court sentenced the appellant, the appellant requested that the sealed envelope allegedly containing the pleadings in support of his request for funds for experts be included in the record to be considered on appellate review. The court on both occasions sustained the prosecution's strenuous objections.

Subsequently, on April 20, 1990, defense counsel filed a motion for a new trial, alleging, among other things, that the trial court's failure to provide the appellant funds for expert assistance was error. Attached to that motion are the pleadings that allegedly supported his motions for funds to hire experts and that counsel had wanted sealed and made a part of the record in this case. In those pleadings, which defense counsel noted were filed pursuant to the court's instruction on August 25, 1989, counsel explained that he was not provided the prosecution's DNA results until May 19, 1989. He further alleged that since the appellant's arrest, progress has been made in exposing the inadequacies of the DNA testing and that opinions of its reliability vary widely. Counsel asserted that "in order to adequately present a motion to suppress based on inadequate handling of samples and inadequate use of testing equipment (the validity of which is not yet proven), this defense counsel will need an expert to be available to [him] to explain the intricacies of the test which is being performed so that the results can not only be appropriately cross-examined, but an appropriate motion to suppress can be meaningfully presented to the Court." After naming the three generally recognized experts in this field (one being Lifecodes), counsel asserted that "there seems and appears to be a definite desire to not squabble between each other about the validity of the others' testing in order to establish jointly their vested financial interest in proving the reliability of such tests." Defense counsel then requested an additional two weeks to provide further information, i.e., the proposed expert's name and the amount of funds necessary to secure the expert's services. Finally, he attached a copy of Lifecodes' DNA "matching" results in an attempt to have the court understand "the difficulty defense counsel is having in understanding the meaning of the information contained therein."

After the denial of this motion for a new trial on July 3, 1990, the trial court declared the appellant to be indigent and, accordingly, ordered that a record be prepared and that counsel be appointed for appeal.

Our threshold inquiry is whether the trial court abused its discretion in denying the appellant's pretrial motion for indigent status for the purpose of securing funds for expert assistance. We need not look to the federal case law argued by the attorney general, because the Alabama Supreme Court, in *Ex parte Sanders*, 612 So. 2d 1199 (Ala. 1993), has recently considered the question of "whether an indigent defendant, for whom a third party has retained legal counsel, has a right to funds for expert assistance when the need for that assistance and its relevance to the defense theory is shown," *id.* at 1199. At his arraignment, Sanders was declared indigent and was appointed counsel. Two weeks later, his family retained counsel to represent him, and his appointed counsel withdrew. Retained counsel later requested that the court approve funds to enable Sanders to hire a ballistics expert. The trial court denied this request, stating, in part, "You have got retained counsel, and I am not going to provide funds to do that."

In regard to a trial court's determination of a defendant's indigency, the Sanders court stated the following:

"Section 15-12-1 defines an indigent defendant [as] 'any person involved in a criminal or juvenile proceeding in the trial or appellate courts of the state for which proceeding representation by counsel is constitutionally required and who under oath or a affirmation states that he is unable to pay for his defense and who is found by the court to be financially unable to pay for his defense. Section 15-12-21(d) provides that 'counsel [appointed to defend an indigent defendant] shall also be entitled to be reimbursed for any expenses reasonably incurred in such defense to be approved in advance by the trial court. . . .'

". . . .

"The criteria for determining indigency are set out in § 15-12-5(b):

"In determining indigency, the judge shall recognize ability to pay as a variable depending on the nature, extent and liquidity of assets, the disposable net income of the defendant, the nature of the of-

fense, the effort and skill required to gather pertinent information and the length and complexity of the proceedings.'

"We agree with the holding of the Court of Criminal Appeals in *Russaw v. State*, 572 So. 2d 1288 (Ala. Cr.App. 1990), that the assets of friends and relatives, not legally responsible for the defendant, are not included within the 'assets' referred to in § 15-12-5(b).

"This is in accord with the general rule that "the earnings or property of various persons other than the accused, but in some way related to him, [should] not be considered in determining his indigency, the test being the personal means of the accused." Annot., 51 A.L.R.3d 1108, § 4 (1973). "The court must look only to the defendant's own earnings and assets, disregarding the potential assistance of friends and relatives who have no obligation to support the defendant." 2 W. LaFave and J. Israel, *Criminal Procedure* § 11.2(e) at 28 (1984).'

" 572 So. 2d at 1295.

". . . .

"Looking at the statute, we agree that the legislature intended for the trial court, in determining indigency, to consider only the assets of those persons legally responsible for the defendant. This is consistent with the purpose of establishing the indigent defense system in Alabama, which is to provide indigent defendants with their constitutionally guaranteed right to a adequate representation."

612 So. 2d at 1200-01. See also Ala. R.Crim. Proc. 6.3, Committee Comments ("In making a determination as to whether a defendant is financially able to employ counsel, the court . . . should not consider . . . the ability of friends or relatives not legally responsible for the defendant to obtain the services of counsel"). In regard to the specific issue before it, the Sanders court held, as follows:

"If the assets of friends and relatives who are not legally responsible for the defendant are not included in determining a defendant's indigency, then the fact that a friend or relative pays for an indigent defendant's counsel should not be considered in determining whether the defendant is entitled to funds for expert assistance. The simple fact that the defendant's family, with no legal duty to do so, retained counsel for the defendant, does not bar the defendant from obtaining funds for expert assistance when the defendant shows that the expert assistance is necessary."

612 So. 2d at 1201. The court concluded that it would have been error for the trial court to have denied Sanders's request for funds on a finding that Sanders was not indigent. *Id.* at 1202. (However, on the facts presented, the Sanders court held that the error was harmless.)

The appellant certainly fell within the definition of an "indigent defendant," § 15-12-1 and -12-5(b). In fact, without any apparent change in the appellant's financial circumstances during the course of the trial, the trial court ruled after trial that the appellant was indigent for purposes of appeal. Based on Sanders, we hold that the trial court erred in denying the appellant's motion for indigent status for the purpose of seeking funds for expert assistance.

The next determination, as framed by the Sanders court, is "whether the [appellant] had shown the need and relevance for the expert assistance." 612 So. 2d at 1200. By considering this to be the next determination, the Sanders court

implicitly recognized that if an indigent defendant shows the need and relevance for the expert assistance, the state is required to provide the funds for that expert assistance. In so holding, the court arguably was relying on § 15-12-21(d) (counsel's reimbursement for expenses reasonably incurred and approved in advance) to find this conditional right to funds for the assistance of any kind of expert. We conclude, however, that this implicit ruling also has constitutional grounds because the Sanders court, in its discussion, referred to "fundamental fairness" and the Due Process Clause. Thus, the Sanders court, in effect, repudiated dicta in *Ex parte Grayson*, 479 So. 2d 76 (Ala.), cert. denied, 474 U.S. 865, 88 L. Ed. 2d 157, 106 S. Ct. 189 (1985), a death penalty case. In *Grayson*, the court held that the limit of \$ 500 imposed by § 15-12-21(d) on funds for expenses incurred in the defense of an indigent, n5 did not violate Grayson's Sixth Amendment right to effective assistance of counsel. 479 So. 2d at 79. On rehearing, *Grayson* called the court's attention to *Ake v. Oklahoma*, 470 U.S. 68, 84 L. Ed. 2d 53, 105 S. Ct. 1087 (1985), wherein the Supreme Court, 11 days after the *Grayson* ruling, held,

n5 At the time, § 15-12-21(d), read in pertinent part: "Counsel shall also be entitled to be reimbursed for any expenses reasonably incurred in such defense to be approved in advance by the trial court, but in no individual case shall such expenses exceed one-half of the allowable attorney fees provided in this section [said fees not to exceed \$ 1,000.00.]" This section was amended by Act No. 84-793, 1984 Ala. Acts 1st Ex. Sess., p. 198, § 1, effective June 13, 1984, to read, in pertinent part, "Counsel shall also be entitled to be reimbursed for any expenses reasonably incurred in such defense to be approved in advance by the trial court." We note that Rule 6.4(g), Ala. R. Crim. P., defines the term "compensation for services" for which a private attorney representing an indigent is entitled to be reimbursed per Rule 6.4(e), to include "any reasonable expenses necessarily incurred by a appointed counsel in defense of an indigent client, including fees and expenses of expert or professional persons, provided that the incurring of such expenses has been approved in advance by the judge presiding, approval to be within the sound discretion of the court."

"When a [n indigent] defendant demonstrates to the trial judge that his sanity at the time of the offense is to be a significant factor at trial, the State must, at a minimum, assure the defendant access to a competent psychiatrist who will conduct an appropriate examination and assist in evaluation, preparation, and presentation of the defense."

470 U.S. at 83. In response to the *Ake* opinion, the *Grayson* court extended its opinion and stated the following:

"Petitioner interprets *Ake* as requiring that he have access, provided by the State, to a forensic pathologist who would furnish assistance to petitioner as to the cause of death of the victim, Annie Laurie Orr.

"The issue in *Ake*, supra, was whether or not an apparently insane indigent had the right to access to a psychiatrist to determine his sanity at the time of the alleged offense. . . .

"Petitioner does not claim that he was deprived of access to a psychiatrist's assistance. He claims, instead, a right to the services of a pathologist. With deference to petitioner's novel contention, there is nothing contained in the *Ake* decision to suggest that the United States Supreme Court was addressing anything other than psychiatrists and the insanity defense. Certainly, that decision cannot be broadly interpreted to require a State to provide experts of any category of a defendant's own choosing to assist him in preparing whatever defense he chooses. We have been cited to no other authority requiring such appointments."

479 So. 2d at 82.

In addition to noting that the Sanders court implicitly recognized that an indigent defendant who has shown the need and relevance for expert assistance should be provided that expert assistance, regardless of what type of expert, we note that we have found only two cases that have referred to the Grayson language that arguably interprets the Ake principles as applying only to psychiatrists and the insanity defense: Siebert v. State, 562 So. 2d 586, 590 (Ala. Cr. App. 1989), aff'd, 562 So. 2d 600 (Ala.), cert. denied, 498 U.S. 963, 112 L. Ed. 2d 408, 111 S. Ct. 398 (1990) (defendant requested funds to hire an expert to assist in the preparation of his motion for change of venue); and Duren v. State, 507 So. 2d 111, 118 (Ala. Cr. App. 1986), aff'd, 507 So. 2d 121 (Ala.), cert. denied, 484 U.S. 905, 98 L. Ed. 2d 206, 108 S. Ct. 249 (1987) (defendant requested funds to employ a criminal investigator, a polling expert, a jury selection expert, an expert on death qualified juries, a psychologist and a psychiatrist, and a presentence investigation expert). Both the Siebert court and the Duren court, after quoting the Grayson language, addressed their respective issues assuming that the principles of Ake were not restricted only to psychiatrists and the insanity defense, 562 So. 2d at 590; 507 So. 2d at 118.

In all other post-Grayson cases that we have reviewed that discuss the denial of funds for employing a nonpsychiatric expert to aid an indigent's defense, the reviewing court has relied, not on the Grayson distinction, but upon another ground to uphold the denial of funds: the indigent defendant failed to make a showing sufficient to support his request for funds. See, e.g., McLeod v. State, 581 So. 2d 1144 (Ala. Cr. App. 1990) (showing for funds for independent testing of alleged controlled substance was insufficient); McGahee v. State, 554 So. 2d 454 (Ala. Cr. App.) (the court, noting that Ake was followed by the appointment of a psychiatrist, found that, under Moore v. Kemp, 809 F.2d 702 (11th Cir.), cert. denied, 481 U.S. 1054, 95 L. Ed. 2d 847, 107 S. Ct. 2192 (1987), McGahee failed to make a sufficient showing of need for a psychologist), aff'd, 554 So. 2d 473 (Ala. 1989) (court, in affirming, noted that its holding was not to be construed as either acceptance or rejection of rationale that Court of Criminal Appeals used in reaching its decision); Davis v. State, 549 So. 2d 577, 579 (Ala. Cr. App. 1989) (while recognizing that "it is only where such an expert is necessary for an adequate defense that an accused may be allowed to procure expert testimony at the State's expense," the court found Davis's showing for the necessity of a paternity test to be insufficient); Garth v. State, 536 So. 2d 173 (Ala. Cr. App. 1988) (while recognizing that "[a] defendant may have a right to the appointment by the State of an expert where it is shown to be necessary for an adequate defense," the court found Garth's request for funds to hire an expert social scientist to be unreasonable and the funds unnecessary); Tarver v. State, 500 So. 2d 1232, 1245 (Ala. Cr. App.), aff'd, 500 So. 2d 1256 (Ala. 1986), cert. denied, 482 U.S. 920, 96 L. Ed. 2d 685, 107 S. Ct. 3197 (1987) (showing in support of request for funds for a forensic expert was insufficient); Hold v. State, 485 So. 2d 801 (Ala. Cr. App. 1986) (showing for request for private investigator insufficient). See also Caldwell v. Mississippi, 472 U.S. 320, 323, n. 1, 86 L. Ed. 2d 231, 105 S. Ct. 2633 (1985) (the Court found "no need to determine as a matter of federal constitutional law what if any showing would have entitled a defendant to assistance of [a criminal investigator, a fingerprint expert, and a ballistics expert]" where it found no denial of due process given that "petitioner offered little more than undeveloped assertions that the requested assistance would be beneficial"). But see Moore v. Kemp, 809 F.2d at 711-12 (although the court acknowledged the implication in Caldwell that "the government's refusal to provide nonpsychiatric expert assistance could, in a given case, deny a defendant a fair trial," it found such implication to be questionable in light of Caldwell's subsequent statement that it had "no need to determine as a matter of federal constitutional law what if any showing would have entitled a defendant to assistance of the type [Caldwell] sought," 472 U.S. at 324 n. 1, but nonetheless, for sake of argument, the court assumed that the due process clause could require the state to provide nonpsychiatric assistance upon a sufficient showing of need (emphasis added in Moore v. Kemp)).

Even the Alabama Supreme Court in Grayson seemed, in its original opinion, 479 So. 2d at 79, to recognize the possible implication of constitutional guarantees when it commented that "the Court of Criminal Appeals recognized in the present case that 'constitutional guarantees may require a state to provide an indigent criminal [defendant] with expert assistance.' [Grayson v. State, 479 So. 2d 69, 72 (Ala. Cr. App. 1984).]" See also Ex parte Clisby, 456 So. 2d 95, 97 (Ala. 1983) ("the indigent defendant in a criminal case [may have] a constitutional right to have the aid of the State by the appointment of an expert for his exclusive benefit . . . where necessary for an adequate defense"); Magwood v. State, 426 So. 2d 918, 925 (Ala. Cr. App. 1982), aff'd, 426 So. 2d 929 (Ala.), cert. denied, 462 U.S. 1124, 77 L. Ed. 2d 1355, 103 S. Ct. 3097 (1983) ("a defendant may have some right to the appointment of an expert for preparation of his defense").

Based upon the case law discussed above, we conclude that the courts of this state recognize that the holding of Ake extends beyond a request for psychiatric assistance to require that the state provide the indigent defendant with other types of expert assistance upon a sufficient showing. We wholeheartedly agree with the following:

"There is no principled way to distinguish between psychiatric and nonpsychiatric experts. The question in each case must be not what field of science or expert knowledge is involved, but rather how important the scientific issue is in the case, and how much help a defense expert could have given."

Little v. Armontrout, 835 F.2d 1240, 1243 (8th Cir. 1987), cert. denied, 487 U.S. 1210, 101 L. Ed. 2d 894, 108 S. Ct. 2857 (1988).

Thus, we come to the question of whether the appellant, under the circumstances presented in this case, made a sufficient showing, that the expert assistance requested was indeed necessary and relevant to his defense. The Alabama Supreme Court's latest recognition of the appropriate analysis for this determination is found in *Ex parte Sanders*, 612 So. 2d at 1201 (quoting *Grayson v. State*, 479 So. 2d at 72), as follows:

"The threshold question requires the showing of a need for the requested services. *Ex parte Argo*, 42 Ala. App. 546, 547, 171 So. 2d 259 (1965). We recognized in *Gwin v. State*, 425 So. 2d 500, 508 (Ala. Cr.App. 1982), cert. quashed, 425 So. 2d 510 (Ala. 1983), that before determining whether fundamental fairness requires that an accused be afforded the opportunity to have an expert of his choosing examine a piece of 'critical evidence whose nature is subject to varying expert opinion,' it should first be determined that the evidence is 'critical.' Evidence is 'critical' for purposes of the due process clause if it could induce a reasonable doubt in the minds of enough jurors to avoid a conviction when that evidence was developed by skilled counsel and experts. *White v. Maggio*, 556 F.2d 1352, 1357-58 (5th Cir. 1977); *Gwin*, supra."

The opinion of *Gwin v. State*, which the *Sanders* court adopted in pertinent part, addressed *Gwin's* argument that the trial court erred in denying his request that the prosecution be required to produce the murder weapon and bullets for independent expert examination because this ruling denied "his rights to the means necessary to conduct his defense," 425 So. 2d at 508. In support of this argument, *Gwin* relied upon *Barnard v. Henderson*, 514 F.2d 744 (5th Cir. 1975), wherein the court addressed the issue whether the trial court erred in denying *Barnard's* request for permission to allow inspection of the murder weapon and bullet by a ballistics expert of his own choosing, *id.* at 746. In finding this contention to be meritorious, the *Barnard* court stated the following:

"That this was not a frivolous request is evident since one of the most damaging pieces of evidence against *Barnard* was the identification of the murder bullet as having been fired by a .22 Ruger pistol traced to his possession. Seventy-five percent of this slug was destroyed and the identification was made on the remaining 25%. This fact alone raises the possibility that had *Barnard* been assisted by a ballistics expert of his own he may have been able to shake the identification testimony of the State's experts.

". . . .

"Under Louisiana procedure pre-trial discovery of evidence in the hands of the prosecution is limited to the defendant's confessions and to narcotics. *State v. Barnard*, 287 So.2d 773. [(La. 1973)]. In affirming *Barnard's* conviction the Supreme Court of Louisiana said that, although Brady production of evidence is required where the evidence is favorable to the accused, there had been no showing that an examination of the murder weapon and bullet would be favorable to *Barnard*. *Id.* at 774. As we stated in *Williams v. Dutton*, 5 Cir., 1968, 400 F.2d 797, 800 [cert. denied, 393 U.S. 1105 (1969),] due process cannot be sidestepped by such a facile distinction.

"The question is not one of discovery but rather the defendant's right to the means necessary to conduct his defense. Justice Barham of the Supreme Court of Louisiana pointed out in his dissent to the majority opinion in *Barnard* that 'the only means by which the defendant can defend against expert testimony by the State is to offer expert testimony of his own.' 287 So. 2d at 778. We agree. Fundamental fairness is violated when a criminal defendant on trial for his liberty is denied the opportunity to have an expert of his choosing, bound by appropriate safeguards imposed by the Court, examine a piece of critical evidence whose nature is subject to varying expert opinion."

Id. at 746.

The *Barnard* case would, by simple analysis, mandate our holding that the trial court in this case erred in refusing the funds necessary for securing any countervailing expert opinion on the DNA "matching" evidence. Certainly, the appellant's request was not frivolous, because the most damaging piece of evidence against him was the DNA "match." This is apparently the criterion that the *Barnard* court used to determine if evidence is critical. As we will later discuss, the state of the DNA technology and its application at the time of the testing in this case raise the possibility that had the appellant been assisted by an expert, he may have been able to cast doubt on the DNA "match" presented by the prosecution's expert testimony. Finally, we certainly agree, as we will later discuss, that the only means by which the appellant could have effectively defended against the prosecution's experts' testimonies was to offer his own DNA expert testimony.

Although as we have shown the *Barnard* analysis would allow a simple and straightforward determination, in the later case of *White v. Maggio*, 556 F.2d 1352 (5th Cir. 1977), also cited by the Alabama Supreme Court in *Sanders*, the Fifth Circuit Court of Appeals expanded its definition of "critical evidence," as that term was used in *Barnard*. In *White v. Maggio*, the court was again confronted with the question of whether the prosecution's refusal to produce certain tangible evidence for pretrial inspection by the defense was fundamentally unfair. The court expounded on "critical evidence" as follows:

"Under *Barnard* a writ of habeas corpus should issue only if the state prevented inspection by defense experts of tangible evidence that is both 'critical' to the conviction and subject to varying expert opinion. . .

..

". . . .

". . . The term, 'critical evidence' . . . is not synonymous with 'dispositive'; it does not mean 'most important.' Instead, it denotes the due process policy that the fourteenth amendment will compel production by the State only of evidence having substantial probative force. In *United States v. Herndon*, 5 Cir. 1976, 536 F.2d 1027, 1029, for instance, we stated this general requirement in terms of materiality. If the State withholds immaterial evidence -- evidence without probative force on the issues at trial -- the defense would not be impaired and due process would not be denied. The proper definition of the word 'critical' must therefore reflect the policies and purpose of the due process clause.

"A useful analogy can be drawn to the line of cases following *Brady v. Maryland*, 1963, 373 U.S. 83, 10 L. Ed. 2d 215, 83 S. Ct. 1194 . . ., which required, as a matter of due process, the production by the prosecution of exculpatory evidence. The Court added in *Brady*, however, that due process required the production only of 'material evidence.' The Court has recently defined this term:

"The proper standard of materiality must reflect our overriding concern with the justice of the finding of guilt. Such a finding is permissible only if supported by evidence establishing guilt beyond a reasonable

doubt. It necessarily follows that if the omitted evidence creates a reasonable doubt that did not otherwise exist, constitutional error has been committed.'

" United States v. Agurs, 1976, 427 U.S. 97, 112, 49 L. Ed. 2d 342, 96 S. Ct. 2392. . . . The Agurs test, which applies when the defense has not requested particular exculpatory information, differs from the test that applies when the defense has requested specific evidence. Cf. *id.*, at 106-07. . . . The due process balance changes when a specific request is made, because the prosecutor is better able to assess materiality when he knows precisely the object of his consideration. If he then fails to turn over exculpatory information, he has deprived the defendant of due process unless 'there appears no reasonable likelihood that [the evidence] would have affected the judgment of the jury.' *Shuler v. Wainwright*, 5 Cir. 1974, 491 F.2d 1213. Stated in positive terms:

"if there is a significant chance that the withheld evidence, developed by skilled counsel, would have induced a reasonable doubt in the minds of enough jurors to void a conviction, then the conviction must be set aside.'

" 427 U.S. at 119. . . . (Marshall, J., dissenting). The Supreme Court has therefore decided that the Constitution will compel the production of evidence only if it possesses probative force, the strength of which can vary depending on the specificity of the defense request for information.

"Because the due process policies are similar in *Barnard v. Henderson* and the Brady line, similar standards of materiality should apply in both. As in *Brady* and *Agurs*, our concern in *Barnard* was to ensure that the accused had the means necessary to conduct his defense; in short, to demonstrate to the jury that a reasonable doubt existed about his guilt. 'Critical evidence,' for purposes of the due process clause, is evidence that, when developed by skilled counsel and experts, could induce a reasonable doubt in the minds of enough jurors to void a conviction. When the defense makes a specific request for such evidence, the request should be granted. If only a general request is made, the higher standard of materiality announced in *Agurs* applies."

556 F.2d at 1356-58 (footnotes omitted).

We must admit that we have some difficulty in assessing the probative force of the potential evidence that could possibly have been uncovered by a defense DNA expert and in determining whether this evidence, whatever it might have been, would constitute "critical evidence." (We do note that while the probative value of the fingerprint identification evidence is limited to the establishment that the appellant had been in the victim's vehicle at some time prior to her murder, the DNA "matching" evidence is substantially more probative by automatically establishing that it was the appellant who had had intercourse with the victim.)

However, we consider that we need not belabor this *White v. Maggio* analysis (and consequently the *Sanders* analysis) because its pertinence to the question of whether the appellant has been denied due process by being denied funds for an expert has been supplanted by recent case law following *Ake v. Oklahoma*. In *Moore v. Kemp*, 809 F.2d 702 (11th Cir.), cert. denied, 481 U.S. 1054, 95 L. Ed. 2d 847, 107 S. Ct. 2192 (1987), the court granted Moore's petition for rehearing en banc to address the claim that "the trial court's denial of Moore's pretrial request for an independent expert to assist his attorney in confronting the physical evidence the State introduced against him at trial denied him due process of law," *id.* at 708. In addressing this contention, the court stated the following principles:

"Supreme Court precedent establishes the principle that the due process clause of the fourteenth amendment requires that the state, upon request, provide indigent defendants with the 'basic tools of an adequate defense . . . when those tools are available for a price to other prisoners.' *Britt v. North Carolina*, 404 U.S. 226, 227, 30 L. Ed. 2d 400, 92 S. Ct. 431 . . . (1971); see also *Ake v. Oklahoma*, 470 U.S. [at] 77 . . .; *Ross v. Moffitt*, 417 U.S. 600, 41 L. Ed. 2d 341, 94 S. Ct. 2437 . . . (1974); *Griffin v. Illinois*, 351 U.S. 12, 100 L. Ed. 891, 76 S. Ct. 585 (1956) (plurality). The state need not provide indigent defendants all the assistance their wealthier counterparts might buy; rather, fundamental fairness requires that the state not deny them 'an adequate opportunity to present their claims fairly within the adversary system.' *Ross*, 417 U.S. at 612 . . .; see also *Ake*, 470 U.S. at 77 . . .

"An expert can assist a criminal defendant in marshaling his defense in two essential ways. First, he can gather facts, inspect tangible evidence, or conduct tests or examinations that may aid defense counsel in confronting the prosecutor's case, including its expert witnesses, or in fashioning a theory of defense. Second, the expert can provide opinion testimony to rebut prosecution evidence or to establish an affirmative defense, such as insanity. In a given case, the assistance of an expert could be so important to the defense that without it an innocent defendant could be convicted or, at the very least, the public's confidence in the fairness of his trial and its outcome could be undermined."

809 F.2d at 709-10 (emphasis in original; footnote omitted). The court then held that "a fair reading of [*Ake* and *Caldwell*] is that a defendant must show the trial court that there exists a reasonable probability both that an expert would be of assistance to the defense and that denial of expert assistance would result in a fundamentally unfair trial." *Id.* at 712 (footnote omitted).

In addressing this two-pronged test in the context of the facts in this case, we are guided by the following principles laid down by the Moore court:

"An indigent defendant who did not have the assistance of an expert in preparing and presenting his case cannot be heard to complain about his conviction on due process grounds unless he made a timely request to the trial court for the provision of expert assistance, the court improperly denied the request, and the denial rendered the defendant's trial fundamentally unfair."

809 F.2d at 710. If the reviewing court finds that a timely request was made, the court must, in determining whether the trial court erred in denying that request, assess the reasonableness of the lower court's decision at the time it was made, as follows:

"This assessment necessarily turns on the sufficiency of the petitioner's explanation as to why he needed an expert. That is, having heard petitioner's explanation, should the trial judge have concluded that unless he granted his request petitioner would likely be denied an adequate opportunity fairly to confront the State's case and to present his defense?"

". . .

"If a defendant wants an expert to assist his attorney in confronting the prosecution's proof--by preparing counsel to cross-examine the prosecution's experts or by providing rebuttal testimony--he must inform the court of the nature of the prosecution's case and how the requested expert would be useful. At the very least, he must inform the trial court about the nature of the crime and the evidence linking him to the crime. . . The defendant's showing must also include a specific description of the expert or experts desired; without this basic information, the court would be unable to grant the defendant's motion, because the court would not know what type of expert was needed. In addition, the defendant should inform the court why the particular expert is necessary. We recognize that defense counsel may be unfamiliar with

the specific scientific theories implicated in a case and therefore cannot be expected to provide the court with a detailed analysis of the assistance an appointed expert might provide. We do believe, however, that defense counsel is obligated to inform himself about the specific scientific area in question and to provide the court with as much information as possible concerning the usefulness of the requested expert to the defense's case."

809 F.2d at 710-712 (footnote omitted).

It is within the context of the analysis of *Moore v. Kemp* that we address the attorney general's arguments in response to the appellant's assertion that his right to due process was violated by the trial court's denial of his request for funds to retain expert assistance in forensic DNA identification. The attorney general's first contention is that the appellant's request for funds was untimely, having been made almost nine months after his arrest. He argues that, although the record shows that as early as December 30, 1988, three days after the appellant's arrest, defense counsel was aware that the prosecution intended to use DNA testing, the appellant did not request for funds until August 24, 1989.

We find that the procedural facts of this case do not lend themselves to such a simple interpretation. It is correct that, on December 30, defense counsel noted that he had reason to believe that the prosecution was going to use DNA testing; however, we consider other circumstances to be more compelling in determining the reasonableness of the filing date of defense counsel's request. At the earliest possible time, December 30, 1988, defense counsel filed a motion to inspect, examine, and test the prosecution's physical evidence and a motion for discovery. Defense counsel explained early on (January 31, 1989) that he was not going to hire any expert until he had received the prosecution's test results. Although the trial court, on February 1, 1989, granted the appellant's discovery motion to the extent mandated by Rule 18, A.R.Cr.P. Temp., and on February 7 ordered the prosecution to notify defense counsel of the conditions under which he could receive all remaining swabs, parts, or extracts, the earliest possible date defense counsel could have received the Lifecodes report was date May 17, 1989; the autorads and lab notes, January 11, 1990; the vaginal swabs, February 7, 1990; and the computer sizings and updated report, February 12, 1990, the day jury selection began. (We do not consider that defense counsel was totally free of blame regarding the latter of these late productions because he acquiesced, by silence, in the court's finding on October 13, 1989, that all discovery had been completed; however, we further note that, in regard to the vaginal swabs and the autorads, he did notify the court during the August 24, 1989, hearing that the substance extracted from the swabs had not been given to him.) Defense counsel was not negligent in waiting until after he had received the DNA test results to conclusively determine that he needed expert assistance. Arguably defense counsel could have alerted the trial court in the May 23, 1989, hearing, of the appellant's indigency and the need for expert funds; however, we cannot be assured that at that time he had even seen the Lifecodes report. While we consider that defense counsel could have better or more quickly anticipated his client's indigent status in regard to his need for expert funds, even on August 24, 1989, there was no compelling reason for an immediate hiring of an expert because defense counsel had received nothing from Lifecodes except the final report. Yet, on that date, he filed a motion for declaration of indigency and expressed the appellant's need for the state to provide funds for retention of a DNA expert and for independent testing of the evidentiary samples. (Based on the certificate of service, we can conclude that the prosecutor was aware of this motion on June 24.) We consider the appellant's initial request to have been timely.

The attorney general also argues that the appellant made absolutely no showing of a specific description of any expert desired, no showing of any reasons for the expert's necessity, and no showing of a reasonable probability, that the expert would be of assistance to the defense and that the denial of such assistance would result in a fundamentally unfair trial. Defense counsel, however, was not permitted to proffer such a showing. After the motion for indigent status and funds for experts was filed, the prosecutor agreed with defense counsel that any factual support for the request of funds was premature until the appellant was declared indigent. Even the trial court stated that in the event the motion for indigent status was denied, the request for funds would be moot. The court then forbade defense counsel from filing any proffer without leave from the court. When the trial court denied the appellant's motion for indigent status three weeks later and subsequently throughout the proceedings, the trial court refused to accept into the record for purposes of appellate review of the issue, the appellant's proffer. Based upon the prosecution's strenuous objections to the proffer, the attorney general cannot now assert that the request for funds was properly denied because there was insufficient factual support for such a request.

Moreover, even at the time of the court's implicit denial of the appellant's first request for funds, the trial court had sufficient knowledge before it to mandate the conclusion that, unless it granted the appellant's request, the appellant would likely be denied an adequate opportunity fairly to confront the prosecution's case and to present his defense. See

Moore v. Kemp, 809 F.2d at 710. Certainly, the trial court knew of the nature the prosecution's case, i.e., the nature of the crimes and the evidence linking the appellant to the crimes. Although the trial court did not preside over the appellant's preliminary hearing and it appears that no transcript of that hearing was placed in the record prior to the trial court's ruling, compare Moore v. Kemp, 809 F.2d at 713, the trial court did preside over the extensive pretrial proceedings, including the hearing on the appellant's motion for a change of venue. In its order denying the motion for a change of venue, it specifically acknowledged that it had "carefully considered all of the evidence" concerning the motion, including "the newspaper articles and transcripts of television broadcasts." From the numerous newspaper articles and the extensive pretrial proceedings, the trial court had to have been aware of the nature of the instant crimes and the evidence linking the appellant to them: the matching of the fingerprints, witnesses placing the appellant in the vicinity of the church and witnesses placing him later in the vicinity of the location where the victim's body and vehicle were found, and the DNA "match." The trial court was further aware that the instant case is the product of one of the most intense investigations ever conducted by the Brewton Police Department and that a suspect was not arrested until two months after the commission of the offenses.

In compliance with Moore v. Kemp, the appellant specifically alleged that he needed an expert in the area of forensic DNA identification testing. The appellant also satisfied the requirement that he inform the court how the requested expert would be useful: he asserted that only an expert could determine whether the prosecution's results are valid and reliable. Moreover, even more compelling are the repeated pretrial references to the critical nature of the DNA "match" in this case. The prosecutor, early in the proceedings, informed the court that the blood sampling was an important part of his case and that the DNA evidence could not be duplicated anywhere. The prosecutor's agreement to a prospective trial date was always contingent on the availability of his Lifecodes witnesses. Defense counsel also alerted the court, early in the proceedings, that the testing of the substance on the vaginal swabs would produce either critical evidence or exculpatory evidence. The critical nature of this evidence was further emphasized by the facts that the technology of forensic DNA identification testing was in its infancy at the time the testing in this case was conducted and that such technology had not been so subjected to the scrutiny of the adversarial legal arena as to ensure its reliability. Finally, Neufeld's affidavit was more than sufficient in explaining how the requested expert would be useful, a specific description of the experts desired, and how those experts were needed.

We also find unpersuasive the state's additional argument that because the DNA "matching" evidence is no more damaging than fingerprint evidence and because the presentation of fingerprint evidence does not always require that a defense fingerprint expert be made available, the presentation of DNA "matching" evidence does not require the provision for a defense DNA expert. The underlying assumption is erroneous. "Equating the procedure with fingerprinting, a forensic technique considered so reliable that courts take judicial notice of its reliability, has contributed to the premature acceptance of DNA profiling as reliable in criminal prosecutions." Janet C. Hoeffel, Note, *The Dark Side of DNA Profiling: Unreliable Scientific Evidence Meets the Criminal Defendant*, 42 Stan. L. Rev. 456, 456 n. 3 (1990). One commentator, in characterizing the term "DNA fingerprinting" as misleading, explains, "By capitalizing on the deep-seated public confidence in the uniqueness of fingerprints. . . , the name DNA fingerprinting may create unsubstantiated beliefs and expectations in the minds of judges and jurors." William C. Thompson & Simon Ford, *DNA Typing: Acceptance and Weight of the New Genetic Identification Tests*, 75 Va. L. Rev. 45, 53 n. 46 (1989) (quoting Dan L. Burk, Abstract, *DNA Fingerprinting: Possibilities and Pitfalls of a New Technique*, 28 *Juremetrics J.* 455, 468-69 (1988)). In *Commonwealth v. Curnin*, 409 Mass. 218,, 565 N.E.2d 440, 441 n. 2 (1991), the court stated the following:

"We elect not to use the descriptive phrase 'DNA fingerprinting' because (1) it tends to trivialize the intricacies of the processes by which information for DNA comparisons is obtained (when compared to the process of fingerprinting) and (2) the word fingerprinting tends to suggest erroneously that DNA testing of the type involved in this case will identify conclusively, like real fingerprinting, the one person in the world who could have left the identifying evidence at the crime scene."

Such a general assumption -- that DNA "matching" evidence is basically like fingerprint evidence -- could have contributed to the phenomenon described in January 1990, one month prior to the instant trial, as follows:

"Although it usually takes many years for the engines of justice to churn out a personal injury suit or a criminal appeal, in less than two years the combined efforts of commercial laboratories and prosecutors

have streamrolled the so-called 'DNA fingerprinting' technique through the courts. The technique has been easy to sell. The current national obsession with crime-fighting and the apparent decrease in concern for individualized justice create a receptive environment for a cutting-edge technology, dazzling in its promise of identifying criminals with 'virtual' or '99 percent certainty.' Courts lost all sense of balance and restraint in the face of this novel scientific evidence, embracing it with little scrutiny of its actual reliability and little concern for its impact on the rights of individuals."

Hoeffel, *supra*, at 466 (footnotes omitted).

In rejecting the state's argument that the defense could have obtained any necessary information from the state experts, we need only consider one glaring circumstance that undermines this assertion: the inherent bias of the prosecution's DNA experts who, as scientists from a private, for-profit laboratory, have vested interests in the success of their company. See Hoeffel, *supra*, at 499-501. Analyzing biological evidence and testifying in court have proven to be an extremely lucrative business, creating an industry earning \$ 40 million per year, with Lifecodes itself projecting earnings of \$ 100 million per year by 1995. *Id.* at 499-500. Lifecodes representatives have admitted that the company's ultimate goal is not to actually perform the testing, but to sell its probes, restriction enzymes, and training programs to crime laboratories; thus a critical part of its marketing strategy was to get into court first, before its competitors. *Id.* at 500. Certainly, the appellant's right to funds for a DNA expert could not have been satisfied by relying on the prosecution's experts, who would be subsequently testifying about the accuracy of their tests and the test results -- experts who the Alabama Supreme Court recognized in *Ex parte Perry*, 586 So. 2d 242, 251 (Ala. 1991), as having "an obvious interest in validating Lifecodes' techniques." As a final note, we point out that some courts have considered defense counsel to be ineffective when counsel relies on a state's expert without requesting a defense expert. See, e.g., *United States v. Fessel*, 531 F.2d 1275 (5th Cir. 1976); *Curry v. Zant*, 258 Ga. 527, 371 S.E.2d 647 (1988).

In regard to the attorney general's final assertion that defense counsel "achieved extraordinary proficiency in his cross-examination of the state's DNA experts," we must, with all due respect to defense counsel, lend more credence than does the attorney general to the observations of the trial court and the prosecutor during defense counsel's cross-examination of the prosecution's DNA experts. During cross-examination of Lifecodes' employee Coleman, the trial court called counsel to the bench and told defense counsel the following: "I am trying to be as liberal as I can, but frankly I haven't been able to tell where you are going for the last hour, and frankly I don't know that you know where you are going." Then, the court ordered a 10-minute recess, after which the following occurred:

"MR. KIRKLAND [prosecutor]: I was present in court when one member of the jury sent some sort of message to the Court to the effect could they inject that they understood the evidence even if the attorney didn't.

"THE COURT: Two bailiffs came to me in chambers immediately when I broke a few minutes ago and I believe said four or five of the jurors wanted to know could they inject themselves that they understood the testimony or did they have to continue to listen to questions. And I told the bailiffs to tell them they could not inject themselves.

"MR. KIRKLAND: What I would like to put into the record is, it is apparent to the state that Mr. Alexander is purposefully conducting such a cross-examination in an effort to bolster his position that he needed an expert. Because quite simply if jurors can understand it, then certainly an attorney with seven years of post-high school education should be able to understand it.

"MR. ALEXANDER [defense counsel]: For the record, I am cross-examining trying to expose and sift this evidence. I will be honest with you, I haven't thought about the other.

"THE COURT: I will say this, Mr. Alexander, the comment the Court made on the record just before we broke sort of coincided with the questions that some of the jurors asked."

During further cross-examination by defense counsel, the prosecutor noted: "There are two different levels of knowledge here [between Coleman and defense counsel] and that is the problem." He further commented, "[Defense counsel] is trying to get the witness to answer something that is technically incorrect," and "Again I want to object to him interjecting a layman's technology on an expert."

These passages certainly confirm the observation that "cross-examination is rarely going to be effective with a complex, technical technique such as DNA profiling," Hoeffel, *supra* at 521. See also Ricardo Fontg, Comment, DNA Fingerprinting: A Guide to Admissibility and Use, 57 Mo.L.Rev. 502, 549 (1992) (same).

"Expert witnesses are . . . crucial to assist the defense in establishing an effective cross-examination. . . .

"The adversary system forces the defendant to rely upon cross-examination of prosecution experts to defend against novel scientific evidence. The defense's effective cross-examination of the prosecution's expert often exposes problems in reliability and veracity of laboratory results. However, few defense attorneys have the expertise to counter DNA typing evidence without the assistance of an expert, and few defendants have the resources to hire an expert. Therefore, even for the most skilled attorney, cross-examination of witnesses is simply not an efficient way of exposing deficiencies in scientific technique and reliability."

Christopher G. Shank, Note, DNA Evidence in Criminal Trials: Modifying the Law's Approach to Protect the Accused from Prejudicial Genetic Evidence, 34 Ariz. L. Rev. 829, 867-68 (1992). See also Hoeffel, *supra* at 524 ("certainly cross-examination is insufficient in DNA profiling cases to uncover often undetected mistakes in the testing procedure which can lead to false matches").

The jury in this case encountered the typical testimony a jury hears when confronted with DNA "matching" evidence, without the benefit of defense expert testimony. See Hoeffel, *supra* at 511-15. The prosecution's experts possessed numerous credentials and had years of experience; they explained the principles underlying DNA identification in overly simplistic and thus misleading language; and they showed the jury how the autorads "match." In response, defense counsel, without an expert to refute their broad statements of accuracy, made a valiant effort to show the jury that the technique is not so simple and that there are many possibilities for error. However, to the jury, his questions sounded nitpicking, confusing, and ignorant and were not as interesting as the lesson in genetics they had just received. This cross-examination did not sufficiently counter the general and overly simplistic and consequently misleading explanations of an incredibly complex process. See *id.* at 514. (The technique as it is performed by Lifecodes involves about 200 steps and takes approximately eight weeks to complete, *id.* at n. 289; a "troubleshooting guide" lists no fewer than 37 different possible causes of problems that may arise during restriction digestion alone, Thompson & Ford, *supra* at 68 n. 107.) Clearly, their comments to the trial court indicated that several jurors considered that they understood the technique as they had followed the state experts' explanations, but their expression of understanding was a clear signal that they unquestionably believed the testimony of the state experts and also believed that they could see the matches themselves and did not fathom or effectively evaluate the complexity of the technique. We find the following quite applicable: "Ill-equipped cross-examiners, the tendency of jurors to be awed by the cutting-edge technology and unimpressed by the nitpicking of the defense, and the possibility of improper presentation and use of statistics increase the difficulty of a successful attack on the profiling technique," Hoeffel, *supra* at 517. We do not agree with the prosecutor's assessment that defense counsel's purpose in his cross-examination was to bolster his assertion of his need for expert assistance. Such interpretation, as illustrated above, is against a great weight of authority. (Even the prosecutor, in his opening statement, admitted that he could not even pronounce the words for which DNA is the abbreviation.)

Clearly, one of the defense's more damning shortfalls was in the crucial admissibility hearing, which in this case failed, in every sense, to reflect the adversary system. The Alabama Supreme Court in *Ex parte Perry*, 586 So. 2d at 250-51, in setting forth, for the first time, the requisites to admission of DNA evidence in Alabama courts, declared that, "like every other court that has addressed the admissibility of DNA evidence, [it] recognized the possibility of error in the interpretation and performance of the tests as a legitimate concern," *id.* at 250. Hence, the court held that one of the three requisites to admissibility of the DNA "matching" evidence and population frequency statistics is proof that, in the particular case, the testing laboratory performed generally accepted scientific techniques without error in the performance or interpretation of those tests. *Id.* at 150, 153. The court further held that the proponent of the evidence has the burden of going forward to establish that the tests and calculations were properly conducted, but once that burden is met, the burden of proof shifts to the opposing party to prove, by a preponderance of the evidence, that the tests and calculations should be suppressed or modified. *Id.* at 255. In finding the evidence in the record insufficient to determine whether there was error in the performance or interpretation of the tests, the *Perry* court stressed that "Perry cross-examined Dr. McElfresh on this issue, but Perry did not provide his own evidence to establish that there was error in the performance," *id.* at 251. We consider that, in so noting, the *Perry* court basically assumed that a defendant contesting the admissibility of DNA "matching" evidence needs an expert in the admissibility hearing, particularly to provide relevant evidence in regard to whether there was error in the performance of the tests or in the interpretation of the results. Our conclusion is buttressed by the *Perry* court's recognition, that "to produce uniformly sufficient information to allow a proper, well-informed determination of the admissibility of DNA evidence and to produce uniformity in DNA evidentiary hearings," certain items are subject to discovery. *Id.* at 255. It can reasonably be inferred from the complexity inherent in some of the discoverable items (e.g., "[a] statement setting forth observed contaminants, the reasons therefore, and tests performed to determine the origin and the effects thereof," *id.*) and the stated objective of thorough discovery that the *Perry* court must have assumed that the adversary would receive expert assistance.

It has been recognized, as Neufeld asserted in his affidavit submitted to the trial court in this case, that in each of "several opinions approving the use of DNA test results to prove the identity of the person who committed a crime the defendant made no concerted challenge to the admissibility of the evidence by presenting expert testimony," *Commonwealth v. Curnin*, 565 N.E.2d at 442 (footnote citing nine such cases omitted). See also Jessie Jo Barr, Note, *The Use of DNA Typing in Criminal Prosecutions: A Flawless Partnership of Law and Science*, 34 N.Y.L. Sch. L. Rev. 485, 527 (1989); Hoeffel, *supra* at 499, n. 193. Thus, the trial court heard only from witnesses who were the scientists employed by private laboratories and who had vested interests in the success of their companies. One of the cases cited as exemplifying of the magnitude of the benefit of expert assistance for the admissibility hearing is *People v. Castro*, 144 Misc. 2d 956, 545 N.Y.S.2d 985 (N.Y. Sup. 1989), a case upon which the *Perry* court relied and also the case discussed in some of the pre-trial hearings of this case. The *Castro* court was confronted with the question of admissibility of the DNA "matching" evidence gathered from tests performed by Lifecodes "upon completion of a [12-week] hearing that some have referred to as the most comprehensive and extensive legal examination of DNA forensic identification tests held to date in the United States," *id.* at , 545 N.Y.S.2d at 985. In regard to the question of whether the testing laboratory perform the accepted scientific techniques in this particular case, the court recognized that, "given the complexity of the DNA multi-system identification tests and the powerful impact that they have on a jury," such evidence cannot be placed before a jury without "a preliminary, critical examination of the actual testing procedures performed in a particular case" because this third prong is the "focus of the controversy," *id.* at , 545 N.Y.S.2d at 987. The court thereafter, in reviewing the 5,000 pages of transcript of the admissibility hearing, concluded that "the defense was successful in demonstrating to this court that [Lifecodes] failed in its responsibility to perform the accepted scientific techniques and experiments in several major respects," *id.* at , 545 N.Y.S.2d at 996, and deemed the DNA identification evidence of inclusion (the "match") to be inadmissible as a matter of law, *id.* at , 545 N.Y.S.2d at 997-98. The *Castro* court further held, in regard to Lifecodes' practices in the area of population genetics, that because of a specified error, the population frequencies reported by Lifecodes were not generally accepted by the scientific community. *Id.* at , 545 N.Y.S.2d at 998.

The magnitude of the benefit of defense expert assistance has also been exemplified in *Caldwell v. State*, 260 Ga. 278, 393 S.E.2d 436 (1990). In reviewing the lower court's pretrial ruling allowing a DNA "match" by Lifecodes to be admitted at trial, the court noted that *Caldwell*'s four experts testified about "various ways that errors conceivably could occur, including mislabelling and cross-mixing of samples, bacterial contamination, less than perfect chemical preparations, and so forth," *id.* at , 393 S.E.2d at 442. The court specifically stated, "It should be noted that the defense was well-assisted by experts on the [DNA] issue. . . ." *Id.* at , 393 S.E.2d at 444. "Possibly in response to . . . *Castro*, as well as criticisms by defense experts in the initial hearings," Lifecodes remedied its initial failure to test for band shift. *Id.* at , 393 S.E.2d at 442. In addition, as a result of scrutiny by defense experts, Lifecodes subsequently revised its calculations for DNA population frequency statistics. Not only did the defense expert assistance in *Caldwell* encourage further and

more accurate testing and interpretation, the testimony of one defense witness resulted in the state's not being permitted to use "Lifecodes' enormous claimed power of identity" -- one in 24 million -- but being allowed to use the power of identity of one in 250,000. *Id.* at 393 S.E.2d at 443-44. Only that witness had studied Lifecodes' database to determine if the relevant population was in Hardy-Weinberg equilibrium, a determination the state's witnesses had assumed.

We find to be of particular import to this case the facts that it was by presenting the testimony of five experts that Castro was able to meet his burden of proving by a preponderance of the evidence that the DNA tests and calculations should be suppressed or modified and that it was by the testimony of one expert that Caldwell was able to have modified "Lifecodes' enormous claimed power of identity." In this case, assuming a *repleto* that the prosecution had met its burden of establishing that the DNA tests and calculations were properly conducted, the appellant had absolutely no tool with which to forge a response. "In an admissibility hearing, the scientific community is being asked its opinion on the reliability of the evidence and the defense must have the opportunity to answer the question in the negative. This is impossible without a defense expert." *Hoeffel, supra* at 521. Moreover, unlike Caldwell, the appellant did not have expert assistance to conduct the type of thorough review and critique that can encourage the prosecution experts to retest and to check their procedures. "The most dangerous errors, those which falsely incriminate someone on whom suspicion has already focused, are likely to go unchallenged; these errors do not stand out." *Thompson & Ford, supra* at 57. The appellant was afforded no such opportunity. The admissibility hearing in this case is a clear example of the pervasive harm that comes to a defendant who has no tool with which to meet such devastating evidence--evidence that, in the instant case, was scrutinized in such scant testimony that its transcription took only 17 pages.

In addressing the considerations pertinent to the issue before us, we have been greatly aided by the most eminent publication DNA Technology in Forensic Science, the product of a two-year study by the National Research Council of the National Academy of Sciences, which by the authority of the charter granted to it by the Congress in 1863 is required to advise the federal government on scientific and technical matters. The report, published on April 16, 1992, contains the following recommendation, which we consider must be observed in this particular case:

"Defense counsel must have access to adequate expert assistance, even when the admissibility of the results of analytical techniques is not in question, because there is still a need to review the quality of the laboratory work and the interpretation of the results. When the prosecutor proposes to use DNA typing evidence or when it has been used in the investigation of the case, an expert should be routinely available to the defendant. If necessary, he or she should be able to apply for funds early in the discovery stages to retain experts without a showing of relevance that might reveal trial strategy. Whenever possible, a portion of the DNA sample should be preserved for independent analysis by the defense."

Based on the foregoing, we must hold that the appellant was denied his right to due process when he was refused state funds for expert assistance to defend against the prosecution's DNA "matching" evidence and DNA population frequency statistics. We are bound by the following:

"[The United States Supreme] Court has long recognized that when a State brings its judicial power to bear on an indigent defendant in a criminal proceeding, it must take steps to assure that the defendant has a fair opportunity to present his defense. This elementary principle, grounded in significant part on the Fourteenth Amendment's due process guarantee of fundamental fairness, derives from the benefit that justice cannot be equal where, simply as a result of his poverty, a defendant is denied the opportunity to participate meaningfully in a judicial proceeding in which his liberty is at stake."

Ake v. Oklahoma, 470 U.S. at 76.

Accordingly, the judgment of the circuit court is reversed and this case is remanded for a new trial. If the prosecution intends to introduce the DNA "matching" evidence and DNA population frequency statistics, the appellant must be afforded expert assistance.

REVERSED AND REMANDED.

BOWEN, TAYLOR, McMILLAN, JJ., CONCUR; MONTIEL, J., DISSENTS WITHOUT OPINION.