**IN THE SUPREME COURT OF CALIFORNIA**

THE PEOPLE,

Plaintiff and Respondent,

v.

CHESTER DEWAYNE TURNER,

Defendant and Appellant.

S154459

Los Angeles County Superior Court

BA273283

November 30, 2020

Justice Corrigan authored the opinion of the Court, in which Chief Justice Cantil-Sakauye and Justices Liu, Cuéllar, Kruger, Groban, and Gilbert[[1]](#footnote-2)\* concurred.

PEOPLE v. TURNER

S154459

Opinion of the Court by Corrigan, J.

 Over the course of nearly 12 years, a serial killer raped and murdered women in high crime areas of Los Angeles. Police identified defendant Chester Dewayne Turner as a suspect in 2003, when his DNA was found to match DNA left on the victims in several unsolved cases. Convicted of murdering ten women and one viable fetus, he was sentenced to death. (Pen. Code, § 187, subd. (a).)[[2]](#footnote-3) This automatic appeal primarily challenges the admission of statistical evidence about the significance of the DNA matches and hearsay testimony about the fetus’s viability. The hearsay claim has merit and warrants reversal of the fetal murder conviction. The judgment is affirmed in all other respects.

# I. BACKGROUND

## A. *Guilt Phase*

###  1. Figueroa Corridor Murders

 Between 1987 and 1996, the bodies of eight women were found in the Figueroa Corridor of Los Angeles, an area beset by crime, including prostitution and narcotics activity. Defendant lived at various addresses in the Figueroa Corridor during this period. All of the victims had been sexually assaulted and strangled to death, sometimes by ligature and sometimes manually. All had a history of drug abuse, and all but one had cocaine in their systems. Some were homeless; some were thought to be mentally ill; and some had arrests for prostitution.

####  a. 1987 to 1989

 The body of 21-year-old Diane Johnson was found on March 9, 1987, in a construction area six blocks from defendant’s home. Drag marks led to her body, which was nude from the waist down. She had been strangled.

 Annette Ernest, age 26, was found just three blocks away on October 29, 1987. She lay face down with her pants lowered. There was a possible ligature mark on her neck and a bite on one breast. The cause of death was strangulation.

 On January 20, 1989, a young boy discovered the body of 31-year-old Anita Fishman in an alley less than two blocks from defendant’s home. Her pants were partially down and the body was beginning to decompose. She died of manual strangulation.

 Regina Washington was 27 years old and visibly pregnant when she was killed. Her body was found on September 23, 1989, lying on a mattress in a burnt-out garage about 14 blocks from defendant’s home. Although she was clothed, her pants were unfastened and her shirt pulled up. A black coaxial cable was wrapped around her throat and attached to an electrical box on a nearby wall. She died of ligature strangulation with signs of a struggle. Washington’s female fetus weighed 825 grams with a gestational age of 27 to 28 weeks. That weight and age were considered viable under World Health Organization guidelines. Despite her mother’s cocaine use, the fetus had no congenital abnormalities and appeared to be developing normally. She died from lack of oxygen due to her mother’s strangulation.[[3]](#footnote-4)

####  b. 1993 to 1996

 On April 2, 1993, 29-year-old Andrea Tripplett was found dead behind an abandoned house 22 blocks from defendant’s residence and only two blocks from her own home. Her skirt was pushed up and she was naked below the waist. She was around five months pregnant when she was manually strangled to death. At 305 grams, the fetus was not yet viable.

 Deserae Jones, who sometimes went by Tracy Williams, was also 29 years old and killed by manual strangulation. Her body was found on May 16, 1993 in the trash-filled yard of a burned, boarded-up house within 30 blocks of defendant’s address. She was unclothed below the waist.

 On February 12, 1995, Natalie Price’s body was found approximately five blocks from defendant’s home, next to an empty house where people gathered to smoke narcotics. Her bra was pushed up around her neck and her pants were pulled down. She had been strangled and struck on the head. She was 39 years old when she died.

 Mildred Beasley, age 45, was on her way to her sister’s house when she disappeared. Her body was found on November 6, 1996 on a trash-strewn embankment of the 110 Freeway about 18 blocks from defendant’s home. The area was frequented by transients and known for drug activity. She had been strangled to death and left naked below the waist, with her upper garments pulled up. Insect activity indicated the body had begun to decompose.

###  2. Downtown/Skid Row Murders in 1998

 Two additional murder victims were found under similar circumstances near downtown Los Angeles in 1998. During that year, defendant lived downtown at the Regal Hotel on 6th Street.

 Paula Vance, age 41, was found dead on February 3, 1998. Her body lay next to an abandoned building near 6th and Hope Street, about 14 blocks from defendant’s residence. Her upper garments were pulled up, her nylons and underwear pulled down. She had been strangled, and there were signs of sexual assault. A surveillance camera at the scene recorded her entering the alleyway with a man, who grabbed her around the neck until she fell to the ground. Vance was the only murder victim without cocaine in her system. Evidence showed that she was homeless and suffered from mental illness.

 On April 6, 1998, the body of 37-year-old Brenda Bries was found in a portable toilet on South Gladys Avenue and 5th Street, just 50 yards from defendant’s residence. She was slumped with her head on the seat, pants around her knees, and shirt pulled around her neck. A fabric cord, intertwined with her bra, was wrapped around her neck. She died from ligature strangulation and showed signs of a struggle.

###  3. Investigation

 Crime scene investigators compiled and stored sexual assault kits for all victims.

####  a. 2002 Rape of Maria M.

 In March 2002, defendant raped Maria M., a 47-year-old homeless woman who worked as a prostitute and sold drugs. She knew defendant from the Midnight Mission, a shelter they both frequented. As she walked alone near the shelter one night, defendant asked to borrow her lighter, which he used to smoke cocaine. Instead of returning the lighter, defendant grabbed Maria in a chokehold and dragged her behind some dumpsters, where he raped and sodomized her, ejaculating in the process. He threatened to kill her if he was arrested.

 Maria immediately went to a police station, but after being kept waiting for some time she felt ignored and left. The next morning, she reported the assault to Midnight Mission employees and the police. Defendant attempted to flee but was arrested at the shelter. Evidence for a sexual assault kit was collected at a hospital. Defendant ultimately pled no contest to rape by force or fear and unlawful penetration. (§§ 261, subd. (a)(2), 289, subd. (a)(1).)

####  b. DNA Identification of Defendant

 i. *General Evidence*

 Gary Sims, a director of the Department of Justice DNA Laboratory, testified as an expert on forensic DNA analysis. Chromosomes found in cell nuclei contain DNA, which is the same in all cells of a person’s body. The vast majority of human DNA is the same, coding basic traits all people share. At some chromosomal regions, however, the DNA is highly variable. Forensic DNA analysis studies these areas of variation. The specific site being studied is called a “locus.” “Allele” describes the alternative forms of genetic material at a particular locus. Each locus has two alleles, one inherited from each parent. Current forensic testing focuses on loci with sections of DNA that repeat a variable number of times, known as short tandem repeats or STRs. Different people have different numbers of the repeating sequence at these sites. DNA testing compares the alleles at these sites to see if they are the same or different. As the science of DNA analysis developed, more loci with variable STRs could be tested. At the time of defendant’s trial, analysts could study DNA variation at 13 different loci. Sims explained that DNA analysis is a powerful tool in determining “the probability of identity,” which is the likelihood that two people chosen at random will have the same DNA sequences at the areas tested.

 Once DNA is extracted from biological material left at a crime scene, the STR regions are amplified. Analysts determine the number of STR repeats for alleles present at each of the 13 loci, producing a “profile” for the evidence sample. Biological material is then obtained from a suspect to create a DNA profile. When the two profiles are compared, a match is declared if the alleles at all loci are the same. The significance of a match depends on how common the particular DNA profile is in the population. Sims explained that population databases have been developed to determine how frequently particular alleles are found in each major ethnic group. After the allele frequencies are determined at each locus, the frequencies are multiplied together to determine the rarity of the overall profile. This number, called the random match probability, reflects the probability that DNA from a randomly chosen person would match the evidence profile.

 ii. *Case-specific Evidence*

 On July 3, 2002, defendant gave cheek swabs for DNA testing in connection with Maria’s assault. The Los Angeles Police Department (LAPD) DNA Unit prepared defendant’s DNA profile from this reference sample. His profile matched the DNA in sperm cells recovered during Maria’s examination.

 Investigators later compared defendant’s profile with DNA samples from unsolved crimes.[[4]](#footnote-5) Defendant’s profile matched DNA left on all of the victims here. A private forensic laboratory, Orchid Cellmark (Cellmark), retested the evidence and independently confirmed LAPD’s findings. Specifically, the laboratories found as follows.

 Sperm cell DNA matching defendant’s profile was recovered from anal and vaginal swabs from Diane Johnson. In the Anita Fishman, Regina Washington, Andrea Tripplett, Natalie Price, Mildred Beasley, Paula Vance, and Brenda Bries cases, DNA from sperm cells in vaginal swabs matched defendant’s profile. Occasionally these samples included some “carryover” DNA from the victim’s epithelial cells, but there were no other sperm cell contributors. Cellmark also found DNA with defendant’s profile in external genital swabs from Price, Beasley, Vance, and Bries, and in the anal swabs for Beasley and Bries. In the Annette Ernest and Deserae Jones cases, sperm cell DNA recovered from the external genital area matched defendant’s profile. Cellmark also found DNA with defendant’s profile in nipple and anal swabs in the Ernest case and in oral and anal swabs in the Jones case. Some external genital samples included DNA from unknown individuals, but in all such cases defendant was the primary contributor. Each unknown DNA profile appeared in only one victim. Defendant’s DNA profile alone recurred in all of the victims.

 Both laboratories declared a match when DNA sequences were the same at all 13 sites examined. LAPD’s DNA Unit determined the probability of this match occurring at random was one in one quintillion. Cellmark calculated the probability of a random match within the Black population group as one in 6.725 quintillion. A quintillion is rendered as a one followed by 18 zeroes.

###  4. Defense Case

 A third forensics laboratory analyzed the DNA evidence for the defense. Unlike the other two laboratories, Technical Associates (TA) used the Y-STR test, which isolates male DNA by studying sites on the Y chromosome. Because it examines only male lineage, the Y-STR test is less powerful than other tests, producing random match probabilities of one in thousands versus one in quadrillions. It is useful, however, when the amount of male DNA in a sample is comparatively small.

 TA tested samples from all of the victims except Anita Fishman, examining 12 loci on the Y chromosome. Defendant was considered identified when his DNA profile matched most, if not all, of the 12 loci in the sample DNA. Rather than describing a correspondence between defendant’s profile and the sample as a “match,” the TA criminalist preferred to state that defendant could not be excluded as the source of DNA in the sample. Because genes examined by the Y-STR test are less rare than those in other tests, it was possible another male’s profile could overlap defendant’s at some sites.

 TA found DNA consistent with defendant’s profile in samples from each of the victims studied. Specifically, DNA consistent with defendant’s was found: in the nipple and vaginal swabs from Diane Johnson; in the nipple, vaginal, and anal swabs from Annette Ernest; in the external genital swab from Regina Washington; in the anal swab from Andrea Tripplett; in the nipple and anal swabs from Deserae Jones; in the external genital, nipple, and anal swabs from Natalie Price; in the nipple and anal swabs from Mildred Beasley; in the external genital and nipple swabs from Paula Vance; and in the external genital swab from Brenda Bries. The Y-STR test detected male DNA from unknown contributors in several of the samples. No DNA profile other than defendant’s repeated from victim to victim.

 The defense expert testified that sperm cells deposited in the vagina are typically expelled within one to two days from a living woman. After death, however, bodily processes slow down the expulsion. Sperm cells could remain as long as two weeks postmortem. Sperm found in a female who had been deceased for a day could have been deposited three or four days earlier. Even if defendant’s DNA profile was detected at a higher concentration than unknown profiles, the finding did not mean defendant was necessarily the last person to deposit DNA.

 The parties stipulated that the defense requested discovery of DNA test results for all clothing booked into evidence and that neither side conducted such testing.

## B. *Penalty Phase*

###  1. Aggravating Evidence

 The prosecution presented victim impact evidence relating to seven victims. The jury heard from Annette Ernest’s mother, Andrea Tripplett’s mother, Anita Fishman’s mother and younger sister, Deserae Jones’s mother and niece, Regina Washington’s daughter, Natalie Price’s daughter, and Mildred Beasley’s younger sister and niece. They described the families’ sorrow at losing their loved ones and their anguish at having the cases remain unsolved for so many years.

 Most of the aggravating evidence concerned defendant’s violent conduct in four unrelated incidents: murder, sexual assault, felony resisting arrest, and threatening a sheriff’s deputy while awaiting trial on the current charges. The prosecution also presented evidence of defendant’s conviction for the attack on Maria M.

####  a. Murder of Elandra Bunn

 In June 1987, less than three months after Diane Johnson’s murder, Elandra Bunn was killed in the Figueroa Corridor. Her body had been left in an alley near 88th Street and Figueroa. Her pants had been pulled down to her ankles. She had “massive facial trauma” and multiple abrasions. The injuries were consistent with her face being pushed or dragged across a rough surface. She died of strangulation, likely manual. Bunn had a history of cocaine abuse, and the drug was found in her system. She was in the early stages of pregnancy.

 Crime scene investigators compiled a sexual assault kit. Although it was destroyed in 1996, some evidence was retained, including a bloody tissue found four or five feet from the body. DNA obtained from the tissue matched defendant’s profile, with a random match probability of one in one quintillion.

####  b. Sexual Assault of Carla W.

 After midnight in October 1996, 22-year-old Carla W. was walking alone in downtown Los Angeles. A man grabbed her by the arm and crotch. He tried to pull her into a nearby alley but she struggled and screamed. When a patrol car drove by, he fled. Later that night, Carla identified defendant as her attacker and did so again in court.

####  c. Resisting Arrest

 In March 1997, the police tried to interview defendant about a possible parole violation. When two officers came to his motel room, defendant answered the door but refused to put his hands behind his head for a weapons check. Officers attempted to handcuff him but he ran, dragging the officers 10 to 20 yards down a hallway and into the parking lot. Kicking one officer several times in the chest and leg, he tried to grab the officer’s gun, then broke free and fled. When a search dog alerted near a woodpile, the officers ordered defendant to emerge. He rose from his hiding place then hit the search dog with a nearby fiberglass sink. The dog bit him in response. Defendant ran at the officers, charging ahead even after being struck with six rounds from a beanbag shotgun. Following another violent struggle, defendant was finally taken into custody.

####  d. Threatening a Deputy

 In May 2006, while in county jail awaiting trial, defendant confronted Deputy Natalie Uyetatsu, the only female deputy assigned to his area. Angry because Uyetatsu had put him on lockdown, defendant told another inmate he would kill Uyetatsu if he was found guilty of the pending charges. The inmate thought the threat was serious because defendant seemed to hate women.

###  2. Mitigating Evidence

 Defendant’s mother, Audrey Turner, described his upbringing. She raised defendant alone from the time he was a year old. She worked full time while a friend watched her son. They moved from Arkansas to California when defendant was four. He was a fun-loving child but struggled in school, often getting into trouble. Defendant went to live with his father in Arkansas but returned after a year. His father provided no financial or emotional support.

 When defendant was 14, Ms. Turner had a second son, Anthony. Soon thereafter she began working a second job. Friends helped with babysitting until Ms. Turner’s father arrived to help in 1984. Defendant eventually dropped out of high school and worked as a pizza delivery driver. When he was 17, his mother insisted he leave the home due to his drinking and drug use, but she let him return while he recovered from a gunshot injury. During that time, defendant treated his mother well. He helped her with her cleaning job and cooked and cleaned for the family.

 In 1991, Ms. Turner moved to Salt Lake City. Anthony stayed behind to finish the school year, then joined his mother. Each summer, Anthony stayed in California with defendant, who was his primary caretaker. Defendant warned his brother to stay in school and keep out of trouble.

 Defendant had four children who loved him. He was unable to support them because he was often in custody. His mother helped raise the children in Salt Lake City.

# II. DISCUSSION

## A. *Pretrial Issues*

###  1. DNA Issues

 The court denied defendant’s pretrial motion under *People v. Kelly* (1976) 17 Cal.3d 24 (*Kelly*) to exclude evidence about the DNA matches and their statistical significance. Defendant now makes two related arguments concerning this ruling. First, he contends the court erred in admitting random match probability numbers because this statistic is not a generally accepted measure of significance in “cold hit”[[5]](#footnote-6) DNA cases. (See *Kelly*, at p. 30.) Building on this argument, defendant next asserts that insufficient evidence supports the guilt verdicts because the jury heard no evidence of the rarity of his DNA profile. The first argument was rejected in *People v. Nelson* (2008) 43 Cal.4th 1242 (*Nelson*). Defendant does not persuade us that *Nelson* was wrongly decided. Defendant’s second argument fails because, as *Nelson* and other cases have explained, random match probability *is* an expression of a DNA profile’s rarity in the population. Because the jury was given this statistic, it was able to evaluate the probative value of the DNA matches in determining his guilt.

####  a. Background

 “Forensic DNA analysis is a comparison of a person’s genetic structure with crime scene samples to determine whether the person’s structure matches that of the crime scene sample such that the person could have donated the sample.” (*Nelson*, *supra*, 43 Cal.4th at pp. 1257–1258.) As discussed, scientists examine specific loci that are highly variable among individuals. A match is declared when DNA sequences in the samples being compared are identical at all loci. Here, prosecution experts found matches between defendant’s DNA and crime scene DNA for each victim at 13 different loci. Defendant does not dispute the accuracy of this part of the analysis.

 “Once a match is found, the next question is the statistical significance of the match.” (*Nelson*, *supra*, 43 Cal.4th at p. 1258.) This number helps the jury evaluate how much weight it should give to evidence of a match. A match would be of little significance if the genetic profile were shared by many others in the population. (*People v. Venegas* (1998) 18 Cal.4th 47, 82 (*Venegas*).) The concept is frequently explained in terms of “how unlikely it is that the crime scene samples came from a third party who had the same DNA pattern as the suspect.” (*People v. Barney* (1992) 8 Cal.App.4th 798, 809 (*Barney*).) In other words, the question is: “Given that the suspect’s known sample has satisfied the ‘match criteria,’ what is the probability that a person chosen at random from the relevant population would likewise have a DNA profile matching that of the evidentiary sample?” (*People v. Soto* (1999) 21 Cal.4th 512, 523 (*Soto*).) The smaller the odds that a match could be found at random in the relevant population, the greater the evidentiary weight of a suspect’s match. (*Venegas*, at p. 82.)

 “Experts use a statistical method called the ‘product rule’ to calculate the rarity of the sample in the relevant population.” (*Nelson*, *supra*, 43 Cal.4th at p. 1259.) We have discussed this calculation in detail previously and need only summarize it here. In short, examiners first determine the frequency of alleles at each locus using population databases, then multiply the frequencies of all loci together, generating a statistic that reflects the probability that an individual will have the complete profile across all loci studied. (*Ibid*.; *Soto*, *supra*, 21 Cal.4th at p. 525.) As in other cases involving a match across many loci, application of the product rule here produced “astronomical odds” (*Nelson*, at p. 1259): one in one quintillion according to the LAPD expert, and one in 6.725 quintillion according to the Cellmark expert. Earth’s total population at the time of trial was around six and a half billion people.

 Under the *Kelly* test, when expert testimony relies on “ ‘a new scientific technique,’ ” the proponent must establish “that the technique is ‘ “sufficiently established to have gained general acceptance in the particular field to which it belongs” ’ (quoting *Frye* [*v. United States* (D.C. Cir. 1923)] 293 F. [1013,] 1014, italics omitted).” (*Venegas*, *supra*, 18 Cal.4th at p. 76; see *Kelly*, *supra*, 17 Cal.3d at p. 30.) Reliability need not be relitigated in every case. “[O]nce a trial court has admitted evidence based upon a new scientific technique, and that decision is affirmed on appeal by a published appellate decision, the precedent so established may control subsequent trials, at least until new evidence is presented reflecting a change in the attitude of the scientific community.” (*Kelly*, at p. 32.)

 We have considered whether evidence calculated by the product rule satisfies *Kelly*’s reliability requirement in several cases. *Venegas* held that a modified version of the product rule known as the interim ceiling principle was “ ‘artificially conservative,’ ” yet it was a generally accepted method for calculating the significance of a DNA match while also compensating for any possible effect caused by population substructuring. (*Venegas*, *supra*, 18 Cal.4th at p. 89; see *Barney*, *supra*, 8 Cal.App.4th at pp. 814–816.)[[6]](#footnote-7) *Soto* determined concerns about population substructuring had been laid to rest by later scientific developments and held that use of the unmodified product rule is generally accepted in the relevant scientific community as a means of expressing the significance of a DNA match. (*Soto*, *supra*, 21 Cal.4th at pp. 515–516.) Most recently, *Nelson* held that the admissibility of evidence based on the product rule in a cold hit case “is a question of relevance, not scientific acceptance,” thus obviating the need for a *Kelly* inquiry. (*Nelson*, *supra*, 43 Cal.4th at p. 1260.) We further held that the product rule provides relevant and admissible evidence in cold hit cases. (*Ibid*.)

####  b. Admissibility of Random Match Statistics

 Defendant was initially identified as a suspect based on cold hits in the state’s database of convicted offenders.[[7]](#footnote-8) Renewing the arguments we rejected in *Nelson*, he claims the random match probability statistic generated by the product rule does not accurately convey the significance of a DNA match derived from searching an offender database. He also disputes the relevance of this statistic in the cold hit context. Because defendant insists *Nelson* was wrongly decided, we discuss that case in some detail.

 Nelson was identified as a suspect when DNA evidence from a 26-year-old murder was uploaded to the state’s offender database. (*Nelson*, *supra*, 43 Cal.4th at pp. 1248–1249.) Further testing confirmed the database match. (*Id*. at p. 1249.) At Nelson’s trial, the prosecution expert testified that the 15-loci match profile would occur at random in only one in 950 sextillion African-Americans, one in 130 septillion Caucasians, or one in 930 sextillion Hispanics. (*Ibid*.)[[8]](#footnote-9) Challenging these statistics, Nelson conceded the product rule is a generally accepted method for calculating the odds of a random match when a suspect’s DNA is compared to crime scene evidence. (See *Soto*, *supra*, 21 Cal.4th at p. 541.) But he argued scientists disagree as to whether the method is an appropriate way to assess the significance of a match when the suspect is not identified at random but is instead found through a database search. (*Nelson*, at pp. 1259–1260.) Defendant makes the same argument here.

 The challenges are premised on the idea that reported statistics should avoid “ ‘ascertainment bias,’ ” which can result when repeated testing of a hypothesis imbues a particular result with more significance than it warrants. (Kaye, *supra*, 87 N.C. L.Rev. at p. 454.) For example, while the odds of winning a lottery are very small, a winner will likely be found if everyone who actually bought a lottery ticket is considered. (See 4 Faigman et al., Modern Scientific Evidence: The Law and Science of Expert Testimony (2019–2020 ed.) § 30:20) “The probability [of winning], while remote, is not impossible, and looking in a pool of people, rather than just picking a person at random, affects the likelihood that you will find what you are looking for.” (*Ibid*.) Ascertainment bias also describes “the bias that exists when one searches for something rare in a set database.” (*U.S. v. Jenkins* (D.C. 2005) 887 A.2d 1013, 1018–1019 (*Jenkins*).)[[9]](#footnote-10) In the DNA context, for example, “if the frequency of a given profile is expected to occur in 1 out of every 100,000 people, the chances of finding a match increase if one searches a database with 50,000 entries versus a database with only 10 entries.” (*Jenkins*, at p. 1018, fn. 8.)

 Four methods have been proposed for expressing the statistical significance of a match following a database search. Only three need be considered here.[[10]](#footnote-11) One method, the random match probability statistic, is calculated by the unmodified *product rule*, which calculates the *rarity* of a match in the population. (*Nelson*, *supra*, 43 Cal.4th at p. 1261; see *Soto*, *supra*, 21 Cal.4th at pp. 515–516.) An alternative proposal begins with the rarity of the profile in the general population, the statistic generated by the product rule, then multiplies that number by the number of profiles in the database searched. (Nat. Research Council, DNA Technology in Forensic Science (1996) pp. 134–135.) The result reflects the probability of finding a match in a particular database and is frequently called the *database match probability*. (See *Nelson*, at p. 1262; *Jenkins*, *supra*, 887 A.2d at p. 1020.) By definition, it will always be a larger number than the rarity statistic alone, and thus more favorable to the defendant. The last approach, often called the Balding-Donnellyor *Bayesian* method, differs from the others in its premise that a database match is *more* significant than a confirmatory match. This model reasons that a database search not only identifies a match but also “simultaneously eliminates other profiles as being the source of the sample,” thus increasing the likelihood the identified person is the actual source. (*Jenkins*, at p. 1020.)[[11]](#footnote-12)

 After reviewing these different approaches, *Nelson* observed that while there was “some disagreement among experts as to which of these methods is the best, i.e., the most probative, way to judge the significance of a cold hit” from a database search, “the question before us is not what technique is ‘best,’ but whether use of the product rule in a cold hit case is permissible.” (*Nelson*, *supra*, 43 Cal.4th at p. 1263.) The product rule had already been approved as a reliable method for calculating the rarity of a DNA profile in the relevant population (see *Soto*, *supra*, 21 Cal.4th at pp. 515–516), and we observed that the rule’s use in a cold hit case did not convert it into a new scientific technique requiring further *Kelly* scrutiny. (*Nelson*, at pp. 1263–1264.) On the contrary, the real questions here concern *relevance*, not the reliability of methodology. (*Id*. at p. 1264.) As the *Jenkins* court explained: “At the heart of this debate is a disagreement over the competing questions to be asked, not the methodologies used to answer those questions. The rarity statistic, the database match probability, and the Bayesian approach each answer unique and potentially relevant questions. More importantly, there is no controversy in the relevant scientific community as to the accuracy of the various formulas. In other words, the math that underlies the calculations is not being questioned. Each approach to expressing significance of a cold hit DNA match accurately answers the question it seeks to address. The rarity statistic accurately expresses how rare a genetic profile is in a given society. Database match probability accurately expresses the probability of obtaining a cold hit from a search of a particular database. Bayesian analysis accurately expresses the probability that the person identified through the cold hit is the actual source of the DNA in light of the fact that a known quantity of potential suspects was eliminated through the database search. These competing schools of thought do not question or challenge the validity of the computations and mathematics relied upon by the others. Instead, the arguments raised by each of the proponents simply state that their formulation is more probative, not more correct. Thus, the debate . . . is one of relevancy, not methodology . . . .” (*Jenkins*, *supra*, 887 A.2d at pp. 1022–1023, fn. omitted, italics added; see *Nelson*, at p. 1264.)

 Relevant evidence is that “having any tendency in reason to prove or disprove any disputed fact.” (Evid. Code, § 210.) Generally, all relevant evidence is *admissible* unless otherwise provided by statute. (Evid. Code, § 351.) If admitted, the trier of fact determines the *weight* it gives to that evidence. Two sources of relevant evidence may potentially conflict or lead to opposite conclusions. Evidence may be relevant but found unpersuasive. A jury hearing competing relevant evidence will ultimately have to determine what weight, if any, to give each. “Relevance” describes whether evidence should be heard because it might reasonably resolve a dispute. “Weight” describes the degree to which the jury finds the evidence probative.

 “Relevancy is a legal issue for courts to answer.” (*Nelson*, *supra*, 43 Cal.4th at p. 1265.) While deference to scientists is appropriate on scientific questions, determining the relevance of evidence “ ‘is a hallmark responsibility of the trial judge and that responsibility is not appropriately delegated to parties outside the court.’ (*Jenkins*, *supra*, 887 A.2d at p. 1025.)” (*Id.* at p. 1265.) *Nelson* concluded the statistical rarity of the DNA profile, calculated by the product rule, is relevant in cold hit cases. (*Id.* at p. 1267.) We see no basis to depart from that conclusion. To be sure, a defendant remains free to present evidence that the product rule statistic should be given less weight because some experts have concerns about its persuasive value due to ascertainment bias. But defendant did not attempt to do so here, nor did he offer evidence of an alternative measure of statistical significance, such as database match probability.[[12]](#footnote-13)

 i. *Applicability of the* Kelly *Test*

 Defendant first asserts that *Nelson* misapplied California law because, contrary to *Venegas* and *Soto*, the court exempted a category of DNA statistics from *Kelly* analysis despite an ongoing scientific controversy. This argument misconstrues both our prior precedents and *Nelson*’s holding. The issue in *Venegas* and *Soto* was whether the product rule was a reliable measure of a DNA profile’s rarity or whether some modification was needed to account for population substructuring and other issues. But, critically, both the unmodified product rule and the modified ceiling approach are statistical formulae designed to answer the same question: How frequently can we expect a specific profile to appear in the relevant population? As discussed, the alternative statistical models proposed for cold hit cases are each answering a *different* question. We adhere to the view that admissibility of the random match statistic in these cases presents an issue of relevance, not scientific reliability.

 Defendant argues *Nelson* misconstrued the scientific debate. He contends the issue is not one of legal relevance but of science, because the various methodologies all seek to answer the question: What is the correct way to statistically account for ascertainment bias? Defendant merely repeats the arguments made in *Nelson*. It is evident that experts disagree about what information would be *most* helpful to the factfinder in evaluating a cold hit DNA match. Frequentists believe juries should be told the probability of finding a match in the offender database because the database trawl makes the match to the defendant less significant. (See Kaye, *supra*, 87 N.C. L.Rev. at p. 460.) Bayesians believe the database match itself “has considerable probative value” and does not reduce the significance of the match to the defendant. (*Id*. at p. 471.) But, as *Nelson* observed, the dispute among these statisticians concerns not which information is correct, but which information is “the best, i.e., the most probative, way to judge the significance of a cold hit.” (*Nelson*, *supra*, 43 Cal.4th at p. 1263.) Relevance, and hence admissibility, is a question for the court. (*Id*. at p. 1265.) Probative value, or weight, is an issue for the jury to decide.

 Defendant’s renewed arguments do not persuade us that a *Kelly* hearing was required. He cites no case agreeing with his position. It appears all published decisions considering the issue have concluded the product rule statistic is admissible in cold hit cases without a *Kelly* hearing or the equivalent. (See *U.S. v. Davis* (D.Md. 2009) 602 F.Supp.2d 658, 676–677; *Commonwealth v. Bizanowicz* (2011) 459 Mass. 400, 407–409 [945 N.E.2d 356, 362–363]; *State v. Bartylla* (Minn. 2008) 755 N.W.2d 8, 20; *Jenkins*, *supra*, 887 A.2d at pp. 1023–1025; see also *Crews v. Johnson* (W.D.Va. 2010) 702 F.Supp.2d 618, 639 [opining that database match probability should also have been admitted, but finding no error in admission of product rule’s rarity statistic because it was “clearly probative of guilt”].) Indeed, the Massachusetts Supreme Judicial Court persuasively observed that excluding evidence of the rarity statistic would eviscerate the purpose for which offender databases have been created. (*Bizanowicz*, at p. 408.) “DNA evidence from convicted offenders whose DNA is stored in a CODIS [(Combined DNA Index System)] database could never be used at trial unless it was obtained without using the CODIS database.” (*Id*. at pp. 408–409.)

 Nor are we persuaded that the denial of a *Kelly* hearing was erroneous because of the trial court’s reasoning. The court found it significant that the database match here was confirmed by later testing, comparing the cold hit to a confidential informant who initiates the investigation of a particular subject. Similar reasoning appeared in *People v. Johnson* (2006) 139 Cal.App.4th 1135, where the Court of Appeal observed that a “database search merely provides law enforcement with an investigative tool, not evidence of guilt.” (*Id*. at p. 1150.) Reasoning that proof of guilt depends upon the confirmatory match between a defendant’s profile and that of the perpetrator, the court concluded a defendant’s initial identification “as a possible suspect based on a database search simply does not matter.” (*Id*. at p. 1151.) The trial court disclaimed reliance on *Johnson*, which was not yet final at the time of its ruling. Nevertheless, defendant argues *Johnson* was wrongly decided and could not properly support denial of a *Kelly* hearing. We need not consider the validity of *Johnson*’s holding. Our task is to review the trial court’s *ruling*, not its reasoning. “ ‘No rule of decision is better or more firmly established by authority, nor one resting upon a sounder basis of reason and propriety, than that a ruling or decision, itself correct in law, will not be disturbed on appeal merely because given for a wrong reason. If right upon any theory of the law applicable to the case, it must be sustained regardless of the considerations which may have moved the trial court to its conclusion.’ ” (*D’Amico v. Board of Medical Examiners* (1974) 11 Cal.3d 1, 19.) The court’s ruling here was sound.

 ii. *Relevance of the Profile’s Rarity*

 Defendant also disagrees with *Nelson*’s holding that the generally accepted product rule statistic is relevant in cold hit cases. Our discussion of this issue relied heavily on *Jenkins*, *supra*, 887 A.2d 1013. First, *Nelson* agreed with *Jenkins* that “in a non-cold-hit case, the number derived from the product rule ‘represents two concepts: (1) the frequency with which a particular DNA profile would be expected to appear in a population of unrelated people, in other words, how rare is this DNA profile (“rarity statistic”), and (2) the probability of finding a match by randomly selecting one profile from a population of unrelated people, the so-called “random match probability.” ’ (*Jenkins*, [] at p. 1018.)” (*Nelson*, *supra*, 43 Cal.4th at p. 1266.) The government in *Jenkins* had conceded that when a match is the result of a database search, the number derived from the product rule is no longer an accurate expression of the probability of finding a matching profile by chance. (*Ibid*.; see *Jenkins*, at p. 1018 & fn. 7.) This is essentially the same argument defendant makes here. Even accepting the government’s concession that random match probability was not an applicable principle in cold hit cases, *Jenkins* explained that the “same product rule number . . . still accurately expresses the rarity of the DNA profile.” (*Jenkins*, at p. 1018, fn. 7.) Although the database search might alter the probability of finding a *match*, it does not change how *rare* a specific profile is among humans. (See *Nelson*, at pp. 1266–1267; *Jenkins*, at pp. 1018–1019.) We held that this expression of rarity is relevant in cold hit cases just as it is when the defendant has been identified by other means. (*Nelson*, at p. 1267.)

 Defendant contends the rarity statistic loses all relevance when there has been a database search. That argument fails. In light of “modern DNA technology and statistical methods,” the rarity of a matching profile is relevant no matter how the suspect was first located. (*Nelson*, *supra*, 43 Cal.4th at p. 1267.) If a profile is extremely rare, as is increasingly likely the more loci are examined, “[i]t is relevant for the jury to know that most persons of at least major portions of the general population could not have left the evidence samples.” (*People v. Wilson* (2006) 38 Cal.4th 1237, 1245.) The rarity of the evidence profile has a tendency to prove that the defendant, who has a matching profile, was the source of the evidence at the crime scene. This test for relevance is met regardless of how the defendant was first identified. The product rule statistic “refer[s] to the *perpetrator’s* profile and [is] therefore . . . unaffected by any particular defendant or suspect.” (*People v. Xiong* (2013) 215 Cal.App.4th 1259, 1274 (*Xiong*).) It informs the jury “how few people are likely to have this profile.” (*Ibid.*) The product rule statistic therefore provides relevant evidence, although its admissibility, as with all relevant evidence, may be subject to an Evidence Code section 352 analysis.

 Defendant contends random match probability is not relevant in cold hit cases because a match resulting from a database search is not “random.” Whereas random match probability is appropriate if only one person is tested, defendant insists the statistic is inapt when a potentially large number of profiles are tested in a database trawl. This argument focuses on the odds of finding a match in a database, relying on the assertion that the more profiles are compared against the evidence sample, the greater the likelihood a match will ultimately be found. The assertion may be accurate, but it does not assist defendant here. If a suspect’s profile is compared to a database of 10, it may be quite unlikely that the suspect’s profile will happen to match one of those 10 profiles. But if the database is expanded to 10,000, the chances of a successful match increase because there are more *opportunities* for a match. That the opportunities for a match increase as the database size grows does not mean the database trawl itself injects error, nor does it cast doubt on the fact that the suspect’s DNA has been found to match crime scene evidence.

 When the random match probability statistic is very small, such as the one in one quintillion figure calculated by the LAPD’s DNA Unit in this case, the probability of finding a match in an offender database will generally not be germane to an issue the jury must decide.[[13]](#footnote-14) In such cases, the relevance of asking how likely it is that someone in the database committed the crime is eclipsed by the issue of how likely it is that someone other than the defendant could have been the source of the evidence samples. This latter question is addressed by a statistic that measures the prevalence of a DNA profile in the entire population of potential suspects. (See *Xiong*, *supra*, 215 Cal.App.4th at pp. 1274–1275.) Thus, the statistic generated by the product rule, which describes the rarity of the DNA profile shared by the perpetrator and the defendant, is relevant even in cold hit cases. (Chin et al., Forensic DNA Evidence: Science and the Law, *supra*, § 5:4.) Of course, defendants remain free to challenge the probative value of this statistic through objections, cross-examination, or the introduction of other evidence, such as database match probability, and trial courts may give clarifying jury instructions when appropriate.

####  c. Sufficiency of Evidence Regarding DNA Profile Rarity

 Building on his previous arguments, defendant claims insufficient evidence supports the verdicts because the jury only heard evidence of random match probability, not rarity. It is true that the prosecution experts typically described statistical significance in terms of “the probability of a random match of unrelated individuals.” But this information *did* convey essential facts about the significance of the matches between defendant’s profile and crime scene DNA. The rarity of a DNA profile and random match probability are two different ways of expressing the meaning of the same statistic calculated using the product rule, and it is ultimately the *statistic* that is relevant. (See *Nelson*, *supra*, 43 Cal.4th at p. 1266.) Defendant incorrectly asserts that *Nelson* disapproved use of random match probability in cold hit cases. *Nelson* recited the *Jenkins* court’s observation that “ ‘the product rule number no longer accurately expresses the random match “probability” ’ ” in cold hit cases. (*Nelson*, at p. 1266, quoting *Jenkins*, *supra*, 887 A.2d at p. 1018, fn. 7.) But the statement simply acknowledged that the defendant in a cold hit case has been identified by a database search and not selected “at random.” Although the concept of “random match probability” is not directly applicable when the defendant has been identified by a database search, and the defendant may point this out at trial, the *statistic* generated by the product rule continues to have relevance in cold hit cases because it expresses rarity. *Nelson* did not suggest otherwise. On the contrary, *Nelson* held, and we reaffirm, that the statistic generated by the product rule provides relevant and admissible evidence in cold hit as well as confirmatory match cases. (*Nelson*, at pp. 1266–1267.)[[14]](#footnote-15)

 Here, one expert told the jury that the probability a random person, unrelated to defendant, would match DNA left at each crime scene was one in one quintillion. Another expert set the probability at one in 6.725 quintillion. Even though phrased in “random match” language, the point of these product-rule-derived statistics was clearly to convey the rarity, if not uniqueness, of the 13-loci profile. The evidence was properly admitted and constitutes substantial evidence in support of the verdicts.

###  2. Excusal of Prospective Jurors for Cause

 Defendant next argues two prospective jurors were improperly dismissed from the venire based on their views about the death penalty. The dismissals were permissible.

 Criminal defendants have a constitutional right to an impartial jury, and “a prospective juror’s personal views concerning the death penalty do not necessarily afford a basis for excusing the juror for bias.” *(**People v. Martinez* (2009) 47 Cal.4th 399, 425 (*Martinez*).) Instead, consistent with the constitutional imperative, prospective jurors may be dismissed for cause only if their views on capital punishment “ ‘would “ ‘prevent or substantially impair’ ” the performance of [their] duties as defined by the court’s instructions and [their] oath.’ (*People v. Cunningham* (2001) 25 Cal.4th 926, 975; see *Wainwright v. Witt* (1985) 469 U.S. 412, 424; *Witherspoon v. Illinois* (1968) 391 U.S. 510, 521–522.)” (*People v. Winbush* (2017) 2 Cal.5th 402, 424 (*Winbush*).) A prospective juror’s bias against the death penalty need not be shown with unmistakable clarity. (*People v. Abilez* (2007) 41 Cal.4th 472, 497.) “Jurors commonly supply conflicting or equivocal responses to questions directed at their potential bias or incapacity to serve.” (*Martinez*, at p. 426.) Indeed, “many prospective jurors ‘simply cannot be asked enough questions to reach the point where their bias has been made “unmistakably clear”; these [prospective jurors] may not know how they will react when faced with imposing the death sentence, or may be unable to articulate, or may wish to hide their true feelings.’ ” (*People v. Beck and Cruz* (2019) 8 Cal.5th 548, 607 (*Beck and Cruz*).) Nevertheless, a dismissal for cause is appropriate if, “after examining the available evidence, . . . the trial court [is] left with a definite impression that the prospective juror is unable or unwilling to faithfully and impartially follow the law.” (*People v. Thompson* (2016) 1 Cal.5th 1043, 1066 (*Thompson*).)

 Our review in this area is necessarily deferential because “the trial court, through its observation of the juror’s demeanor as well as through its evaluation of the juror’s verbal responses, is best suited to reach a conclusion regarding the juror’s actual state of mind.” (*People v. Jones* (2012) 54 Cal.4th 1, 41; see *Uttecht v. Brown* (2007) 551 U.S. 1, 7.) In applying deferential review, “appellate courts recognize that a trial judge who observes and speaks with a prospective juror and hears that person’s responses (noting, among other things, the person’s tone of voice, apparent level of confidence, and demeanor), gleans valuable information that simply does not appear on the record.” (*People v. Stewart* (2004) 33 Cal.4th 425, 451 (*Stewart*).) Accordingly, the trial court’s determination as to the juror’s true state of mind is binding on appeal if supported by substantial evidence. (*Thompson*, *supra*, 1 Cal.5th at p. 1066; *Martinez*, *supra*, 47 Cal.4th at pp. 426–427.)

####  a. Prospective Juror No. 4

 In her jury questionnaire, Prospective Juror No. 4 said she was moderately in favor of the death penalty, and her responses evinced a general willingness to impose death in an appropriate case. When asked to consider this particular case, however, the juror’s confidence faltered. The questionnaire asked whether, depending on the evidence and circumstances presented, jurors could impose the death penalty in a case involving a multiple murder allegation. Instead of circling “yes” or “no,” Prospective Juror No. 4 wrote “possibly.” The court probed this response in voir dire, asking whether the juror could impose the death penalty in a case involving allegations of multiple murder and murder in the course of a rape. She responded, “I’d have to hear everything,” and “I am open.” However, after the court finished its question with the phrase “could you actually vote for death,” Prospective Juror No. 4 said, “I would not vote for death.” The questioning continued:

 “THE COURT: I’m sorry. You would not?

 “PROSPECTIVE JUROR NO. 4: No. I’d have to listen to everything and, you know, get an understanding and the good and the bad and all of that.

 “THE COURT: All right.

 “PROSPECTIVE JUROR NO. 4: And it would be a hard decision to say now.

 “THE COURT: There are some people that believe in the death penalty, support it but cannot participate in the process.

 “PROSPECTIVE JUROR NO. 4: Right.

 “THE COURT: Is that you? You could not vote for death, no matter what the evidence is in the penalty phase?

 “PROSPECTIVE JUROR NO. 4: Possibly, yeah.”

 Later in voir dire, the prosecutor explained that there is no burden of proof at the penalty phase, but jurors must make “a moral decision and . . . a choice.” She then asked Prospective Juror No. 4 about her ability to make such a choice:

 “MS. DO: And so given some of the reluctance that I’m seeing in you, knowing that it’s a choice, do you think that if you have the option of giving a person, a human being[,] life without parole, that you would always choose that?

 “PROSPECTIVE JUROR NO. 4: I have a hard time putting someone to death. Most likely my choice would be the life in prison.

 “MS. DO: Okay.

 “PROSPECTIVE JUROR NO. 4: I would have a hard time with the other.

 “MS. DO: All right. So do you think that you might, if we get to penalty phase, walk in predisposed to life without parole?

 “PROSPECTIVE JUROR NO. 4: Most likely, yes.

 “MS. DO: Okay. And would the prosecution have quite a burden to prove to you that death would be appropriate to overcome that predisposition?

 “PROSPECTIVE JUROR NO. 4: Yeah.”

 In granting the prosecution’s motion to dismiss Prospective Juror No. 4, the court remarked that it had noticed the juror’s “body language as she was answering the questions, and she seemed to be very tightly drawn, is what I would say. That’s a bad description, but not open and free with her feelings about it but somewhat defensive about it.” Although the juror had said on the questionnaire that she could “possibly” impose the death penalty, in oral questioning she made it “awfully clear,” in the court’s opinion, that she would not actually do so. Based on the juror’s demeanor and responses in voir dire, the court concluded “she would not fairly impose the death penalty.”

 Substantial evidence supports this decision. Although the juror may have supported the death penalty in theory, her voir dire responses made it clear she felt great reluctance about actually voting to impose it. We considered a similar record in *People v. Solomon* (2010) 49 Cal.4th 792 (*Solomon*). There, we deferred to the trial court’s finding of substantial impairment regarding a prospective juror who expressed support for the death penalty in her questionnaire but later equivocated about whether she could ultimately vote to sentence someone to death. (*Id*. at pp. 835–836.) Similarly, in *People v. Cunningham*, *supra*, 25 Cal.4th at page 981, we upheld the dismissal of a prospective juror who said “she believed in the death penalty and would like to see it applied more often but was not certain whether personally she could vote for it.”

 Deference to the court’s finding of substantial impairment is particularly appropriate here because the court expressly based its ruling, in part, on the juror’s “tightly drawn” and “defensive” body language. (See *People v. Manibusan* (2013) 58 Cal.4th 40, 73.) This demeanor, combined with the juror’s repeatedly expressed doubts about whether she could impose a death sentence, could support a “definite impression” that the juror would be unwilling or unable “to faithfully and impartially apply the law.” (*Wainwright v. Witt*, *supra*, 469 U.S. at p. 426; see *People v. Nunez and Satele* (2013) 57 Cal.4th 1, 24.)

 *Stewart*, *supra*, 33 Cal.4th 425 does not compel a different result. There, we held it was error to dismiss jurors based solely on brief written comments and a check mark next to a box indicating their views “would *either* ‘prevent *or* make it very difficult’ ” to impose the death penalty. (*Id*. at p. 446.) Here, the court and prosecutor explored Prospective Juror No. 4’s views in greater detail. While it is true that a prospective juror is not disqualified merely because she would find it difficult to impose the death penalty (*id*. at pp. 446–447), Prospective Juror No. 4’s responses to oral questioning indicated not only that she would have difficulty with the decision but also that she would be predisposed to voting for a life sentence, regardless of the evidence presented. Nor is this case like *People v. Pearson* (2012) 53 Cal.4th 306, 332, in which the court improperly dismissed a prospective juror who had no strong views on the death penalty and gave no indication she would be unable to perform her duty as a capital juror. The juror’s responses here indicated she would not be able to impartially apply the law.

####  b. Prospective Alternate Juror No. 1

 Prospective Alternate Juror No. 1’s questionnaire responses consistently expressed personal opposition to capital punishment.[[15]](#footnote-16) He checked a box indicating he was strongly against the death penalty and wrote, “I’m not for death penalty” in response to the question whether he would always vote guilty to reach the penalty phase in a capital case. He wrote that he was “not sure” what purpose the death penalty serves and that he did not feel it should be used. When asked whether he could impose the death penalty in a case involving multiple murder, the juror circled “yes” and wrote, “I will perform my civi[c] duty but I’m not for it.” He reported that his religious organization was “anti death penalty” and, though he felt obligated to accept that view, he could “do what I’m ask[ed] to do” regardless of his views. Finally, he agreed somewhat that people who intentionally kill should never get the death penalty, explaining, “I’m not for the death of anyone.”

 In voir dire, the court asked whether Prospective Alternate Juror No. 1 would always vote against the death penalty, regardless of the evidence. The juror responded, “Not always, but I’d say if it was on a scale, it would be more towards life than death.” When the court asked if he was open to voting for death, the juror said, “If I have to, . . . I will follow the instructions,” but in his “personal view,” he “would lean towards life.” When pressed about whether he could realistically ever see himself voting for death, the juror responded, “Not really,” and “it would be kind of tough for me.” Nevertheless, he stated that he could perform his duty as a juror and could vote for death if the penalty was warranted.

 The prosecutor asked whether, given his religious and moral opposition to the death penalty, Prospective Alternate Juror No. 1 could “make a decision that would end a man’s life.” The juror responded, “I’m not sure if I could do that,” adding that he might not be able to vote for death if the defendant’s family members were present. The prosecutor explained that there might be family members in the audience but asked again whether, regardless of family members, the juror could vote for death.[[16]](#footnote-17) Again, he answered, “I’m not sure.”

 The court granted the prosecutor’s cause challenge. Although the juror said he would “do his duty,” the court found his answers indicated he would not be able to vote for death, “especially if there were any people in the courtroom related to the defendant.” As with Prospective Juror No. 4, this dismissal is supported by substantial evidence. We recently upheld the dismissal of a prospective juror who expressed similar doubts about her ability to impose the death penalty. (*Beck and Cruz*, *supra*, 8 Cal.5th at p. 607.) When a prospective juror repeatedly says he does not know whether he could realistically impose the death penalty, we will not second-guess the trial court’s determination that the juror is substantially impaired. (See *id*. at pp. 607–608; *Solomon*, *supra*, 49 Cal.4th at pp. 835–836.)

## B. *Guilt Phase Issues*

###  1. Third Party Culpability Evidence

 Defendant argues the court infringed his constitutional right to present a defense when it excluded evidence about police efforts in the Washington case to match a partial shoe print with a different suspect. The ruling was an appropriate exercise of discretion.

 Shortly before trial, defense counsel announced he intended to introduce evidence that police had compared a partial footprint found on Regina Washington’s shirt to the shoe of another individual. The court deferred ruling, noting admissibility would depend on the print’s significance in relation to the crime scene. Trial evidence established that a partial shoe print outline had been found on the back shoulder of Washington’s white T-shirt. At an Evidence Code section 402 hearing, a criminalist testified that the shoe print was approximately one square inch and “of a quality that no further comparison could be made.” He had compared the print to a shoe belonging to Ray Anthony Williams and could not eliminate the shoe as the source of the print. Mr. Williams was connected to the case by unspecified hearsay evidence, which was not made part of the record. The prosecution sought to elicit evidence about the size and quality of the print but argued the defense should be precluded from inquiring about the Williams comparison under Evidence Code section 352.[[17]](#footnote-18)

 The court agreed the evidence would be irrelevant and inadmissible. It explained, “[T]he problem is this: By making the comparison, it suggests to the jury that there was a reason for the comparison, which is hearsay, which is not admissible. [¶] So you can’t get the reason for doing the comparison in front of the jury.” The court also denied defendant’s request to ask more generally whether the print had been compared “to anybody else” to eliminate them as a suspect, explaining that the print “doesn’t include or eliminate because it’s not sufficient to do that. And . . . bringing forth the fact of the comparison, it suggests that there is more than the actual evidence in the case, which is the reason for it, which is hearsay.” Defendant now contends he had a constitutional right to present evidence of the Williams comparison because it tended to show a third party committed the Washington murder.

 Like all other evidence, third party culpability evidence may be admitted if it is relevant and its probative value is not substantially outweighed by the risk of undue delay, prejudice, or confusion, or otherwise made inadmissible by the rules of evidence. (Evid. Code, §§ 350, 352; see *People v. Hall* (1986) 41 Cal.3d 826, 834 (*Hall*).) “To be admissible, the third-party evidence need not show ‘substantial proof of a probability’ that the third person committed the act; it need only be capable of raising a reasonable doubt of defendant’s guilt. At the same time, we do not require that any evidence, however remote, must be admitted to show a third party’s possible culpability.” (*Hall*, at p. 833.) For example, “evidence of mere motive or opportunity to commit the crime in another person, without more, will not suffice to raise a reasonable doubt about a defendant’s guilt . . . .” (*Ibid*.) Moreover, admissible evidence of this nature points to the culpability of a *specific* third party, not the possibility that some unidentified third party could have committed the crime. (See *People v. Page* (2008) 44 Cal.4th 1, 39 (*Page*); *People v. Panah* (2005) 35 Cal.4th 395, 481; *People v. Gutierrez* (2002) 28 Cal.4th 1083, 1136.) For the evidence to be relevant and admissible, “there must be *direct or circumstantial evidence linking the third person to the actual perpetration of the crime*.” (*Hall*, at p. 833, italics added.) As with all evidentiary rulings, the exclusion of third party evidence is reviewed for abuse of discretion. (See *People v. Lewis* (2001) 26 Cal.4th 334, 372–373 (*Lewis*); *People v. Kaurish* (1990) 52 Cal.3d 648, 686.)

 The court properly excluded evidence about the shoe print comparison. No direct or circumstantial evidence linked Williams to the Washington murder. Defendant insists the evidence would have shown that “someone else was present at the scene [and] was responsible for the murder.” But the evidence could establish no such thing. The one-inch print was deficient in quality and size to be matched to any particular shoe. This deficiency would have made it impossible to exclude any number of shoes as the source of the mark. The criminalist’s inability to exclude Williams as the source of the print was therefore irrelevant and potentially misleading, to the extent the jury might have speculated the result indicated an affirmative identification. Defendant contends forensic evidence linking a third party to a crime scene is always admissible, but the premise of his argument fails. The shoe print did *not* affirmatively link Williams, defendant, or anyone else to the murder. Nor was it relevant that the police had compared the shoe print to a third party, since the comparison yielded no “direct or circumstantial evidence linking [him] to the actual perpetration of the crime.” (*Hall*, *supra*, 41 Cal.3d at p. 833.) We have repeatedly upheld the exclusion of third party culpability evidence when the third party’s link to a crime is tenuous or speculative. (See, e.g., *Page*, *supra*, 44 Cal.4th at pp. 38–39; *Lewis*, *supra*, 26 Cal.4th at p. 373; *People v. Alcala* (1992) 4 Cal.4th 742, 792–793.) The linkage here is similarly unsupported.

 Furthermore, as the trial court noted, testimony about the comparison would have invited speculation about why Williams was being investigated. Yet no explanation could be provided because the evidence about Williams’s potential as a suspect was inadmissible hearsay. The court reasonably concluded the shoe print evidence would have been irrelevant and potentially confusing without this additional information. Although the court did not expressly invoke Evidence Code section 352 as the basis for its ruling, it clearly had the concerns of that statute in mind when excluding the evidence. Moreover, express reliance on section 352 is not required because we must affirm if the court’s ruling is correct on any ground. (*People v. Geier* (2007) 41 Cal.4th 555, 582.)

 Defendant also claims exclusion of the evidence violated his constitutional rights to due process, compulsory process, and “to present a complete defense.” (*California v. Trombetta* (1984) 467 U.S. 479, 485.) There was no constitutional error. “As a general matter, the ordinary rules of evidence do not impermissibly infringe on the accused’s right to present a defense.” (*Hall*, *supra*, 41 Cal.3d at p. 834; see *United States v. Scheffer* (1998) 523 U.S. 303, 308.) This case is no exception. The court’s reasonable application of the rules of evidence to exclude irrelevant and potentially misleading information did not deprive defendant of his constitutional rights. (See *Lewis*, *supra*, 26 Cal.4th at p. 373–374; *People v. Cudjo* (1993) 6 Cal.4th 585, 611.)

###  2. Issues Regarding Fetal Viability

 Defendant was charged with murdering the fetus carried by Regina Washington. In 1989, when this crime was committed, the murder statute had consistently been interpreted to require a finding of fetal viability. (See *People v. Davis* (1994) 7 Cal.4th 797, 804–805, 812 (*Davis*).)

 Dr. Lisa Scheinin, a deputy medical examiner with the Los Angeles County Coroner’s Office, testified on that topic. Although she had not autopsied the fetus herself, Dr. Scheinin related findings from an autopsy report that the fetus was female, weighed 825 grams, and had a gestational age of 27 to 28 weeks, or approximately six and a half months. She explained that World Health Organization guidelines consider a fetus viable after it has reached the 22nd week or a weight of 500 grams. Although the autopsy report said nothing specific about whether the fetus could have survived outside the womb, Dr. Scheinin concluded from the numbers in the report that it was “clearly well into the range that’s defined as viable.” The fetus had no congenital abnormalities, and there was nothing to suggest Washington’s cocaine use had negatively affected its health or development. Based on the autopsy report’s findings, the fetus appeared to be a “normally developing healthy baby.”

####  a. Fetal Viability Instruction

 Defendant first contends the jury instruction defining viability was erroneous and violated his rights to due process, a fair trial, and a fair and reliable penalty determination. The claim fails because the instruction accurately conveyed the legal definition of viability.

 The jury was instructed with a modified version of CALJIC No. 8.10: “In the crime of murder, a human fetus is defined as a viable unborn child. Viability is defined as the capability of the fetus to maintain independent existence outside of the womb even if this existence required artificial medical aid.”[[18]](#footnote-19) Defendant did not object or propose an alternative instruction.

 In 1970, the Legislature amended section 187, subdivision (a), to include the killing of a fetus within the definition of murder. (Stats. 1970, ch. 1311, § 1, p. 2440; *Davis*, *supra*, 7 Cal.4th at p. 803.) Thereafter, the United States Supreme Court decided in the abortion context that states have no legitimate interest in protecting a fetus before it reaches viability, which the court defined as the “capability of meaningful life outside the mother’s womb.” (*Roe v. Wade* (1973) 410 U.S. 113, 163; see *Davis*, at p. 803.) A series of Court of Appeal decisions relying on *Roe* held that only the killing of a viable fetus could constitute murder. (See *People v. Smith* (1976) 59 Cal.App.3d 751, 757 (*K.A. Smith*); *People v. Apodaca* (1978) 76 Cal.App.3d 479, 487, 489 (*Apodaca*); *People v. Smith* (1987) 188 Cal.App.3d 1495, 1514 (*R.P. Smith*); see also *Davis*, at pp. 804–805.) We disapproved this line of cases in 1994 when we held that viability is not required for the crime of murdering a fetus. (*Davis*, at p. 810.) However, our decision was prospective only. (*Id*. at p. 812.) Accordingly, when defendant was tried, a conviction for murdering the Washington fetus required a finding that the fetus was viable.

 Courts first defined viability for this purpose as “ ‘having attained such form and development of organs as to be normally capable of living outside the uterus.’ ” (*K.A. Smith*, *supra*, 59 Cal.App.3d at p. 758.) The definition was later expanded to address the availability of medical assistance. *Apodaca*, *supra*, 76 Cal.App.3d at page 489 stated that “a fetus is deemed viable when it is possible for it to survive the trauma of birth, although with artificial medical aid.” Similarly, *R.P. Smith*, *supra*, 188 Cal.App.3d at page 1514 summarized case law as holding that “viability means being capable of surviving the trauma of birth with the aid of normal medical science.” The instruction here was fully consistent with the controlling law. It defined viability as the fetus’s capability to live outside the womb, even if doing so required medical assistance.

 Nevertheless, defendant complains the instruction was comparable to one we found lacking in *Davis*. The comparison does not withstand scrutiny. The instruction at issue in *Davis* stated that “ ‘a fetus is viable when it has achieved the capability for independent existence; that is, when it is possible for it to survive the trauma of birth, although with artificial medical aid.’ (Italics added.)” (*Davis*, *supra*, 7 Cal.4th at p. 813.) We found the term “possible” to be problematic because it could permit a finding of viability for a fetus that was “incapable of survival outside the womb for any discernible time.” (*Id*. at p. 814.) Because the term significantly lowered the viability threshold as it was commonly accepted at the time, we concluded this modification of CALJIC No. 8.10 was error. (*Davis*, at p. 814.) By contrast, the instruction in defendant’s trial used no variant of the word “possible,” nor did it include any similar language that could have lowered the threshold for when a fetus becomes viable. The instruction required that a viable fetus have the “capability . . . to *maintain* independent existence outside of the womb even if this existence required artificial medical aid.” (Italics added.) The word “maintain” excludes a case in which the fetus might only survive momentarily. Even assuming defendant did not forfeit his claim by failing to object, the instruction given here accurately defined viability and did not violate defendant’s constitutional rights.

###  b. Hearsay Evidence of Viability

 After we notified the parties of our intention to set the case for oral argument, defendant filed a supplemental brief contending Dr. Scheinin violated state law by relating case-specific hearsay from the fetus’s autopsy report to support her viability opinion.[[19]](#footnote-20) (See *People v. Sanchez* (2016) 63 Cal.4th 665 (*Sanchez*).) He also argued the report’s statements were testimonial and admitted in violation of his Sixth Amendment right to confront his accusers. (See *Crawford v. Washington* (2004) 541 U.S. 36.) Because we conclude the state law error was prejudicial and requires reversal of the fetal murder conviction, we need not address these constitutional arguments.[[20]](#footnote-21) It is not reasonably possible the error affected the jury’s penalty decision, however, and defendant’s death sentence remains undisturbed. (See *People v. Gonzalez* (2006) 38 Cal.4th 932, 960‑961 (*Gonzalez*); see also *Chapman v. California* (1967) 386 U.S. 18, 24 (*Chapman*).)

###  i. Hearsay

 Hearsay is “evidence of a statement that was made other than by a witness while testifying at the hearing and that is offered to prove the truth of the matter stated.” (Evid Code, § 1200, subd. (a).) “Documents like letters, reports, and memoranda are often hearsay because they are prepared by a person outside the courtroom and are usually offered to prove the truth of the information they contain.” (*Sanchez*, *supra*, 63 Cal.4th at p. 674.) Hearsay evidence is generally inadmissible unless it satisfies a statutory exception. (Evid. Code, § 1200, subd. (b).)

 As noted, Dr. Scheinin did not perform the autopsy on Regina Washington’s fetus. She did, however, relate to the jury observations recorded by the non-testifying medical examiner, including the weight and gestational age of the fetus. These facts were hearsay if offered to prove their truth. (See *Sanchez*, *supra*, 63 Cal.4th at p. 674.) Experts enjoy wide latitude in the sources they may draw upon, and they are permitted to rely on hearsay in reaching their conclusions. (*Id*. at pp. 685–686; *People v. Leon* (2015) 61 Cal.4th 569, 603; see Evid. Code, § 802.) That is to say, experts can take hearsay into account when forming their own opinions.[[21]](#footnote-22) “What an expert *cannot* do,” however, “is relate as true case-specific facts asserted in hearsay statements, unless they are independently proven by competent evidence or are covered by a hearsay exception.” (*Sanchez*, at p. 686.) Some prior cases had allowed experts to relate case-specific facts on the theory that the material was not offered for its truth, but merely to show the basis of the expert’s opinion. *Sanchez* pointed out the flaw in this logic: “When an expert relies on hearsay to provide case-specific facts, considers the statements as true, and relates them to the jury as a reliable basis for the expert’s opinion, it cannot logically be asserted that the hearsay content is not offered for its truth. In such a case, ‘the validity of [the expert’s] opinion ultimately turn[s] on the truth’ (*Williams*[ *v. Illinois* (2012)] 567 U.S. [50,] 108 . . . (conc. opn. of Thomas, J.)) of the hearsay statement. If the hearsay that the expert relies on and treats as true is not true, an important basis for the opinion is lacking.” (*Sanchez*, at pp. 682–683.)[[22]](#footnote-23) When Dr. Scheinin gave facts about gestational age and weight obtained only from the autopsy report, presented them to the jury as true, and represented that those facts bolstered her opinion, she related case-specific hearsay. (See *Sanchez*, at p. 685.)

 The Attorney General concedes the testimony was hearsay but argues the report could have been admitted under an exception to the hearsay rule. For example, when an appropriate foundation has been laid, autopsy reports have sometimes been admitted as business records (Evid. Code, § 1271; see *People v. Beeler* (1995) 9 Cal.4th 953, 979 (*Beeler*)) or official records (Evid. Code, § 1280; see *People v. Clark* (1992) 3 Cal.4th 41, 158–159). However, it is significant that the prosecution did not offer the report itself into evidence, and the trial court did not rule on whether it was admissible under either exception. “The proponent of hearsay has to alert the court to the exception relied upon and has the burden of laying the proper foundation.” (*People v. Livaditis* (1992) 2 Cal.4th 759, 778.) A trial court’s decision to admit evidence under a hearsay exception is entitled to great deference on appeal, but here foundational testimony was neither elicited by the prosecution nor ruled upon by the court.

 Both the business record and official record exceptions require a showing that the writing “was made at or near the time of the act, condition, or event” (Evid. Code, §§ 1271, subd. (b), 1280, subd. (b)); either “in the regular course of a business” (*id*., § 1271, subd. (a)) or “by and within the scope of duty of a public employee” (*id*., § 1280, subd. (a)); and that “sources of information and method and time of preparation were such as to indicate [the writing’s] trustworthiness” (*id*., §§ 1271, subd. (d), 1280, subd. (c)). Dr. Scheinin described how autopsy reports are customarily prepared and maintained in the Los Angeles County Coroner’s Office, but she did not begin working there until two years *after* the autopsy in question. She did not testify that the same procedures were followed before her arrival, nor did she link her description of the office’s procedures to the preparation of this particular autopsy report. The foundational showing here is notably thinner than we have encountered in upholding rulings to admit other autopsy reports. For example, in *Beeler*, *supra*, 9 Cal.4th at page 979, the testifying pathologist both explained the office’s autopsy procedures and attested that these standard procedures were followed in the autopsy’s performance and documentation. That testimony was sufficient to support the court’s admission of the report as a business record. (*Ibid*.) In contrast, given the record here, we cannot say with confidence that the fetal autopsy report would have been admissible as either a business record or a public record, and the issue was not explored at trial.

 We recognize that the prosecution might reasonably have perceived no need to offer the autopsy report under a hearsay exception. When defendant’s case was tried in 2007, courts frequently allowed experts to relate case-specific hearsay under the rationale that such evidence merely explained the basis of the expert’s opinion and was not offered for its truth. (See, e.g., *Montiel*, *supra*, 5 Cal.4th at p. 919, overruled in *S**anchez*, *supra*, 63 Cal.4th at p. 686, fn. 13.) *Sanchez* changed this aspect of the law. (See *Sanchez*, at p. 686.) But, while our treatment of hearsay has changed in light of evolving Supreme Court jurisprudence (see *id*. at p. 682), this change does not make it appropriate in this case to uphold the admission of hearsay against a criminal defendant based on an exception that was never presented to the trial court, for which no effort was made to lay the necessary foundation, and on which the court never ruled.

 Had the report been offered and admitted under an exception, the words of the document itself would have constituted admissible hearsay. Dr. Scheinin’s recitation of the content of an *unadmitted* document remains hearsay for which no exception was established. She was allowed to present inadmissible hearsay as true and supportive of her opinion. This was error under California’s hearsay statutes. (See *Sanchez*, *supra*, 63 Cal.4th at p. 686).

###  ii. Prejudice

 State law error in the admission of hearsay requires reversal of the judgment if “ ‘it is reasonably probable that a result more favorable to the [defendant] would have been reached in the absence of the error.’ ” (*People v. Watson* (1956) 46 Cal.2d 818, 837 (*Watson*); see *People v. Duarte* (2000) 24 Cal.4th 603, 618–619.) Given the significance of the hearsay evidence to the fetal murder charge, and the dearth of other evidence on the issue, we cannot conclude the error was harmless. Defendant’s conviction for the fetal murder count must be reversed.

 The prosecution had to prove the fetus was viable at the time of death. Dr. Scheinin testified that viability is largely a function of weight and gestational age. At both the time of trial and in 1989 when Regina Washington was murdered, scientists generally considered a fetus viable after it had reached a gestational age of 22 weeks or a weight of 500 grams. To illustrate her testimony, Dr. Scheinin displayed a chart showing the week-by-week development of an embryo into a fetus. She drew the jury’s attention to a dividing line on this chart labeled “stage of viability.” She explained, “Anything to the left of this line is considered a pre-viable fetus and anything to the right of it is considered viable,” noting the dividing line of weight and age. Having previously quoted from the autopsy report that the Washington fetus weighed 825 grams and had reached a gestational age of 27 to 28 weeks, Dr. Scheinin then pointed to the place on the chart indicated by these statistics. She observed that, “*according to the medical examiner who did the autopsy*, . . . the baby is in this ballpark here, and about in this ballpark here by weight, so it’s clearly well into the range that’s defined as viable.” (Italics added.) Finally, she quoted the report’s statement that the fetus had “no congenital abnormalities” and concluded “nothing in the report” suggested the fetus was anything other than healthy. All of Dr. Scheinin’s statements about the fetus’s ability to survive outside the womb were expressly tied to the autopsy report, the contents of which she presented to the jury. This case-specific information was neither stipulated nor independently proven.

 Dr. Scheinin’s testimony was essential in proving viability. The only other evidence bearing on the subject was testimony from Washington’s daughter, 11 years old at the time of the crime, who recalled that her mother was visibly pregnant and the family believed the gender was female. This evidence was insufficient to prove viability beyond a reasonable doubt. Although the Attorney General is correct that no contrary evidence was presented, it was the *prosecution*’*s* burden to prove every element of the charge. (See *Estelle v. McGuire* (1991) 502 U.S. 62, 69; see also *Melendez-Diaz v. Massachusetts* (2009) 557 U.S. 305, 324 [“the Confrontation Clause imposes a burden on the prosecution to present its witnesses, not on the defendant to bring those adverse witnesses into court”].)

 The Attorney General argues the error was harmless because, apart from the hearsay, Dr. Scheinin gave her own opinion about fetal viability. He reasons that even if she had been precluded from reciting the report’s facts about fetal weight and gestational age, she still would have been able to testify to her opinion on the ultimate question. It is true that an “expert may still *rely* on hearsay in forming an opinion, and may tell the jury *in general terms* that he did so.” (*Sanchez*, *supra*, 63 Cal.4th at p. 685.) Dr. Scheinin thus *could* have told the jury that she read the autopsy report and relied on it in forming her opinion. But that is not what happened here. Instead, she repeatedly recounted case-specific facts from the report and invited the jury to compare that hearsay to the medically accepted guidelines for determining viability.

 Once the improperly admitted hearsay testimony is excluded (see *People v. Doolin* (2009) 45 Cal.4th 390, 448), all that remains of Dr. Scheinin’s viability testimony is a bare conclusion that “just looking at the numbers, the age of the baby would indicate that it was a viable fetus, meaning it has a chance for life by itself.” The persuasive force of this conclusion would have been considerably diminished without testimony about the case-specific facts on which it was based. An expert’s opinion is only as strong as its factual basis. “The jury is not required to accept an expert’s opinion. The final resolution of the facts at issue resides with the jury alone. The jury may conclude a fact necessary to support the opinion has not been adequately proven, even though there may be some evidence in the record tending to establish it. If an essential fact is not found proven, the jury may reject the opinion as lacking foundation.” (*Sanchez*, *supra*, 63 Cal.4th at p. 675.) A conclusory opinion, with no articulated factual foundation, would have been substantially less compelling than the testimony Dr. Scheinin actually gave. She repeatedly stated the fetus’s specific weight and gestational age and showed on a demonstrative exhibit how these attributes placed it “well into” the medically established viability range.

 The case-specific hearsay erroneously admitted here served two interrelated purposes. First, it provided nearly all the direct evidence pointing to fetal viability. Second, it provided the entire factual basis for the expert’s opinion on that question. The hearsay evidence was relevant to an especially important issue. On this record, it is reasonably probable the jury would have reached a different verdict on the fetal murder count absent the admission of hearsay evidence. (See *Watson*, *supra*, 46 Cal.2d at p. 837.)

 We do not agree with defendant, however, that this error undermines the penalty judgment. Defendant was a convicted serial killer who preyed on vulnerable women for over a decade. A jury convicted him of strangling his victims and abandoning their corpses in degrading conditions. Apart from the fetal death, the jury found that defendant murdered 10 women. The jury heard evidence about these murders and defendant’s sexual assault of Maria M. In the penalty phase, it heard aggravating evidence about yet another murder and sexual assault. Although defendant suggests the jury may have considered the fetus’s murder especially aggravating, that argument is speculative at best. Moreover, despite the error, the jury was still entitled to give aggravating weight to the fact that defendant murdered a visibly pregnant woman. (See *Brown v. Sanders* (2006) 546 U.S. 212, 220.) The prosecutor’s closing argument only mentioned this death in a single sentence. Nor was there any victim impact evidence concerning the fetus. In view of the substantial aggravating facts of both the charged and uncharged crimes, it is not reasonably possible the jury would have reached a different penalty verdict absent the error. (See *People v. Johnson* (2019) 8 Cal.5th 475, 518.) Likewise, any federal constitutional error in admitting the evidence was harmless beyond a reasonable doubt as to penalty. (*Chapman*, *supra*, 386 U.S. at p. 24; see *Gonzalez*, *supra*, 38 Cal.4th at pp. 960‑961.)

## C. *Penalty Phase Issues*

###  1. Criminal Threat Evidence

 Defendant contends insufficient evidence was admitted to establish that he made a criminal threat against Deputy Uyetatsu. Assuming this claim was not forfeited, any error was harmless.

 To establish a criminal threat, the prosecution must prove: (1) the defendant willfully threatened death or great bodily injury to another person; (2) the threat was made with the specific intent that it be taken as a threat, regardless of the defendant’s intent to carry it out; (3) the threat was “on its face and under the circumstances in which it [was] made, . . . so unequivocal, unconditional, immediate, and specific as to convey to the person threatened, a gravity of purpose and an immediate prospect of execution”; (4) the threat caused the person threatened “to be in sustained fear for his or her own safety or for his or her immediate family’s safety”; and (5) this fear was reasonable under the circumstances. (§ 422, subd. (a); see *People v. Toledo* (2001) 26 Cal.4th 221, 227–228.) Defendant challenges the evidentiary support for three elements. First, defendant argues the evidence does not show he specifically intended to threaten Deputy Uyetatsu. Although he told another inmate he planned to kill the deputy if he was convicted of the pending charges, he did not instruct the inmate to report the threat to her, nor was there evidence to suggest he thought such a report was likely. Second, defendant asserts the threat was not sufficiently unconditional and immediate because he made it while in a locked cell, and he would have even less ability to carry it out if he were convicted of the capital charges. Finally, he argues there was no evidence the threat caused Deputy Uyetatsu to be in a state of sustained fear. When asked how she felt upon learning of the threat, Uyetatsu said only that she thought defendant had the ability to carry it out and would do so if given the opportunity. She did not say she was afraid, nor did she testify that she wanted to be moved to a different unit.

 First, the claim is not cognizable on appeal because defendant did not object or move to strike the evidence he now challenges. (See *People v. Livingston* (2012) 53 Cal.4th 1145, 1175; *People v. Hamilton* (2009) 45 Cal.4th 863, 934.) Defendant couches his argument as a challenge to the sufficiency of evidence, noting such claims are generally permitted on appeal without the need for an objection. (See *People v. McCullough* (2013) 56 Cal.4th 589, 596.) However, it is significant that “here the evidence was admitted at the penalty phase of a capital trial as aggravating evidence, not to support a conviction for that crime.” (*Livingston*, at p. 1175.) “Even if defendant need do nothing at trial to preserve an appellate claim that evidence supporting his *conviction* is legally insufficient, a different rule is appropriate for evidence presented at the penalty phase of a capital trial. There the ultimate issue is the appropriate punishment for the capital crime, and evidence on that issue may *include* one or more other discrete criminal incidents. (§ 190.3, factors (b), (c).) If the accused thinks evidence on any such discrete crime is too insubstantial for jury consideration, he should be obliged in general terms to object, or to move to exclude or strike the evidence, on that ground.” (*Montiel*, *supra*, 5 Cal.4th at p. 928, fn. 23.)

 Even assuming admission of the threat evidence was error, there is no reasonable possibility it affected the penalty verdict. (See *People v. Collins* (2010) 49 Cal.4th 175, 220.) The threat was only one of five violent crimes admitted under section 190.3, factor (b) and had arguably less impact. The jury heard evidence in the penalty phase that defendant had murdered Elandra Bunn, sexually assaulted Carla W., and forcibly resisted arrest. It was also directed to consider guilt phase evidence about his attack on Maria M. The threat was certainly less impactful than defendant’s capital crimes. Defendant was a proven serial killer who brutally raped and murdered nearly a dozen known victims, preying on vulnerable women from his own neighborhood. As the court stated in denying defendant’s automatic motion for modification of the verdict, “defendant methodically located unescorted and vulnerable women, overwhelmed each of them in isolation, and strangled each to death for his own sexual pleasure.” The aggravating facts here were overwhelming, and any error relating to the threat evidence was clearly harmless.

###  2. Constitutionality of Death Penalty Law

 Defendant raises a number of challenges to the constitutionality of California’s death penalty statute and instructions. He acknowledges that we have previously rejected all of these arguments. We decline to reconsider our precedents as follows:

 Section 190.2 adequately narrows the class of offenders eligible for the death penalty. (*People v. Reed* (2018) 4 Cal.5th 989, 1018; *Winbush*, *supra*, 2 Cal.5th at p. 488.) Section 190.3, factor (a), allowing aggravation based on the circumstances of the crime, does not permit arbitrary and capricious sentencing. (*People v. Capers* (2019) 7 Cal.5th 989, 1013 (*Capers*); *Thompson*, *supra*, 1 Cal.5th at p. 1129.) “Choice of penalty is a normative decision,” not a factual one. (*Beck and Cruz*, *supra*, 8 Cal.5th at p. 670.) Accordingly, the death penalty scheme does not violate the federal Constitution for failing to require:

* written findings (*People v. Rhoades* (2019) 8 Cal.5th 393, 455 (*Rhoades*); *Winbush*, at p. 490);
* unanimous findings as to proof of each aggravating factor or unadjudicated crime (*Capers*, at p. 1013);
* findings that aggravating factors (other than section 190.3, factors (b) and (c)) were proven beyond a reasonable doubt;
* or specific, articulated findings that aggravating factors outweigh those in mitigation, or that death is the appropriate penalty (*People v. Krebs* (2019) 8 Cal.5th 265, 350 (*Krebs*); *People v. Rangel* (2016) 62 Cal.4th 1192, 1235).

These conclusions are not altered by *Apprendi v. New Jersey* (2000) 530 U.S. 466, *Ring v. Arizona* (2002) 536 U.S. 584, or *Hurst v. Florida* (2016) 577 U.S. 92. (*Capers*, at pp. 1013–1014; *People v. Henriquez* (2017) 4 Cal.5th 1, 45.) Because sentencing is “an inherently moral and normative function, and not a factual one amenable to burden of proof calculations” (*Winbush*, at p. 489), the prosecution has no obligation to bear a burden of proof or persuasion (*Capers*, at pp. 1014–1015). Nor does the federal Constitution require an instruction that life is the presumptive penalty. (*Capers,* at p. 1016; *Beck and Cruz*, at p. 670.)

 CALJIC No. 8.88 is not impermissibly vague or otherwise defective for failing to require a finding that death is the “appropriate” penalty (*People v. Leon* (2020) 8 Cal.5th 831, 853; see *Beck and Cruz*, *supra*, 8 Cal.5th at p. 671) or failing to require a life sentence if the jury finds that mitigating factors outweigh aggravating ones (*Capers*, *supra*, 7 Cal.5th at p. 1016; *People v. Johnson* (2018) 6 Cal.5th 541, 594 (*Johnson*)). The phrase “so substantial” in this instruction is not overbroad or unconstitutionally vague. (*Beck and Cruz*, at p. 671; *People v. Ghobrial* (2018) 5 Cal.5th 250, 292.) Nor is the jury’s consideration of mitigating factors impermissibly constrained by CALJIC No. 8.85’s use of the words “extreme” and “substantial” to describe mitigating circumstances. (*Beck and Cruz*, at p. 671; *People v. Rices* (2017) 4 Cal.5th 49, 94.) The court is not constitutionally obligated to delete inapplicable sentencing factors, identify which factors are aggravating or mitigating, or instruct that certain factors are relevant only for mitigation purposes. (*Krebs*, *supra*, 8 Cal.5th at p. 351; *Rhoades*, *supra*, 8 Cal.5th at p. 455; *Winbush*, *supra*, 2 Cal.5th at p. 490.)

 Intercase proportionality review is not constitutionally required. (*Rhoades*, *supra*, 8 Cal.5th at pp. 455–456; *Johnson*, *supra*, 6 Cal.5th at p. 594.) Nor does the death penalty law violate equal protection by providing different procedures to capital and noncapital defendants. (*Rhoades*, at p. 456; *Capers*, *supra*, 7 Cal.5th at p. 1017.) We continue to hold that California’s capital sentencing scheme does not violate international norms or evolving standards of decency in violation of the Eighth and Fourteenth Amendments. (*Beck and Cruz*, *supra*, 8 Cal.5th at p. 671; *Krebs*, *supra*, 8 Cal.5th at p. 351; *Capers*, at p. 1017.)

## D. *Cumulative Error*

 Finally, defendant argues errors in his trial were cumulatively prejudicial. We conclude to the contrary. (See *People v. Penunuri* (2018) 5 Cal.5th 126, 172.) Hearsay was improperly admitted on the question of fetal viability. That murder conviction is reversed. We also assumed a penalty phase error involving evidence that defendant threatened Deputy Uyetatsu. In light of the totality of evidence at both phases of trial, reversal of neither the guilt nor penalty judgments is required for the reasons discussed above.

# III. DISPOSITION

 The second degree fetal murder conviction is reversed. In all other respects, the judgment is affirmed.

 **CORRIGAN, J.**

**We Concur:**

**CANTIL-SAKAUYE, C. J.**

**LIU, J.**

**CUÉLLAR, J.**

**KRUGER, J.**

**GROBAN, J.**

**GILBERT, J.****\***

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\*         Presiding Justice of the Court of Appeal, Second Appellate District, Division Six, assigned by the Chief Justice pursuant to article VI, section 6 of the California Constitution.

*See next page for addresses and telephone numbers for counsel who argued in Supreme Court.*

**Name of Opinion**  People v. Turner

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**Unpublished Opinion**

**Original Appeal** XXX

**Original Proceeding**

**Review Granted**

**Rehearing Granted**

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**Opinion No.** S154459

**Date Filed:** November 30, 2020

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**Court:** Superior

**County:** Los Angeles

**Judge:**  William R. Pounders

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1. \*  Presiding Justice of the Court of Appeal, Second Appellate District, Division Six, assigned by the Chief Justice pursuant to article VI, section 6 of the California Constitution. [↑](#footnote-ref-2)
2. All statutory references are to the Penal Code unless otherwise stated. Defendant was convicted of second degree murder for the fetus, but all other murders were in the first degree. The jury also found true special circumstance allegations of multiple murder and, as to one of the victims, murder in the course of a rape. (§ 190.2, subd. (a)(3), (17).) [↑](#footnote-ref-3)
3. These details as to fetal age and condition were taken from an autopsy report and conveyed by a pathologist who did not perform the procedure. We discuss their erroneous admission *post*, at pages 38 to 46. [↑](#footnote-ref-4)
4. The profile used in this analysis was obtained from a blood sample defendant submitted after his rape conviction. (See § 1202.1, subd. (a).) [↑](#footnote-ref-5)
5. A “cold hit case,” sometimes called a “trawl case,” colloquially refers to a case in which “the DNA match itself made the defendant a suspect, and the match was discovered only by searching through a database of previously obtained DNA samples.” (Donnelly & Friedman, *DNA Database Searches and the Legal Consumption of Scientific Evidence* (1999) 97 Mich. L.Rev. 931, 932.) Cold hit cases may be contrasted with traditional “confirmation cases,” in which other types of evidence pointed to the defendant as a suspect and warranted testing his DNA against crime scene samples. (*I**bid*.; see Kaye, *Rounding Up the Usual Suspects: A Legal and Logical Analysis of DNA Trawling Cases* (2009) 87 N.C. L.Rev. 425, 428 (Kaye).) [↑](#footnote-ref-6)
6. In the early days of forensic DNA analysis, population geneticists were concerned that nonrandom mating within subgroups would undermine the product rule’s assumption that alleles at different loci were statistically independent. (See *Barney*, *supra*, 8 Cal.App.4th at p. 815.) [↑](#footnote-ref-7)
7. No information about the database search was presented at trial. In an early court appearance, the prosecutor explained how defendant was identified. When DNA samples preserved from various unsolved cases were uploaded to the state’s offender database, defendant’s profile was found to match crime scene evidence in the Beasley and Vance cases. After learning of the matches, investigators identified approximately 25 unsolved murder cases with preserved biological evidence that appeared to be sexually motivated killings of women in the geographic region where defendant “either lived, worked[,] or was known to associate.” DNA evidence from these cases was then uploaded to the database, and eight more matches were made to defendant’s profile. The Attorney General argues this is not a pure cold hit case because the second database search was conducted after other evidence pointed to defendant as a suspect. Even so, we address defendant’s arguments because it is clear the initial identification was based exclusively on a database match. [↑](#footnote-ref-8)
8. The LAPD DNA Unit did not report random match probabilities broken down by racial population subgroups. Defendant does not argue this omission was error, nor does he contend the distinction alters *Nelson*’s force as precedent here. [↑](#footnote-ref-9)
9. While the *Jenkins* opinion is not binding precedent, we find its analysis persuasive and its explanations of these complex concepts helpful. [↑](#footnote-ref-10)
10. One proposal is not a statistical calculation but a different approach to testing. The first National Research Council report on forensic DNA analysis suggested ascertainment bias could be avoided by using one set of loci to identify a suspect in a database and then examining a different set of loci to confirm the match. (Nat. Research Council, DNA Technology in Forensic Science (1992) p. 124.) Because this approach would use fewer loci than actually matched in determining significance, product rule calculations would result in shorter, perhaps “unnecessarily conservative,” odds. (*Nelson*, *supra*, 43 Cal.4th at p. 1261.) Defendant does not challenge *Nelson*’s observation that this approach “ ‘is no longer accepted or followed by the relevant scientific community.’ ” (*Id*. at p. 1262, quoting *Jenkins*, *supra*, 887 A.2d at p. 1022, fn. 17.) [↑](#footnote-ref-11)
11. Professor Kaye illustrates this reasoning by contrasting a database trawl with a hypothetical drug company that conducts 20 clinical trials and achieves success in only one, but then reports that one success “as if there had been no search.” (Kaye*,* *supra*, 87 N.C. L.Rev. at p. 469.) In the drug trial context, “the omitted information contradicts the company’s claim of therapeutic effectiveness. In contrast, if all the other clinical trials were *consistent* with the company’s claim, the failure to mention them would not prejudice the case for approving the drug. The trawl case is similar to a series of successful clinical trials . . . . The additional evidence — that everyone else in the database is excluded — is consistent with the claim of defendant’s guilt. The lack of other hits in the database trawl therefore has an effect opposite to that of the lack of other significant differences in the clinical trials. It supplies compatible rather than contradictory data.” (*Ibid*., italics added.) According to this reasoning, ascertainment bias is not a problem that needs correction in database search cases. (*Id*. at pp. 469–472.) [↑](#footnote-ref-12)
12. *Nelson* left open the possibility that database match probability might also be admissible in an appropriate case. (*Nelson*, *supra*, 43 Cal.4th at p. 1267, fn. 3.) Defendants may indeed seek to introduce such evidence, particularly in cases where the database searched was especially large. As with the other measures of statistical significance, the trial court may, of course, consider an Evidence Code section 352 objection that the relevance of the database match probability statistic is outweighed by a substantial possibility of juror confusion or undue consumption of time. [↑](#footnote-ref-13)
13. We reaffirm, however, that trial courts have discretion to permit evidence of database match probability in an appropriate case. Database match probability is relevant in some circumstances. For example, a profile’s random match probability may be relatively high if a degraded crime scene sample provides only a few loci for testing. In such a case, there is a significant chance that a “match” based on those few loci could be found in a large database by coincidence, even though the individual had nothing to do with the crime. (Chin et al., Forensic DNA Evidence: Science and the Law (The Rutter Group 2019) § 5:4.) Database match probability is a way of conveying this concept. [↑](#footnote-ref-14)
14. Trial courts and parties have tools available to address any possible confusion arising from the use of “random match” terminology in cold hit cases. If there is a risk jurors might mistakenly think the defendant was identified at random, rather than from a database search, the concept can be clarified through cross-examination, additional evidence, and/or jury instructions. Defendant did not object on this ground below, nor did he seek to present evidence about the database searches by which he was located. [↑](#footnote-ref-15)
15. Because an alternate juror was selected at random and seated early in the trial, it does not appear that any error in this excusal would have been harmless. (See *People v. Bryant, Smith and Wheeler* (2014) 60 Cal.4th 335, 399, fn. 19.) [↑](#footnote-ref-16)
16. Defendant argues it was “improper” for the prosecutor to probe the juror’s ability to announce a death verdict in front of family members. We have repeatedly approved similar lines of questioning. (See *People v. Lynch* (2010) 50 Cal.4th 693, 734; *P**eople v. Bramit* (2009) 46 Cal.4th 1221, 1235; *P**eople v. Samayoa* (1997) 15 Cal.4th 795, 853–854.) [↑](#footnote-ref-17)
17. Evidence Code section 352 provides: “The court in its discretion may exclude evidence if its probative value is substantially outweighed by the probability that its admission will (a) necessitate undue consumption of time or (b) create substantial danger of undue prejudice, of confusing the issues, or of misleading the jury.” [↑](#footnote-ref-18)
18. The 1988 version of the instruction in effect at the time of the Washington murder was similar. It said: “A viable human fetus is one who has attained such form and development of organs as to be normally capable of living outside of the uterus.” (CALJIC No. 8.10 (5th ed. 1988).) [↑](#footnote-ref-19)
19. He also sought judicial notice of the autopsy report and its attachments. We granted this unopposed request. (See Evid. Code, §§ 452, subds. (c), (h), 459, subd. (a).) [↑](#footnote-ref-20)
20. Whether a challenged statement is hearsay is always the threshold question. If it is, it cannot be admitted unless it satisfies an exception. If it does not do so, and the error is prejudicial under state law, a further *Crawford* analysis is unnecessary. (See *Sanchez*, *supra*, 63 Cal.4th at p. 680.) [↑](#footnote-ref-21)
21. Experts may also tell the jury about background information generally accepted and reasonably relied on in their field. This information is part of the expert’s specialized knowledge, even if derived from hearsay sources. (See Evid. Code, §§ 801, subd. (b), 802; *Sanchez*, *supra*, 63 Cal.4th at p. 676; see also Simons, Cal. Evidence Manual (2020) § 4:31.) On the distinction between case-specific facts and general background information, see *Sanchez* at pages 676 to 677. [↑](#footnote-ref-22)
22. Defendant raised no hearsay or confrontation objection below. Although his case was tried after *Crawford* established a constitutional ban on testimonial hearsay, the statements in question would not have been considered hearsay *at all* under the law then in effect because they were offered for the “non-hearsay purpose” of explaining the basis for Dr. Scheinin’s opinion. (See *People v. Montiel* (1993) 5 Cal.4th 877, 918–919 (*Montiel*), overruled in *S**anchez*, *supra*, 63 Cal.4th at p. 686, fn. 13.) Drawing on United States Supreme Court precedent, particularly *W**illiams v. Illinois*, *supra*, 567 U.S. 50, *Sanchez* rejected that approach. (See *People v. Perez* (2020) 9 Cal.5th 1, 9.) Accordingly, as the Attorney General acknowledges, defendant’s failure to object did not forfeit his present claims. (*I**bid*.) [↑](#footnote-ref-23)