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CERTIFIED FOR PARTIAL PUBLICATION*

IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

THIRD APPELLATE DISTRICT

(Sacramento)

THE PEOPLE, Plaintiff and Respondent, v. DENNIS LOUIS NELSON, Defendant and Appellant.	C047366 (Super. Ct. No. 02F06021)

APPEAL from a judgment of the Superior Court of Sacramento County, Gary S. Mullen, Judge. Affirmed.

Cara DeVito, under appointment by the Court of Appeal, for Defendant and Appellant.

Bill Lockyer, Attorney General, Robert R. Anderson, Chief Assistant Attorney General, Mary Jo Graves, Senior Assistant Attorney General, J. Robert Jibson and Judy Kaida, Deputy Attorneys General, for Plaintiff and Respondent.

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* Pursuant to California Rules of Court, rule 976.1, this opinion is certified for publication with the exception of parts IC, III, IV and V.

In this case, we confront issues arising from the use of the state's convicted offender deoxyribonucleic acid (DNA) databank to solve a murder that occurred many years earlier. The victim was abducted, raped, and murdered in 1976. In 2002, a DNA profile derived from crime scene evidence was searched through the DNA databank. Defendant Dennis Louis Nelson was identified as a potential candidate. In further testing, it was determined that his DNA profile matched that of the evidentiary samples. Convicted of first degree felony murder, defendant appeals.

In the published parts of this opinion, we reject defendant's claims that (1) the delay between the date of the crime and the filing of a complaint charging him with the murder violated his right to due process of law, and (2) in light of the holding in *People v. Kelly* (1976) 17 Cal.3d 24 (hereafter *Kelly*), the DNA evidence should not have been presented to the jury because there is no general scientific acceptance of a statistical means of explaining the results of a DNA comparison when a DNA databank is used to identify a potential candidate. As we will explain, those claims of error lack merit.

The 26-year delay in prosecuting defendant was not the result of negligence, and it was not for the purpose of gaining an advantage over him. It occurred solely due to the limits of forensic technology at the time of the initial investigation, which resulted in insufficient evidence to identify defendant as a suspect. When forensic technology in the form of the DNA databank became available to identify him as a candidate for further investigation and testing, the prosecution

proceeded with promptness. The justification for the delay outweighed defendant's minimal showing of prejudice.

Like the use of a fingerprint database search to identify potential candidates as suspects, a DNA databank search does not implicate the concerns addressed in *Kelly*. The DNA databank search merely identified defendant as a possible candidate as the murderer; it was not the basis for declaring that his DNA matched DNA on the evidentiary samples. The latter determination was made based upon further, complete testing utilizing scientific techniques found to be reliable and admissible under the *Kelly* test.

In the unpublished parts of this opinion, we conclude that defendant's other contentions lack merit. Thus, we shall affirm the judgment.

FACTS

In 1976, Ollie George was a 19-year old college student who lived with her parents. On the late afternoon of February 23, 1976, she borrowed a car from her brother, Delbert, in order to go to the store to buy some nylons.[1] Ollie went to a shopping center where there were a Safeway, a Pay 'n Save, and a nearby McDonald's restaurant. At about 5:30 p.m., Ollie telephoned her mother and reported that the car would not start. Delbert's car, a Pontiac GTO, would often flood; the remedy was to wait for a while and try again, although it was unclear whether Ollie knew that. Ollie's mother asked her to pick up some grocery items while she waited.

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[1] For simplicity and to avoid confusion, we will refer to members of the George family by their first names.

Dan Kemp worked at the nearby McDonald's and recognized Ollie from prior visits to the restaurant. He reported that Ollie visited the restaurant at some time after he started his shift at 5:00 p.m.

Delbert's girlfriend, Beata Garner, went to the George home at about 5:30 p.m. Ollie's sister, Laurenda, wanted to go to the shopping center to meet Ollie, so Garner drove her there. They located Delbert's car. The door was unlocked and the keys were in the ignition. The car contained grocery items, nylons, Ollie's purse, and a partially eaten McDonald's hamburger. Ollie was missing. When Ollie could not be located, the family notified the city police department.

Ollie's disappearance was reported in the newspaper and on television. Upon learning of the disappearance, Ardis Hayes contacted the police department. He reported that he had been at the shopping center at the time it was just beginning to get dark. As he was on his way into the store, he saw Ollie in a faded blue or gray Oldsmobile F85. The hood was open and an African-American man appeared to be working on the engine.

Ruth Jones, who was acquainted with Ollie, also reported seeing her at the shopping center. Jones said that she and her children went to the shopping center in the evening, around 5:00 or 6:00 p.m., and as they were leaving they saw Ollie in the driver's seat of a blue car. The hood was open and a man appeared to be working on the engine. Jones first thought the man was Caucasian, but when he stood up she saw that he was an African-American. The man was wearing a "watch cap."

Ollie's body was found in an unincorporated area of the county on February 25, 1976. She had been brutally raped and drowned in mud. At that point, the county sheriff's department took over the investigation.

Within a couple of weeks, Hayes saw what he believed to be the same car in which he had seen Ollie around the time of her disappearance. Hayes took down the license number of the car and reported it to the police department, which relayed the information to the sheriff's department. The car Hayes saw on that occasion was defendant's faded blue Oldsmobile F85.

In early March 1976, sheriff's detectives encountered defendant and his car in an apartment parking lot. Defendant was wearing a watch cap. The detectives spoke with him and took photographs of him and his car. Defendant told the detectives his car was not running properly; it would cut off when he stopped, and he would have to use jumper cables to start it.

Defendant agreed to go to the sheriff's department for an interview. When asked to account for his whereabouts at the time of Ollie's disappearance, defendant gave a somewhat confused and conflicting account about visiting his mother-in-law's house, his grandmother's house, and his estranged wife's house, and about giving a ride to a person whom he knew as Eloise. Defendant said he believed that his sister-in-law knew Ollie. He did not say that he knew Ollie, had been in contact with her, or had been intimate with her.

When defendant's mother-in-law was interviewed, she told detectives that while she could not be specific about the time,

defendant was definitely at her house sometime between 4:00 and 6:00 p.m. on February 23, 1976. However, she also said that defendant never stayed at her house very long.

During the investigation, detectives received hundreds of tips, including the reports of Hayes and Jones. Some of those providing information reported seeing Ollie, or at least an African-American female, with a Caucasian male or males. Detectives interviewed over 180 potential witnesses and followed other leads. However, they were unable to develop sufficient evidence to focus the investigation upon any person. Eventually, the matter became a cold case, that is, unsolved but inactive.

Due to his convictions for robbery in 1977 and felony petty theft in 1984, defendant was incarcerated for a significant portion of the decade between the murder of Ollie and incidents in 1986 that led to defendant's identification as the person who raped and killed Ollie.

In 1986, defendant abducted a woman from a parking lot, drove her car while holding her hostage, and took her to an isolated location where he committed violent sexual offenses against her. He said that he should kill her but relented when she convinced him she would not identify him. A week later, defendant abducted another woman from a parking lot. This incident began exactly as had the abduction a week earlier. The second victim became fearful and tried to escape. This led to a struggle during which defendant crashed the car, which enabled the victim to get away.

Based on these incidents, defendant was convicted of criminal offenses including rape and forcible oral copulation. He was sentenced to a lengthy prison term.

As a result of defendant's convictions and prison sentence, a biological sample was obtained from him for DNA analysis and entry into the state convicted offender databank.

In October 2000, with California's convicted offender DNA databank in operation, the state allocated funds to enable local law enforcement agencies to utilize DNA to solve sexual assault cases that lacked suspects. Sacramento County began hiring and training analysts, a process that takes about a year. At that time, the county had approximately 1,600 unsolved sexual assault cases. In July 2001, the Ollie case was screened and it was determined that there was biological evidence warranting analysis. The case was put in line for DNA analysis.

The biological evidence included a vaginal swab, semen stains on Ollie's sweater, and hair samples from Ollie obtained during the autopsy. An analyst used a portion of a semen stain from the sweater to develop a DNA profile. The profile was provided to the state Department of Justice for comparison, by computer, with the state's convicted offender databank. The search identified defendant as a potential source of the semen stain.

With a warrant, detectives obtained oral swabs from defendant, which were analyzed with the vaginal swab from Ollie, the semen stains on her sweater, and Ollie's hair samples. Defendant's DNA matched the DNA of the suspect samples. Through use of the

"product rule," which we will discuss later, it was determined that a random chance match would be extraordinarily unlikely.[2]

Defendant was charged with the first degree felony murder of Ollie. In view of the DNA evidence, the defense did not deny that defendant had sexual intercourse with Ollie. Rather, the defense asserted, without evidentiary support, that Ollie and defendant had consensual intercourse on the weekend before she disappeared and that someone else abducted, raped, and murdered her.

DISCUSSION

I

Ollie was murdered in February 1976. Twenty-six years later, in July 2002, a complaint was filed charging defendant with having committed the crime. He contends that prosecution after such a length of time violated his right to due process of law under the Fifth and Fourteenth Amendments to the United States Constitution and article I, section 15 of the California Constitution.

A

Delay in prosecution that occurs before the defendant is arrested or a complaint is filed can constitute the denial of

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[2] The random match probability is the same as the anticipated frequency of a particular profile in the population. (*People v. Soto* (1999) 21 Cal.4th 512, 524-525.) Under the product rule, the anticipated frequency of a profile is dependent in part on the number of DNA loci tested. (*Ibid*.) A 13-loci profile was developed in this case, and it was determined that this profile would occur at random among unrelated individuals in about one in nine hundred and fifty sextillion African Americans, one in one hundred and thirty septillion Caucasians, and one in nine hundred and thirty sextillion Hispanics. There are 21 zeros in a sextillion and 24 zeros in a septillion.

due process of law under both the state and federal Constitutions. (*People v. Catlin* (2001) 26 Cal.4th 81, 107 (hereafter *Catlin*.) "A defendant seeking to dismiss a charge on this ground must demonstrate prejudice arising from the delay." (*Ibid*.) Prejudice will not be presumed from such delay; it must be affirmatively shown. (*People v. Martinez* (2000) 22 Cal.4th 750, 769-770; *People v. Archerd* (1970) 3 Cal.3d 615, 640 (hereafter *Archerd*); *People v. Dunn-Gonzalez* (1996) 47 Cal.App.4th 899, 911; *People v. Butler* (1995) 36 Cal.App.4th 455, 467; *People v. Lawson* (1979) 94 Cal.App.3d 194, 198.) If the defendant demonstrates actual prejudice, then the prosecution is permitted to offer justification for the delay. (*Catlin, supra*, 26 Cal.4th at p. 107.) It then becomes the trial court's duty to balance harm to the defendant against justification for the delay in deciding whether to dismiss the charge. (*Ibid*.)[3]

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[3] Defendant asserts that prejudice may be presumed, citing *Doggett v. United States* (1992) 505 U.S. 647 [120 L.Ed.2d 520]. But that case concerned only *postaccusation delay* in violation of the Sixth Amendment right to a speedy trial. (*Id*. at p. 648 [120 L.Ed.2d at p. 526] [negligent delay of eight and a half years between obtaining the indictment and arresting the accused].) In such circumstances, prejudice can be presumed and, while not sufficient in itself, such presumed prejudice is part of the mix of relevant facts. (*Id*. at pp. 655-656 [120 L.Ed.2d at pp. 530-531].) With respect to *preaccusation delay*, however, the due process clause "has a limited role to play in protecting against oppressive delay;" "*proof of actual prejudice*" is "a necessary but not sufficient element of a due process claim . . . ." (*United States v. Lovasco* (1977) 431 U.S. 783, 789-790 [52 L.Ed.2d 752, 758-759], italics added; *United States v. Marion* (1971) 404 U.S. 307, 325-326 [30 L.Ed.2d 468, 481-482].) *Stabio v. Superior Court* (1994) 21 Cal.App.4th 1488 was a case of postaccusation, not preaccusation, delay

The balancing process is the same under both the state and federal Constitutions. (*Catlin, supra*, 26 Cal.4th at p. 107.) However, the United States Constitution imposes an additional requirement; it must be shown that the delay was deliberately undertaken to gain a tactical advantage over the defendant. (*Ibid*.)

In the trial court, defendant's counsel stated: "The defense makes no argument that the authorities somehow 'had it in' for [defendant] or that they delayed the investigation in order to gain some advantage over him." This concession is fatal to the claim of error based on the federal Constitution.

In his reply brief, defendant acknowledges his concession but argues it was before an evidentiary hearing revealed that the prosecution delayed until the forensic use of DNA was developed to the point that defendant could be identified and tried for the murder. According to defendant, the development of sophisticated DNA techniques was the tactical advantage the prosecution gained through delay. We reject the contention. A prosecutor should not begin a prosecution until he or she is satisfied the defendant should be prosecuted and the evidence will establish guilt beyond a reasonable doubt. (*Catlin, supra,* 26 Cal.4th at p. 109.) The development of forensic techniques that were not available at the time of an initial investigation provides justification for a delay

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(*id*. at p. 1493) and, thus, it does *not* hold that prejudice may be presumed from preaccusation delay in support of a claim of federal constitutional error. In any event, as we will explain, a concession by defendant in the trial court defeats his federal due process claim.

in prosecution. (*Id*. at p. 110; *Archerd, supra*, 3 Cal.3d at pp. 641-643.) And the development of forensic science to the point it was possible to identify and prosecute defendant is not prejudice within the meaning of due process principles.

With respect to our state Constitution, however, a relevant consideration is whether the delay was deliberately undertaken to gain an advantage over the defendant. (*Catlin, supra*, 26 Cal.4th at pp. 109-110.) But such a showing is not required to prevail on a motion to dismiss charges. (*Scherling v. Superior Court* (1978) 22 Cal.3d 493, 507 (hereafter *Scherling*).) Governmental negligence may be sufficient if an unjustified delay causes prejudice to the defendant. (*Ibid*.)

The People assert that we should not follow the holding in *Scherling*--negligent delay may suffice--because it is dictum. We decline the invitation.

In *Archerd,* which did not distinguish between state and federal constitutional principles, the Supreme Court said preaccusation delay "must be purposeful, oppressive, and even 'smack of deliberate obstruction on the part of the government,' before relief will be granted." (*Archerd, supra,* 3 Cal.3d at p. 640.) Subsequently, in *Penney v. Superior Court* (1972) 28 Cal.App.3d 941 (hereafter *Penney*), the Court of Appeal nonetheless held *negligent* preaccusation delay can violate due process. (*Id*. at pp. 951-952.) In *People v. Hannon* (1977) 19 Cal.3d 588, the Supreme Court noted the issue but found it unnecessary to resolve it. (*Id*. at pp. 610-611, fn. 12.) There followed *Scherling*, in which the Supreme Court unequivocally said "it makes no difference whether the delay was deliberately designed

to disadvantage the defendant, or whether it was caused by negligence of law enforcement agencies or the prosecution." (*Scherling, supra*, 22 Cal.3d at p. 507.)

Because *Scherling* found there was no prejudice and thus no need to consider justification for the delay (*Scherling, supra*, 22 Cal.3d at p. 506), its statement that negligent delay may be enough was dictum. However, where the Supreme Court unequivocally states a principle of law in a unanimous opinion, then the statement, albeit dictum, is entitled to respect from the Courts of Appeal and should be followed absent sound reasons otherwise. (*Hubbard v. Superior Court* (1997) 66 Cal.App.4th 1163, 1169; see 9 Witkin, Cal. Procedure (4th ed. 1997) Appeal, § 947, pp. 989-991.)

We find no persuasive reason for departing from the *Scherling* standard. In *People v. Pellegrino* (1978) 86 Cal.App.3d 776 (hereafter *Pellegrino)*, the Court of Appeal noted that the *Scherling* statement was dictum but found it appropriate to follow the standard. (*Id*. at p. 780.) Other Courts of Appeal have reiterated the standard. (*People v. Dunn-Gonzalez, supra*, 47 Cal.App.4th at p. 911; *People v. Hartman* (1985) 170 Cal.App.3d 572, 581.) The Supreme Court has never seen fit to overrule the decisions in *Penney* and *Pellegrino*. For its part, the Supreme Court treats the absence of deliberate or intentional delay as a relevant factor, but not in itself determinative. (*Catlin, supra*, 26 Cal.4th at pp. 109-110.) Regardless of whether it was dictum, the *Scherling* standard has become engrained in our law and we will adhere to it. We note, however, that California authorities do not suggest delay alone, without a finding of at least governmental negligence, is sufficient to require dismissal.

B

We turn to defendant's showing of prejudice. Prejudice may be shown by such things as the loss of material witnesses, loss of other evidence, and fading memories due to the lapse of time. (*Catlin, supra*, 26 Cal.4th at p. 107; *Archerd, supra,* 3 Cal.3d at p. 640.) A showing of prejudice is not an all-or-nothing matter. Defendant should demonstrate both the fact and the extent to which he has been prejudiced by the lapse of time. The trial court's task of balancing the harm to defendant against justification for the delay cannot be performed in the abstract but rather requires consideration of the particular circumstances of the individual case. (See *People v. Frazer* (1999) 21 Cal.4th 737, 775, overruled on another ground in *Stogner v. California* (2003) 539 U.S. 607, 610, 632-633 [156 L.Ed.2d 544, 551, 565].) Where, as here, defendant had a trial and we review a claim of unjustified preaccusation delay, it is appropriate to consider the evidence adduced at trial in determining whether defendant was in fact prejudiced by the delay. (*Archerd, supra*, 3 Cal.3d at p. 641; *People v. Butler, supra*, 36 Cal.App.4th at p. 464.)

As we will explain in part C, defendant demonstrated some prejudice sufficient to require the prosecution to justify the preaccusation delay, but the prejudice was minimal.

C*

We address defendant's claims of prejudice in the order in which he has raised them.

1. Unavailability of witnesses

In support of his motion to dismiss the charge, defendant pointed to a number of witnesses who had died or could not be located. Some of them were inconsequential or of speculative significance.

For example, Deputy Sheriff Fred Homen had died. Defendant expected the autopsy physician would testify that Ollie was a virgin at the time of the rape. Defense counsel told the trial court that Homen's reports noted the physician had opined Ollie was "in all probability" a virgin, which could impeach the degree of certainty expressed by him. At trial, however, the autopsy physician did not testify that Ollie was a virgin, although the doctor's testimony and the autopsy photographs would certainly suggest that she was. Defendant was able to present expert testimony that the level of brutalization during the rape would have obliterated evidence of a recent consensual sexual encounter. Hence, the unavailability of Homen did not prejudice the defense.

Nor was defendant prejudiced by the unavailability of witness Enid Klaggenberg, who died at some unspecified time. She reported to police that two Caucasian men tried to take her car keys while she was in the parking lot of the shopping center from which Ollie disappeared. But the Klaggenberg incident occurred in August 1976, nearly six months after Ollie was abducted. Thus, that incident had no relevance to Ollie's abduction, rape, and murder. (*People v. Lewis* (2001) 26 Cal.4th 334, 372-373; *People v. Davis* (1995) 10 Cal.4th 463, 501.)

We need not go into detail with respect to each of the dead or missing witnesses identified by defendant. It is sufficient to note that many of them, like Homen and Klaggenberg, were inconsequential or had at best speculative relevance. Defendant did not strongly argue otherwise. In the trial court, he rested his claim of prejudice on seven dead or missing witnesses, whose relevance we will address.

Tom Coats

Tom Coats died in 1997. He told detectives that at about 5:10 p.m. on the day of the abduction he saw an African-American woman, who met Ollie's description, in a brown vehicle. He saw one or two Caucasian men approach the car and heard the woman say that her car would not start. He also saw an older faded blue vehicle.

The evidence strongly indicated that Ollie was abducted at or near 6:00 p.m. If Coats was correct about the time of his observation, then Hayes and Jones saw Ollie in a blue car with an African-American male working under the hood after Coats's observation and closer in time to the abduction. However, since witnesses can be mistaken about time frames, Coats's testimony could have been relevant to the defense.

Nevertheless, Coats's unavailability did not harm defendant because the defense was able to establish that detectives received information from multiple persons who reported seeing Ollie in the parking lot near or talking to a Caucasian man or men on the afternoon of her abduction. Two brothers, John and Thomas Diller, who were 13 and 16 years old at the time, talked to police after the abduction and testified at trial. They reported that shortly

before dark, they approached Ollie in her car to ask for bus money. She gave them change, said her car would not start, and declined their offer of assistance, saying her family was coming. As the boys were approaching the bus stop, they heard an argument or commotion and turned to see two Caucasian men talking to Ollie.[4] Moreover, during the investigation, some of the witnesses participated in the creation of composite drawings of Caucasian male suspects, drawings that were released to the newspaper. Indeed, it appears from the trial record that at the time, detectives were more focused on Caucasian male suspects than on defendant or other African-American persons.

Oscar and Ellen Johnson

Oscar and Ellen Johnson could not be located. They told detectives that shortly after 4:00 p.m. on the day of the abduction, they saw one or two Caucasian males pushing an African-American female into a car. The woman said they were hurting her back.

In two interviews, the Johnsons were specific and adamant that the incident occurred shortly after 4:00 p.m., which was much earlier than Ollie was abducted. Moreover, they described the female as tall and slender, which did not fit Ollie. However, since physical descriptions can vary widely and even

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[4] At trial, the Dillers testified that an argument or commotion brought their attention to Ollie. At the time, they told police they saw Caucasian males talking to Ollie, but neither of them said anything about an argument or commotion.

adamant witnesses can be mistaken about time frames, the Johnsons' testimony could have been relevant to the defense.

But for the same reason defendant was not harmed by Coats's absence, defendant was not unduly prejudiced by the unavailability of the Johnsons.

Earl and Annie Grayson

Earl Grayson died in 1982, and Annie Grayson could not be located. Ollie was abducted on February 23, and her body was found on February 25, 1976, in a muddy area near a creek. The Graysons said they had been fishing across the creek on February 24 and did not see the body.

For reasons that follow, we find no prejudice to defendant from the Graysons' unavailability.

First, Cynthia Livecchi, then Hageman, was available to testify. On February 24, 1976, she rode her horse in the area on the same side of the creek where the body was discovered. She saw a couple she recognized by sight, apparently the Graysons, fishing on the other side of the creek. She did not notice the body.

Second, it is apparent the body was not that recognizable as such. The body was left face down in the mud with clothing piled on top. There was extensive trash and debris in the vicinity. Carlton Wilson discovered Ollie's body. His attention was called to it when his dogs began nosing at it. At first, Wilson believed it was a pile of trash and only realized it was a body on a closer look. He told Livecchi of the body, and she went down to confirm it. She got within 15 feet of the body before she recognized it as such.

Third, the evidence overwhelmingly indicated Ollie was raped and murdered in the place where her body was left. The medical evidence, including such things as the state of her body's rigor and putrification of the body and the stomach contents, indicated that Ollie died within three to eight hours of her abduction. The body was in the place it was found the day after the abduction.

In light of all of the evidence, the unavailability of the Graysons was inconsequential.

Gertrude Wagner

Gertrude Wagner died apparently in 1978. Wagner, who lived in the area where the body was found, reported that on the day of the abduction, she finished watching her television program, which ended at 4:30 p.m., and went outside. She saw a car with two undescribed male occupants and an African-American female yelling to be let out. She described the car as a Buick, white on top and dark on the bottom. However, she said she did not pay much attention because things like that happen all the time in that area.

Wagner's testimony could have been relevant to the defense, although only modestly so. The car that Wagner described was inconsistent with defendant's car. Two male occupants would be inconsistent with defendant having acted alone; although nothing in the evidence would preclude the possibility that defendant acted with an accomplice. And the time that Wagner described, by reference to the end of her television program, was well before Ollie was abducted. Consequently, defendant was not unduly prejudiced by her unavailability.

Katie Clayton

Katie Clayton, who died in 1998, had reported seeing an African-American female who resembled Ollie at a store later in the evening after the time of the abduction. She said the person was with an African-American man who, according to the defense, did not match defendant's description.

The unavailability of Clayton was inconsequential because the evidence at the scene of the abduction was wholly inconsistent with a voluntary departure. The car was left unlocked. The keys were left in the ignition. Ollie's purchases, grocery items and nylons, as well as her purse containing her wallet and all of her belongings, and a partially eaten hamburger were left in the car. Simply because someone reported seeing a person who resembled Ollie later in the evening, no reasonable juror would have believed that Ollie voluntarily left the car.

2. Loss of memory

Defendant contends he was prejudiced by witnesses' failing memories. We disagree.

Some of the testifying witnesses had independent recollection of the events. But most were limited in their recall, and many had no recollection at all. Nevertheless, as the trial court noted, the matter of failing memories was dealt with by the thoroughness of the initial investigation and the careful manner in which reports were prepared. Defendant has failed to establish significant prejudice.

3. Missing photographs

Defendant complains of the loss of "mug" shots and photographs of cars. Some of the potential witnesses were shown photographs of persons and cars. It does not appear that anyone identified a suspect. Ruth Jones identified a person she said looked similar to the person she saw but was not him. After deputies made contact with defendant, Jones was shown a photographic lineup that included defendant and his brother, but she failed to make an identification. Potential witnesses looked at cars and photographs of cars and selected a variety of cars as similar to the cars they had seen.

The loss of the mug shots and mug books was inconsequential since it appears that they did not result in anyone being identified by possible witnesses. Also inconsequential was the loss of car photographs originally shown to witnesses. This is so because defendant's expert obtained photographs of the various types of cars named by possible witnesses, and presented them at trial.

4. Lost or destroyed physical evidence

Defendant also claims that he was prejudiced by the loss or destruction of physical evidence. As with the dead or missing witnesses, some of the physical evidence was of inconsequential or speculative significance. For example, the defense asserted that television news broadcasts about the matter could be used to investigate and impeach witnesses, but were not available. Department of Motor Vehicle records also were not available. And it was asserted that reports from the City of Davis Police Department concerning abduction attempts in Davis have been purged. Those matters are wholly speculative and cannot establish actual

prejudice. And other evidentiary items of which defendant complained in his pretrial motion were resolved at trial.

Swabs from the autopsy

Defendant asserted in the trial court that oral and rectal swabs from the autopsy could have been DNA tested but disappeared. On appeal, he complains of the absence of "oral and rectal swabs which (although DNA tested), have since disappeared, which once again demonstrated the presence of a second male 'contributor' to the DNA sample." This was not so.

In fact, the autopsy physician observed significant trauma to the vagina and blood and semen within the vagina, but no trauma to the rectum. He took two swabs each from the mouth, rectum, and vagina and prepared slides. He found no sperm on the oral or rectal swabs but found a lot of sperm on the vaginal swabs. A criminalist later tested both oral swabs and both rectal swabs for the presence of seminal fluid, with negative results. The testing destroyed the swabs so they were disposed of, but the empty evidence envelopes were retained. The first vaginal swab tested gave a strong positive reaction for seminal fluid, so the second vaginal swab was not tested and was retained in evidence.

Thus, the oral and rectal swabs did not disappear, they were consumed in testing for seminal fluid, with negative results. And the swabs did not in any way indicate the presence of a second male contributor to the semen stains.

Degraded DNA samples

Ollie's body was found in an area near a creek. Neighbors said some people used the area for a "lovers' lane." Young people would

go down there to party. Others went there to fish. Those who went there were always leaving things like beer cans and bottles and other trash. Some went down there just to dump loads of trash.

When the body was discovered, there was a lot of debris in the area. Deputies had no way of knowing what might be associated with the rape and murder, so they gathered a large number of items that had potential significance. In moving to dismiss the charge against him, defendant complained that DNA on such things as beer cans, cigarette butts, and a discarded t-shirt had degraded.[5]

Without some evidentiary basis to believe that the items were associated with the rape and murder of Ollie, and there was none, this matter does not establish actual prejudice.

Defendant asserts that the lost evidence included degraded DNA samples indicating a third person's semen was on Ollie's sweater. He made no such argument in the trial court. In moving to dismiss the charge, he complained that DNA on such things as beer cans, cigarette butts, and a t-shirt had degraded. There was no evidence at trial that a third person's semen was on Ollie's sweater but had degraded.[6]

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[5] Cigarette butts, beer cans, and a t-shirt were submitted to defendant's DNA expert for testing. Some of the items, including the t-shirt, did not bear human cells necessary for DNA testing. Some items bore human cells but did not produce a profile, thus indicating degradation. Partial profiles of no apparent significance were obtained from some items.

[6] When an extremely sensitive testing kit, known as the Identifiler, was used, a minor foreign allele--a small amount of an allele that belonged to neither defendant nor Ollie--was developed in three of the sweater stains. The expert testified

Fingerprints

Defendant asserts that five latent fingerprints developed from Delbert's car have disappeared and that only a single fingerprint remains. Not so. The parties stipulated there were two fingerprints recovered that could not be located. In all, 16 fingerprints were developed from the car and items in it. With two exceptions, all were still available.

One fingerprint developed from a card in Ollie's purse was missing. One of two fingerprints developed from a paper in Ollie's purse with the heading "Jesus still lives" was missing. The other was matched to Ollie's brother, Delbert. We find no prejudice.

The missing prints were developed from items in Ollie's purse, which was left in the car when she was abducted. Because there is no evidence to suggest that her abductor touched anything in the car or, in particular, within Ollie's purse, the claim of prejudice is wholly speculative.

Hair

Two hairs that did not appear to match Ollie's hair were found on her left sock. They did not contain roots that would be essential for DNA testing. Because a person's hair characteristics change over time, it would not be feasible to do hair comparisons after the passage of time.

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the Identifiler kit is so sensitive that such things as sneezing or even talking to the victim while she was wearing the sweater could introduce a minor foreign allele. There were no foreign alleles in the vaginal swab. Defendant did not introduce expert evidence to demonstrate that the minor foreign alleles on the sweater, or anything else, indicated the presence of a third person's semen on the sweater.

Defendant complains that the passage of time makes hair comparison impossible. However, hair comparison, while relevant, has limited probative value. (*People v. Pride* (1992) 3 Cal.4th 195, 238-239.) All that can be said is whether hair samples appear consistent or inconsistent with a particular person. (*Ibid*.) Hair on a person's sock could be transferred there in any number of ways and from any number of places. Thus, had the samples been compared to defendant near the time of the crime and been determined to be inconsistent, the evidence would have had little, if any, probative value.

Tire tracks

In the area where the body was discovered, detectives observed some tire tracks. One report said the tracks were 25 to 30 feet from the body, and another stated they were about 30 yards away. According to neighbors, people drove down into the area all the time. Thus, detectives had no way of knowing whether the tire tracks were associated with the rape and murder. Nevertheless, they photographed and measured the tracks.

Defendant complained that reference books that could establish the tracks were not made by an Oldsmobile F85 were unavailable. However, defendant's expert was able to procure a reference book which he produced at trial in support of his testimony that the tracks were too wide to have been made by an Oldsmobile F85.

5. Loss of alibi evidence

Defendant complains that the delay hampered his ability to corroborate an alibi. He asserts that detectives did not talk to his estranged wife, Linda Nelson, during the investigation, and

that she was unavailable at the time of trial. However, defendant presented no evidence that he was unable to obtain Nelson's appearance as a witness at trial. She was not one of the persons he identified as dead or missing in his pretrial motion. And while the defense investigator testified to her efforts to locate other witnesses, she said nothing about Nelson. Moreover, Nelson was identified as a potential witness on the jury questionnaires used for voir dire. On this record, it appears that Nelson was available but defendant chose not to call her to testify. Defendant's former mother-in-law testified at trial. While she had little recollection, her statements to detectives during the investigation were admitted into evidence. Thus, defendant has failed to establish that the delay prejudiced his ability to present an alibi.

6. Unavailable facts for pretrial motions

Defendant contends that through the passage of time, he lost facts upon which to base pretrial motions.

First, defendant refers to "damning admission[s]" he made to investigating officers in 1976, which "directly contradicted the defense theory of the case." When officers encountered him in a parking lot, defendant told them his car was not running properly. And when defendant was interviewed a day or two later, he denied that he knew Ollie.

According to defendant, the officers' inability to remember details regarding the circumstances surrounding those admissions prevented him from being able to establish that the statements should not be introduced in evidence. However, although defendant

had become a “person of interest” in 1976, there was never enough evidence to make him a suspect. He was not arrested or otherwise placed in custody. Hence, the rule of *Miranda v. Arizona* (1966) 384 U.S. 436 [16 L.Ed.2d 694] did not apply. (*People v. Mickey* (1991) 54 Cal.3d 612, 648.) The suggestion that detectives may have coerced defendant such that his statements were involuntary is speculation that does not establish actual prejudice.

Defendant also asserts that the delay hindered him from moving to dismiss the charge or for lesser sanctions due to the destruction of evidence. He refers to the oral and rectal swabs taken during the autopsy. We already have explained that the swabs were consumed in testing with negative results. The swabs were neither exculpatory nor material. (*In re Sassounian* (1995) 9 Cal.4th 535, 543.)

In addition, defendant refers to the unavailability of pants worn by a person named Lester Werniche, a developmentally disabled person who lived in the vicinity of the shopping center. On the evening of the abduction, Werniche went into the Safeway with 31 cents worth of food stamps and asked whether he could make a purchase. An employee gave him a dime so that Werniche could buy a can of tuna fish. The employee noted Werniche had mud on his pants. A few days later, Werniche went into the Safeway with a wad of money and asked if he could make a deposit. About nine days after the abduction, Werniche was arrested on an unrelated matter and his pants were taken from him.

Defendant argues that Werniche’s muddy pants could be compared to the mud where the body was left. But there was no evidence to connect Werniche to the abduction, rape, and murder of Ollie, and

there was no evidence to indicate the pants that he was wearing at the time of his arrest nine days later were the same pants he wore on the day of the abduction or had not been washed in the interim. In other words, defendant has failed to establish actual prejudice due to the unavailability of Werniche's pants.

7. Lost opportunity for concurrent sentencing

Defendant complains that "because the prosecution in this 1976 case was so delayed, [he] lost the opportunity to be convicted sooner, thus to serve concurrent sentences for this case with those [he received] for prior convictions." We are not persuaded.

When a person has been charged or convicted of criminal offenses and is aware of other charges pending, and the person makes a request for prompt resolution, then the potential of concurrent sentencing is a factor with respect to postaccusation speedy trial issues. (*People v. Manina* (1975) 45 Cal.App.3d 896, 900; *People v. Simpson* (1973) 30 Cal.App.3d 177, 181.) On the other hand, if a person is aware of charges pending against him, the failure to invoke the right to a speedy trial is weighed heavily against him. (*Doggett v. United States, supra*, 505 U.S. at p. 653 [120 L.Ed.2d at p. 529].) If the person is not aware that charges have been filed and, thus, does not ask for prompt resolution, the factor is neutral. (*Ibid*.)

Since people who have not been charged with offenses rarely ask to be promptly prosecuted, and defendant did not do so here, this is not a factor with respect to a claim of preaccusation delay.

8. Unavailability of lesser offense

Asserting that Ollie may have been killed accidentally while being raped, defendant suggests that the opportunity to be convicted

of the lesser included offense of manslaughter was precluded by the passage of time, which caused the statute of limitations to expire on the lesser offense. This contention is frivolous. It makes no difference whether the killing was intentional or accidental because it was first degree felony murder. (Pen. Code, § 189; *People v. Coefield* (1951) 37 Cal.2d 865, 868.)

D

We now address the prosecution's showing of justification for the preaccusation delay.

In considering justification for a delay in bringing charges, courts must keep in mind the nature of the prosecutorial function. A prosecutor is not required to, and indeed should not, commence a prosecution until he or she is satisfied that the accused should be prosecuted and that the office of the prosecutor will be able to promptly establish guilt beyond a reasonable doubt. (*People v. Catlin, supra,* 26 Cal.4th at p. 109; *People v. Dunn-Gonzalez, supra*, 47 Cal.App.4th at pp. 914-915.)

Limitations in forensic science at the time of an initial investigation may be sufficient justification for a delay in prosecution.

For example, William Archerd committed a number of murders by insulin injection, including murders of three women he had married. At the time of the first charged murder, eleven years earlier, the police suspected Archerd of committing the murder but could not prove it because medical authorities believed that the cause of death could not be established as due to a criminal agency. (*Archerd, supra*, 3 Cal.3d at p. 641.) Over the years, medical

science advanced to the point that prosecution of Archerd became possible. (*Id*. at pp. 641-643.) Under the circumstances, the Supreme Court found the delay in prosecution was justified. (*Id*. at p. 643.)

Similarly, Steven Catlin was charged with two murders committed by paraquat poisoning, including the murder of his fourth wife nine years earlier. At the time Catlin's wife was murdered, a number of people made accusations against Catlin. However, laboratory tests did not exist then for revealing paraquat poisoning. Over the years, advances in medical knowledge, and Catlin's involvement in two more murders through paraquat poisoning, made prosecution possible. (*Catlin, supra*, 26 Cal.4th at p. 109.) The Supreme Court found that the delay in prosecution was justified because it was caused by the limits of existing laboratory tests, a mistake in preserving tissues in formalin which precluded subsequent paraquat testing, and the early caution of medical experts in stating a cause of death. (*Id*. at p. 110.)

Here, justification for the preaccusation delay was twofold. Despite a diligent and thorough investigation, law enforcement was never able to solve the case. Investigators were unable to develop sufficient evidence to identify defendant, or anyone else, as more than a "person of interest." The ability to use DNA and the state DNA databank to solve crimes was not developed until long after the crime.

With the exception of red blood cells, every cell in the human body has a nucleus containing the person's genetic code in the form of DNA. (*People v. Venegas* (1998) 18 Cal.4th 47, 58.) DNA consists

of two parallel spiral sides, a double helix, composed of repeated sequences of phosphate and sugar. The sides are connected by a series of rungs, with each rung consisting of a pair of chemical components called bases. (*Ibid*.) There are four types of bases--adenine (A), cytosine (C), guanine (G), and thymine (T). A will pair only with T, and C will pair only with G. (*Id*. at pp. 58-59.) There are over three billion base pairs in a person's DNA. (*Id*. at p. 59.)

Except for identical twins, no two persons have identical DNA. (*People v. Venegas, supra*, 18 Cal.4th at p. 59.) This makes DNA valuable for forensic purposes. However, there is no practical way of sequencing all three billion base pairs. (*Ibid*.) Accordingly, forensic scientists test particular regions called loci that are known to be polymorphic, i.e., variable from person to person. (*Ibid*.) Scientists have identified loci where a particular pattern of base pairs is repeated successively for numbers of times that vary from person to person. (*Ibid*.) These repetitions are referred to as alleles. (*Ibid*.) These alleles can be measured and compared to determine whether a suspect sample matches an evidentiary biological sample at each of the loci tested. (*Ibid*.)

If a suspect sample matches an evidentiary sample at each loci, the significance of the match can be expressed statistically. (*People v. Soto, supra*, 21 Cal.4th at p. 523.) This generally takes the form of the "product rule." (*Id*. at p. 525.) The frequency with which each measured allele appears in the relevant population is estimated through the use of population databases. (*Ibid*.) The frequencies at each tested locus are multiplied together to generate a probability statistic reflecting the overall frequency

of the complete multi-locus profile. (*Ibid*.) The result reflects the frequency with which the complete profile is expected to appear in the population. (*Ibid*.) The result is sometimes expressed as the probability that the DNA of a person selected at random from the relevant population would match the evidentiary sample at all tested loci. (*Id*. at pp. 524-525.)

The initial use of DNA for forensic purposes involved what is called restriction fragment length polymorphism (RFLP). The use of RFLP for forensic purposes was proposed in 1984. By 1988 or 1989, the FBI and a few out-of-state laboratories were doing RFLP testing. In 1989, California's state Department of Justice began setting up a laboratory, training analysts, and doing the extensive validation studies required for doing RFLP analyses. The Department of Justice began RFLP typing for a convicted offender database in 1991 and 1992 and began doing casework in 1992.

RFLP testing is now virtually obsolete. Modern laboratories utilize polymerase chain reaction (PCR) testing, which has a number of advantages over RFLP testing. PCR techniques can amplify an evidentiary sample and, thus, require far less DNA in the evidentiary sample for testing than did RFLP testing. The prosecution expert, Kenneth Konzak, from the Department of Justice, testified that with RFLP, samples about the size of a dime could be tested, but that PCR testing can use samples the size of a pinhead. RFLP testing utilized loci with fairly large alleles, while PCR testing, particularly that using short tandem repeats (STRs), tests much shorter alleles that are less subject to destruction through degradation. RFLP testing was a lengthier process than is PCR testing. RFLP testing required

many steps and took six to eight weeks to develop a profile. PCR testing can be automated, and by 1998 the Department of Justice had developed the ability to run a plate of 96 samples in about two and one-half hours.

PCR testing was introduced in the late 1980s. The initial PCR testing was referred to as DQ alpha testing, which analyzed one locus with 28 types of alleles. It did not have highly significant discrimination power, perhaps one in a thousand. Around 1995, the polymarker system was introduced. Together, the DQ alpha and polymarker systems would test six loci with discrimination power in the tens or even hundreds of thousands. However, the DQ alpha and polymarker systems were difficult to interpret with mixed samples, which often occur in sexual assault cases. Another system, known as D1S80, was introduced with significant powers of discrimination. However, by that time PCR-STR testing was emerging as the preferred forensic methodology. In view of the lengthy validation process and the time it takes to train analysts with a new system, few laboratories used the D1S80 system.

From 1995 to 1997, the scientific community, with the participation of the state Department of Justice laboratory, was considering the most suitable procedure or techniques for DNA comparisons. PCR testing with STRs emerged as the preferred method. Eventually, PCR-STR test kits that analyze numerous loci and include a gender test became available. With the ability to compare numerous loci, the discrimination power of PCR-STR testing is extremely high.

In late 1997, the state Department of Justice decided to use PCR-STR testing for purposes of the convicted offender database.

At that time, about 40,000 convicted offenders had been RFLP tested and entered into the data bank. There was a backlog of about 120,000 individuals to be profiled. With the expansion of the database from sexual offenders to include all violent offenders, the laboratory anticipated a backlog of 200,000 individuals by July 2001. The laboratory expanded and began hiring and training analysts--a process that took until late 1998. By July 2001, the laboratory had completed PCR-STR analysis on 200,000 samples, although there was still a backlog due to new samples coming in.

A sample was taken from defendant in May 1995, at a time when the RFLP databank was just starting up. It appears that his sample was not tested with RFLP methods. Konzak explained that in this state the laboratory has to qualify an individual before entry into the databank. This consists of checking the person's criminal history to ensure that he or she has been convicted of a crime that supports entry into the database. In 1995 or 1996, the laboratory began using collection kits by which a thumb print would accompany the sample. The person's identification number could be confirmed by thumb print and an automated criminal history system could be used to qualify the person. However, defendant's sample was collected before those kits were in use, and his qualification had to be done manually. For purposes of efficiency in light of the huge backlog, the laboratory began first testing samples where the individual could be qualified through the automated system.

The laboratory began analyzing a set of samples that included defendant's sample in September 2000, after it had begun PCR-STR testing. A profile was developed by December 2000. Defendant was

qualified and his profile was entered into the database in April 2001.

The Sacramento County crime laboratory never did RFLP testing. In December 1997, it began doing PCR DQ alpha-polymarker testing. Testing was limited to active cases with a suspect. Mary Hansen, the supervising criminalist, testified that without a suspect or a DQ alpha-polymarker databank, there would be no purpose for analyzing an evidentiary sample. The laboratory began doing PCR-STR testing in February 2000. In October 2000, the state allocated funds to enable local law enforcement agencies to use the state DNA database to solve suspectless crimes. The county laboratory expanded and hired and trained analysts, which took about a year. In May 2002, a DNA profile from the Ollie case was submitted to the state database. Defendant was identified as a possible source of the sample. Further testing established that he matched the evidentiary samples.

In light of this evidence, we conclude, as did the trial court, that the prosecution established justification for the preaccusation delay. The evidence we have recounted above shows it was the DNA evidence that made it possible to identify defendant as a suspect and to proceed with prosecution. Because of the DNA evidence, some of the other evidence became significant; however, the other evidence was insufficient, at the time of the crime and investigation, to make defendant anything other than one of many persons of interest.

The trial testimony showed that forensic use of DNA began in 1988 or 1989 and developed over the next 10 to 12 years. Numerous issues were the subject of extensive discussion in the scientific

community. The issues included the development and selection of the best testing methodology for forensic use; the development of protocols to ensure testing accuracy; validation studies to show accuracy; and the selection of statistical methods for explaining the results. The factor that made possible the identification of defendant as a suspect, i.e., the development of a searchable database, required resolution of numerous issues. These included the selection of the best testing system for use in a databank; the identification and development of testing procedures for sufficient loci to establish a significant power of discrimination; laboratory validation studies; training of analysts; and the testing and qualification of hundreds of thousands of offenders. These matters reasonably and necessarily took time to resolve.

Defendant asserts that PCR-STR testing was perfected in 1985 and that any delay after that was unexcused. To the contrary, the record shows that PCR-STR testing was introduced in the mid-1990s. When Cellmark Labs used PCR-STR testing in a California criminal case that arose in late 1995, the PCR-STR method tested only three genetic markers. (*People v. Allen* (1999) 72 Cal.App.4th 1093, 1097 (hereafter *Allen*).) That would not have sufficient discriminatory power for use in a databank. In 1999, when the *Allen* decision was issued, there were only two judicial decisions, from other states, that recognized general scientific acceptance of PCR-STR testing. (*Id*. at pp. 1099-1100.)

Defendant asserts that the only excuse given for the delay was a lack of funding. Again this is not so. The development of DNA testing over the years, to the point where use of a databank became

possible, was fully explained. During this period, the Department of Justice laboratory participated diligently in the ongoing national discussion.

Defendant suggests that the prosecution should have asked for DNA testing as soon as DNA testing became available. However, since law enforcement lacked a suspect at the time, or a functional convicted offender databank, there would have been no purpose for doing so. To the extent defendant suggests he should have been treated as a suspect before there was probable cause for doing so, we reject the suggestion. (*Catlin, supra*, 26 Cal.4th at p. 109; *People v. Dunn-Gonzalez, supra*, 47 Cal.App.4th at pp. 914-915.)

Upon consideration of all of the evidence, we conclude the trial court did not abuse its discretion in denying defendant's motion to dismiss for preaccusation delay. As defendant conceded in the trial court, the delay was not for the purpose of gaining an advantage over the defendant. (*Catlin, supra*, 26 Cal.4th at pp. 109-110.) Indeed, the record does not even establish prosecutorial negligence. The delay was the result of insufficient evidence to identify defendant as a suspect and the limits of forensic technology. (*Ibid.*; *Archerd, supra*, 3 Cal.3d at pp. 641-643.) When the forensic technology became available to identify defendant as a suspect and to establish his guilt, the prosecution proceeded with promptness. Without question, the justification for the delay outweighed defendant's showing of prejudice.

II

Defendant contends that the DNA evidence should not have been introduced because, he argues, there is no generally accepted

statistical method for explaining the significance of DNA evidence when a suspect is identified through use of a convicted offender databank. We disagree.

A

California courts apply a three-prong test for determining whether expert testimony based upon application of a new scientific technique may be introduced into evidence: (1) the reliability of the technique must be established; (2) the witness must be properly qualified as an expert to give an opinion on the subject; and (3) it must be shown that correct scientific procedures were used in the particular case. (*Kelly, supra,* 17 Cal.3d at p. 30; see *People v. Leahy* (1994) 8 Cal.4th 587, 612.)

Defendant bases his appellate argument on the first prong of the *Kelly* test, reliability, which requires a showing that the scientific technique is sufficiently established to have gained general acceptance in the particular field to which it belongs. (*People v. Venegas, supra*, 18 Cal.4th at p. 76.) The test does not require a unanimity of views in the scientific community; the test is met where "use of the technique is supported by a clear majority of the members of that community." (*People v. Guerra* (1984) 37 Cal.3d 385, 418.) Stated another way, the test is met where the technique has been generally accepted by a typical cross-section of the relevant community. (*People v. Leahy, supra*, 8 Cal.4th at p. 612.) The test is not met where it appears that scientists significant in number or expertise publicly oppose a technique as unreliable. (*People v. Soto, supra*, 21 Cal.4th at p. 519.)

When a trial court admits evidence based on a new scientific technique and that decision is affirmed in a published appellate decision, then the precedent established will control subsequent trials unless new evidence is presented reflecting a change in attitude in the scientific community. (*Kelly, supra*, 17 Cal.3d at p. 32; see also *People v. Venegas, supra,* 18 Cal.4th at p. 76.)

Over the years, most of the issues that arise from the forensic use of DNA have been resolved. Thus, RFLP testing is generally accepted. (*People v. Axell* (1991) 235 Cal.App.3d 836, 860.) PCR testing is generally accepted. (*People v. Morganti* (1996) 43 Cal.App.4th 643, 665.) And PCR testing for STRs is generally accepted. (*People v. Hill* (2001) 89 Cal.App.4th 48, 57-58; *People v. Allen, supra*, 72 Cal.App.4th at p. 1100.)

In addition, the use of the unmodified product rule for DNA forensic analysis has gained general acceptance in the relevant scientific community. (*People v. Soto, supra*, 21 Cal.4th at p. 541.)

B

Here, evidence of the random match probability derived through the product rule was presented to the jury. As we have explained in part D of part I, *ante*, under the product rule, the population frequencies of all measured alleles are estimated through use of population databases and then are multiplied together to generate a probability statistic for the complete multi-locus profile. (*People v. Soto, supra*, 21 Cal.4th at p. 525.)

Defendant does not dispute that the product rule is generally accepted in the scientific community for use in cases where a suspect

is identified through traditional investigative techniques and is then compared one to one with an evidentiary sample. But he argues that there is no general agreement in the case of a cold hit, i.e., where the suspect is identified through a DNA databank.

Before discussing this contention, we must describe the process by which defendant was identified.

C

As we have previously noted, forensic DNA comparisons are performed by measuring alleles at different loci. Individuals inherit one allele at each locus from each parent. In very rare instances, a mutation may cause a person to have three alleles at a locus. More commonly, a person may be a homozygote at one or more loci, meaning he or she inherited the same length of allele from each parent. When a person inherits different alleles from his or her parents at a locus, the person is a heterozygote at that locus. In PCR-STR testing, a heterozygote locus will reflect two lengths of allele. A homozygote locus will reflect one length of allele, but the amount of the alleles in the sample will often reveal the homozygote nature of the locus.

In a sexual assault case, an evidentiary sample will often contain contributions from both the male and female. The male contribution, sperm, is essentially half cells, i.e., it contains one-half of the male's DNA. Collectively, the sperm will include the male's total DNA. The female contribution consists of nucleated epithelial cells, each containing a full compliment of DNA. There is a method, called differential extraction, which can separate the male and female contributions. However, the method is not always

completely successful, with the result that there may remain some female DNA in the sperm fraction and some male DNA in the non-sperm fraction.

Degradation of an evidentiary sample can affect DNA testing. Degradation will not change a DNA profile; but with degradation, alleles may become impossible to detect. Typically, the longer alleles are most affected by degradation. There is a characteristic pattern to degradation, which will indicate to an analyst that the sample has partially degraded.

In PCR-STR testing, laboratories use commercial testing kits. During the initial phase of DNA testing in this case, commercially available kits were the Profiler Plus kit, which tested nine loci and a gender marker, and the Cofiler kit, which tested six loci and a gender marker. Two of the loci tested with these kits overlapped. Thus, if both were used, the laboratory could test 13 loci and the gender marker. Eventually, a kit called the Identifiler kit became available and was validated. That kit combined the Profiler Plus and Cofiler kits and was more sensitive. With greater sensitivity, the Identifiler kit would be better at detecting alleles in small or partially degraded samples. However, it might also detect a foreign allele left by something such as sneezing or even talking over the sample.

At the time defendant’s reference sample was analyzed and entered into the state convicted offender databank, California’s Department of Justice laboratory was using the Profiler Plus kit to test nine loci. The computer search engine that was designed to compare evidentiary profiles to profiles in the databank was not

intended to identify the source of the evidentiary sample; rather, it was a screening device. The program would record a moderate stringency match at a locus if a profile in the databank matched at least one of the alleles in the evidentiary sample. A high stringency match occurs where the evidentiary profile reflects two alleles and the databank profile matches both. A person would be identified as a candidate match if there were moderate or high stringency matches on at least seven loci.

To be declared a match for forensic purposes, a suspect's profile must match the evidentiary profile for every allele at every locus that is identified. A single mismatch excludes the suspect. The state's search engine was not programmed to require such a complete match. Evidentiary samples are often mixed with contributions from both the perpetrator and the victim. Thus, for example, if an evidentiary sample reflects two alleles at a locus, it may be that the perpetrator was a homozygote at that locus and contributed one allele, while the victim contributed the other. Further analysis can make the distinction, but for search purposes the state laboratory does not do so. The standard of a moderate stringency match at seven loci was set through experience because that standard best limits coincidental matches without risking exclusion of the actual perpetrator.

If a databank search identifies a candidate match, the person conducting the search examines the data to determine whether there is significance to the match such that it should be reported to the requesting agency. If the candidate match appears significant, the laboratory reanalyzes the original convicted offender sample with

those stored on either side of it to ensure there was no laboratory mix up. The laboratory then reports the name of the candidate and the results of the search to the requesting agency.

When the biological evidence from the Ollie case was submitted to the county laboratory, the analyst, Jeff Herbert, did a direct digest on a cutting from one of the semen stains on the sweater. A direct digest means that he did not use a differential extraction to separate the male and female contributions. Herbert tested the sample with both the Profiler Plus and Cofiler systems. He detected complete genotypes, i.e., two alleles, at 11 loci and one allele at another locus. He was unable to detect alleles at one locus. The profile was submitted to the Department of Justice, and the nine-loci profile of the Profiler Plus kit was run through the state's computer search engine. Defendant was identified as a candidate and, in due course, the identification was reported to the county.

With a warrant, oral swabs were obtained from defendant. Herbert ran a confirmation test to ensure that defendant's profile matched the evidentiary profile. Herbert then developed a 13-loci profile for Ollie from hairs retained during the victim's autopsy. The sweater sample that was initially tested was a mixed sample with a major and a minor contributor. Defendant's profile matched that of the major contributor, and where alleles of a minor contributor were detected, they matched Ollie's profile.

Herbert next analyzed the vaginal swab and another stain from the sweater using the Profiler Plus system. On this occasion, he did a differential extraction to separate the male and female contributions, although without complete success. Herbert was able

to detect alleles at eight loci. Defendant's profile matched that of the male contributor at each loci.

When the Identifiler system, with its greater sensitivity, was validated, Herbert tested the vaginal swab and sweater stains with that system. He was able to develop a complete profile at 13 loci from the vaginal swab. Defendant's profile matched the sperm fraction at each locus.

D

The trial court conducted a pretrial evidentiary hearing with respect to defendant's prong one *Kelly* objection to the statistical expression of the meaning of the DNA testing. The parties agreed the court would take judicial notice of, and consider as evidence in this case, the evidence presented in a prior *Kelly* hearing in the case of *People v. Robinson*, Sacramento County Superior Court No. 00F06871 (hereafter the *Robinson* case). The trial court in the *Robinson* case had conducted a lengthy hearing and ultimately determined that use of the unmodified product rule is generally accepted in cold hit cases.[7]

A number of experts testified at the *Kelly* hearing in the *Robinson* case. They included Dr. Ranajit Chakraborty, a renowned expert in human population genetics (see *People v. Soto, supra*, 21 Cal.4th at p. 527, fn. 20); Dr. George Sensabaugh, Jr., a forensic biologist and biochemical geneticist who is an expert in the forensic

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[7] An appeal in the *Robinson* case is currently pending in this court (No. C044703). As did the trial court, we take judicial notice of the transcripts of the *Kelly* hearing in that case and consider the evidence therein.

use of DNA (see *People v. Pizarro* (2003) 110 Cal.App.4th 530, 589; *People v. Axell, supra*, 235 Cal.App.3d at p. 849); Gary Sims, who has a master of public health degree with a specialty in forensic science and is director of the case work section of the Department of Justice laboratory; Dr. Dan E. Krane, an associate professor of biological science at Wright State University; Dr. Norah Rudin, a forensic DNA consultant; and Dr. Laurence Mueller, an ecologist and population geneticist who has frequently appeared as a defense witness at *Kelly* hearings (see, e.g., *People v. Soto, supra*, 21 Cal.4th at p. 529; *People v. Venegas, supra*, 18 Cal.4th at p. 72; *People v. Pizarro, supra*, 110 Cal.App.4th at p. 595; *People v. Smith* (2003) 107 Cal.App.4th 646, 662).

From the evidence before the trial court, it appears virtually all DNA scientists believe that PCR-STR testing with numerous loci has a tremendous power of discrimination. And most, if not all, agree that the unmodified product rule is a valid and reliable means of demonstrating what it purports to demonstrate, that is, the rarity with which a particular multi-locus profile is expected to appear in the population and thus the probability of a random match.

Some scientists opine that the power of discrimination with multi-locus PCR-STR testing is so great that source attribution can be declared, i.e., it can be declared that the defendant is the source of the evidentiary sample. This view does not appear to have achieved general acceptance. Nevertheless, the minority view does not create a controversy as to use of the product rule. Those scientists simply believe that when the expected frequency of a profile, determined through the product rule, becomes

extraordinarily miniscule, then a conclusion of source attribution can be drawn.

Evidence before the trial court indicated that, in addition to the random match probability determined through use of the product rule, there are three possible methods of explaining the statistical significance of a DNA match in a cold hit case. We will discuss each in turn.

One method was suggested by the National Research Council in 1992. (Nat. Research Council, DNA Technology in Forensic Science (1992) (hereafter NRC-I).) At that time, forensic use of DNA was in its infancy, and the idea of using a convicted offender databank to solve crimes was new. (See Annot., Validity, Construction, and Operation of State DNA Database Statutes (2000) 76 A.L.R.5th 239.) The NRC-I report suggested that in a databank search, one set of loci could be used to screen and identify a suspect and then a different set of loci could be used to confirm a match. Statistical analysis using the product rule would be done on the second set of loci.

The NRC-I suggestion was not based upon any scientific or statistical theory. It was concerned with matters of probable cause, which are judicial rather than scientific questions. No scientific or statistical principle requires that competent, relevant information be disregarded. A subsequent report of the National Research Council criticized the NRC-I suggestion for wasting data. (Nat. Research Council, The Evaluation of Forensic DNA Evidence (1996) (hereafter NRC-II).) The evidence in the trial

court established that the NRC-I approach has been generally rejected and is not used in any laboratory or in any jurisdiction.[8]

The existence of such an old suggestion of a method of practice that was never generally accepted, and has long since been generally rejected, does not create a current controversy in the relevant scientific community.

Another approach that has been suggested is the creation of likelihood ratios through the use of a Bayesian formula. "Bayesian" refers to the Reverend Thomas Bayes who, in the nineteenth century, created a formula that purports to show the effect of new information on a prior probability. (See McCormick on Evidence (5th ed. 1999) § 211, pp. 817-822.) Use of a Bayesian formula requires a quantified prior probability and quantifiable new information. (*Ibid*.) Bayesian analysis then utilizes a complicated formula to revise the prior probability on the basis of the new information. (*Ibid*.) Bayesian techniques are inherently confusing and would be difficult, if not impossible, to explain to an average jury. (*Ibid*.; see also 3 Forensic Sciences (2006 Matthew Bender & Co.) § 30.03 et seq.)

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[8] The NRC-I approach has been generally rejected, but not because it would give affirmatively false information to the jury. For example, if six loci were used for screening and a different set of six loci were used for confirmation, the application of the product rule to the six confirmatory loci would accurately reflect the expected frequency of the six-loci confirmatory profile. The approach is rejected because it unnecessarily wastes information by ignoring the six-loci match at the screening loci. Scientific and statistical theories do not require that valid information be wasted in that way.

The end result of a Bayesian analysis is often misleading. (McCormick on Evidence, *supra*, § 211, at p. 819.)

We need not explore in depth the deficits of the forensic use of a Bayesian analysis in a criminal case. It was established in the trial court that those who suggest a Bayesian approach do not do so because they reject the reliability of the product rule and random match probabilities. Rather, they accept the product rule and random match probability as a valid and reliable expression of what it purports to be, but they believe it may be too generous to the defendant. In their view, the DNA evidence can be even more powerful, and thus more damning to the defendant, through the use of a Bayesian approach. But they concede this applies only when relatively few loci are tested and the random match probability is not exceptionally low. When the random match probability becomes very low, even the Bayesians agree the Bayesian approach becomes irrelevant.

Nothing in the *Kelly* test requires that there be one and only one approach to a scientific problem. The question is whether scientists significant in number or expertise publicly oppose a technique as unreliable, not whether some scientists believe there may be an alternative, perhaps even better, technique available. (*People v. Soto, supra*, 21 Cal.4th at p. 519.) The fact that some, a relatively few, scientists have suggested that a Bayesian approach could be used does not constitute a rejection of the product rule and random match probability. The Bayesians do not regard the product rule as unreliable in demonstrating what it purports to

demonstrate. Thus, the suggestions by the Bayesians do not establish a controversy with respect to the product rule.

The third approach identified in the trial court is the approach suggested in NRC-II, the second National Research Council report in 1996, i.e., that in the case of a databank search, the expected frequency of the profile could be calculated through use of the product rule, and the result could then be multiplied by the number of profiles in the databank. The result would be the expected frequency of the profile in a sample the size of the databank and thus the random chance of finding a match in a sample of that size. The result may be significant when few loci are tested and the discriminatory power of the testing is limited, but the significance tends to disappear when many loci are tested.[9]

In the trial court, the experts were in agreement that both the random match probability and the NRC-II formula are valid and reliable statistical expressions of what they purport to represent.

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[9] When the Ollie evidentiary profile was screened through the state DNA databank, there were 184,000 convicted offender profiles in the databank. If only a few loci had been tested and the population frequency of those loci was, for example, one in 1,000,000, then the probability of a random match in a sample the size of the databank would be one in 5.43, a not-at-all rare possibility. But in this case, the 13-loci profile produced population frequencies of one in 950,000,000,000,000,000,000,000 African-Americans, one in 130,000,000,000,000,000,000,000 Caucasians, and one in 930,000,000,000,000,000,000,000 Hispanics. The NRC-II formulation would produce a random chance of finding that profile in a sample the size of the databank of one in 5,163,000,000,000,000,000 African-Americans, one in 706,500,000,000,000,000,000 Caucasians, and one in 5,054,000,000,000,000,000 Hispanics. It seems most unlikely that the difference would be significant to the jury.

But the formulations address different questions. If the jury is asked to infer that the defendant is the source of the evidentiary sample because he was identified in a databank search, then the NRC-II formula is appropriate. However, the NRC-II formulation does not supersede the random match formula. The rarity of a DNA profile in the population does not change due to the manner through which the defendant is identified as a suspect. Thus, if the jury is asked to infer that the defendant is the source of the evidentiary sample due to the rarity of the profile in the population, then the unmodified product rule is the appropriate formula.

The evidence established that the unmodified product rule is in universal use in explaining the meaning of a DNA match whether or not a databank search was used to identify the suspect. Some laboratories report both the result of the unmodified product rule and the result of the NRC-II formula. Both are relevant provided the jury is made aware of the different questions they address.

The expert testimony presented to the trial court established that to the extent there is a debate, it is over relevance rather than reliability. Most of the experts who testified agreed that rarity of the DNA profile in the population is a relevant question. Dr. Mueller, the defense expert, did not disagree that the unmodified product rule establishes rarity in the population, but said he does not find that to be the interesting question. It was apparent that he was referring to relevance and not reliability.

The issue in a *Kelly* prong one inquiry is reliability. (*People v. Soto, supra*, 21 Cal.4th at p. 519.) The court does not determine whether the technique is reliable as a matter of scientific fact;

rather, the court defers to the scientific community and considers whether the technique is generally accepted as reliable in that scientific community. (*Ibid*.)

The evidence in this case established that use of the product rule to compute a random match probability is overwhelmingly accepted by the scientific community as a scientifically reliable means of demonstrating the rarity of a profile in the population.

Consequently, the technique satisfies the reliability prong of the *Kelly* test and it was for the trial court, not the scientific community, to determine the relevance of the technique to this criminal prosecution. In any event, the evidence established that a heavy majority of the scientific community opine that the rarity of a profile in the population is a relevant inquiry in a cold hit case. The existence of a few dissenters, such as Dr. Mueller, does not preclude use of the statistic. (*People v. Guerra, supra*, 37 Cal.3d at p. 418.)

Finally, we note the NRC-II report assumed that in a databank search, the evidentiary profile matched the defendant's profile and evidence of that match is being presented to the jury. This is not what happens in a California databank search. As we have previously noted, the computer search engine employed in California is simply a screening device. In a comparison of the nine loci of the Profiler Plus kit, the computer will identify a candidate if a profile in the databank matches at least one allele at seven loci. Identification of a candidate in that manner cannot be called a match. Rather, to constitute a match, a suspect profile must match the evidentiary sample for all alleles at every loci; a single mismatch will exclude

the suspect. That can be determined only through complete and thorough testing after the candidate is identified.

A search of the state DNA databank operates in a manner very similar to a search of the state's fingerprint database (the CAL-ID system). In a CAL-ID search, a fingerprint analyst identifies a number of points of comparison on an evidentiary print and submits the profile for a computer search of the state fingerprint database. The computer search will produce candidates.[10] The candidate prints are visually examined, and those that are not close are eliminated. If a candidate print appears close to the evidentiary print, the analyst requests the candidate's fingerprints from the Department of Justice. A match is determined in the traditional manner, through manual comparison by a qualified analyst.

The California Supreme Court has rejected a prong one *Kelly* challenge to identification of a person as a fingerprint candidate through a CAL-ID search, after which the person's fingerprints are compared manually to the evidentiary fingerprints and determined to match. (*People v. Farnam* (2002) 28 Cal.4th 107, 159.) The court concluded "that the admission of [expert] testimony concerning the CAL-ID system did not implicate the concerns addressed in *Kelly*. The reliability of the computerized system in comparing latent prints to fingerprints in its database was apparent at trial.

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[10] The fingerprint analyst can specify the number of candidates to be selected. The computer will select that number of candidates from the database who best match the evidentiary profile. The County of Sacramento typically asks for 10 to 15 candidates so as not to exclude a possible match.

The jury could make its own comparisons between the latent prints found at the . . . crime scene and defendant's fingerprints, and there was no dispute that the system made its comparisons 'without tampering or alteration of any kind.' [Citation.] Moreover, [the expert] did not suggest that the CAL-ID system positively identified the latent prints as defendant's fingerprints, or that any opinion regarding a fingerprint identification was based on the computer. Although the police used the CAL-ID system to narrow the range of potential candidates whose fingerprints might match the latent prints, the prosecution relied on a long-established technique--fingerprint comparison performed by fingerprint experts--to show the jury that defendant's fingerprints matched those found at the . . . residence. Accordingly, the trial court did not err under *Kelly* when it admitted [the expert's] testimony." (*Id*. at p. 160.)

DNA comparison differs from fingerprint comparison in some respects. It is a relatively new rather than long-established technique, but it has been established that the DNA techniques used in this case are reliable in the sense that they are generally accepted in the scientific community. Fingerprints can be shown to the jury and the bases for declaring a match illustrated. DNA analysis produces printouts that can illustrate the bases for comparison to the jury, but a jury cannot physically observe and compare DNA.

Here, the reliability of a DNA databank search in identifying a candidate was apparent at trial. Like a fingerprint database search, a DNA databank search makes its comparisons without tampering

with or altering the evidence in any way. In fact, the testing that resulted in declaring a match used a new DNA sample from defendant. It was established that the manner in which a suspect is identified does not change the frequency of a DNA profile in the population. The databank search merely screened the DNA databank to identify a possible candidate and was not the basis for declaring that defendant's DNA matched that of the evidentiary samples; rather, the basis for declaring a DNA match relied upon complete testing with techniques that have been determined to be reliable under the *Kelly* test.

Like the use of a CAL-ID fingerprint search to identify potential candidates, a DNA databank search to identify a potential candidate does not implicate the concerns addressed in *Kelly*.

E

We summarize. Experts agree PCR-STR testing with numerous loci has a tremendous power of discrimination. The experts, including the defense experts, agreed that at 13 loci a DNA profile is essentially unique. In fact, Dr. Mueller, the defense expert, testified that with a 13-loci match, the only real question is the possibility of laboratory error. The use of the unmodified product rule to establish a random match probability to demonstrate the rarity of a DNA profile in the population has been judicially determined to be generally accepted in the scientific community. (*People v. Soto, supra*, 21 Cal.4th at p. 541.) All laboratories currently use that method to explain the meaning of a DNA match regardless of whether the suspect was identified through a database search. The majority of experts, with a few dissenters, accept the random match

probability as a scientifically reliable means of explaining the meaning of a DNA match in a databank case.

Defendant's contention is that, despite the virtually universal scientific agreement that a 13-loci profile is essentially unique, the trial court erred in allowing the DNA evidence to be presented to the jury. He bases the argument upon a purported dispute in the scientific community regarding the statistical means of explaining the meaning of a DNA match when a databank is used to identify a potential suspect. As we have shown, the dispute is more shadow than real.

We agree with the trial court that the scientific community has generally accepted the random match probability derived through the product rule in a DNA databank case. The evidence was properly admitted.

III*

The third prong of the *Kelly* inquiry requires the proponent of the evidence to demonstrate that correct scientific procedures were employed in the particular case. (*Kelly, supra*, 17 Cal.3d at p. 30.) In the trial court, defendant made a prong three *Kelly* objection to the statistical evidence. However, the objection was entirely derivative of the prong one challenge. Defendant argued that if use of the product rule to derive a random match probability is not generally accepted in a databank case, then use of that formula here did not follow correct scientific procedures.

In reiterating his prong three argument on appeal, defendant states that he "has no quarrel with the specific figures the crime lab developed from the data, only with the method it used in arriving

at those figures." Thus, he recognizes that if we reject his prong one *Kelly* challenge, then his prong three attack must also fail.

For the reasons explained in Part II, *ante*, we have rejected defendant's prong one *Kelly* challenge. Accordingly, we reject this contention as well.

IV*

Defendant claims his Fourth Amendment right to be free of unreasonable search and seizure was violated when, in 1995, he was compelled to provide a biological sample for analysis and entry into the state's convicted offender DNA databank.

A like contention was rejected by this court in *Alfaro v. Terhune* (2002) 98 Cal.App.4th 492, at pages 505-506. The Sixth Appellate District rejected such a contention in *People v. Adams* (2004) 115 Cal.App.4th 243, at pages 255 to 259. And Division One of the First Appellate District Court rejected the contention in *People v. King* (2000) 82 Cal.App.4th 1363, at pages 1369 to 1378. The contention also has been rejected in an overwhelming number of judicial decisions elsewhere. (See Annot., *supra*, 76 A.L.R.5th 239.)

Defendant recognizes that decisional authorities are against him. However, he notes the issue has yet to be decided by the California Supreme Court or the United States Supreme Court and, thus, he raises the issue in order to preserve it for further review. We will adhere to the overwhelming weight of authority in rejecting the contention.

V*

Defendant contends he was denied due process of law when the trial court allowed the prosecution to present random match probability evidence by reference to the three major ethnic groups. According to defendant, "presenting the random match probabilities for each of three major ethnic groups" "allowed the People to enjoy the benefit of an unsupported inference that both the perpetrator and [defendant] shared the same race, even though," defendant argues, there was "no reliable information regarding the ethnicity of the perpetrator of [the murder in this case]." Defendant relies on the decision in *People v. Pizarro, supra*, 110 Cal.App.4th 530 (hereafter *Pizarro II*).

The contention fails because since the filing of appellate briefs in this case, our state Supreme Court approved the practice of providing frequency evidence as to the three main population groups (*People v. Wilson* (2006) 38 Cal.4th 1237, 1244-1250) and disapproved *Pizarro II* "to the extent it concludes that evidence regarding any particular population group is inadmissible absent sufficient independent evidence that the perpetrator was a member of that group." (*People v. Wilson, supra,* 38 Cal.4th at p. 1251.)

Moreover, contrary to defendant's claim, presenting frequencies for the major population groups did not infer that the murderer in this case and defendant "shared the same race." The jurors were presented with evidence of the expected frequency of the 13-loci profile for each of the three major population groups. The testimony and argument did not focus the statistical analysis on any particular population group; rather, it was presented solely to show the overall

rarity of the profile in any of the groups. Nothing in the testimony or the arguments suggested that the DNA evidence could indicate the race of the perpetrator. Because the jurors were told of the rarity of a DNA profile in the three major population groups and the rarity of the frequency in any group, they could not bootstrap themselves into believing that the murderer must have belonged to defendant's racial group.

Where, as here, the evidence demonstrates that the profile is extraordinarily rare in all three major population groups, the only inference the jury could draw was that the profile is extraordinarily rare in the population as a whole. The fact a DNA profile is very rare in any of the three major population groups tends to demonstrate that the profile is rare in the population as a whole and, therefore, meets the standard of relevance. (*People v. Freeman* (1994) 8 Cal.4th 450, 491 [evidence is relevant if it tends logically, naturally, and by reasonable inference to prove or disprove a disputed issue].

DISPOSITION

The judgment is affirmed.

SCOTLAND, P.J.

We concur:

HULL, J.

CANTIL-SAKAUYE, J.