

**Genes on Trial: MAOA-L**

**The Legal Interpretation of Behavioral Genetics**

Violet Webber

University of California, Los Angeles

Society and Genetics 191S: Capstone Seminar

Professor Soraya de Chadarevian

March 16, 2026

The MAOA gene has become widely known in popular media as a marker of violent behavior. Appearing in the TV show *CSI* and the *New York Times* bestselling novel *Defending Jacob*, it has been referred to as “The Murder Gene,” “The Serial Killer Gene,” and “The Warrior Gene” (Berkeley Scientific Journal, 2020; Landay, 2010, 2013; “MAOA-L on CSI,” 2011; McDermott et al., 2009). Historically, biological determinism, defined as “the theory that biological factors, particularly genetics, have a direct influence on human behavior and societal roles,” has been used to argue that social and economic disparities are inherited and attributed to genetic differences that cannot be changed (Martínez, 2024). This perspective was used to create and justify hierarchies under the assumption that specific groups were superior based on their genes (Martínez, 2024). Two popular examples of areas in which biological determinism was prevalent are intelligence, measured via intelligence quotient tests, and antisocial behavior, measured by personality factors, such as impulsivity, criminality, risk-taking, and aggression (Baker et al., 2006; Heschl & Sedjo, 1996).

Published in 1876, the book *Criminal Man* by Italian physician Cesare Lombroso is often cited as the origin of biological criminology. Inspired by Charles Darwin, Paul Broca, and Franz Gall, Lombroso argued for an anthropological criminal archetype, where features such as pronounced cheekbones could be used to assign criminality (Lombroso, 2006). Critics of Lombroso argued against his observational claims. However, while collecting data for *The English Convict: A Statistical Study*, English psychiatrist Charles Goring found biological differences between a group of convicted individuals and the control group (Bedoya & Portnoy, 2023). In 1964, psychologist Hans Jürgen Eysenck published a biopsychosocial theory of crime where he described neuroticism, extraversion, and psychoticism as traits linked to specific brain pathways that affect an individual’s propensity to commit crimes. In 1997, psychologist Adrian

Raine became the first researcher to use PET scans to study the brains of murderers (Bedoya & Portnoy, 2023).

During the mid-twentieth century, genetic research within criminology began to expand. In 1965, the journal *Nature* published “Aggressive Behaviour, Mental Sub-Normality and the XYY Male” (Jacobs et al., 1965), which presented a study conducted within mental institutions investigating the sex chromosome karyotype of criminals and low-intelligence males. Eight out of 203 patients were discovered to have an additional Y chromosome. While the paper concluded that the increased frequency of XYY males may not be related to their aggressive behavior or mental deficiency, this remained a popular topic (Jacobs et al., 1965). In 1968, the XYY karyotype entered the criminal sphere during the French murder trial of Daniel Hugon. While awaiting his day in court, a medical examination revealed that he had an XYY karyotype. Following this discovery, the *New York Times* ran a headline stating “Genetic Abnormality Is Linked to Crime” (Chadarevian, 2020). With the help of French medical specialists, Hugon pleaded not guilty, stating that his chromosome disorder “prevented him from exercising normal responsibility.” After deliberation, the jury delivered Hugon a reduced sentence of seven years (Times, 1968).

In 1993, while investigating a Dutch family with a history of extreme antisocial, impulsive, and aggressive behavior, Brunner et al. discovered the MAOA and MAOB genes. Using skin fibroblast cultures, MAO activity was measured within clinically affected males and compared to controls. While the MAOB activity was found to function normally in affected males, MAOA was discovered to be deficient and negligible. The study concluded that selective MAOA deficiency within the family resulted in a disturbance of monoamine metabolism, leading to increased concentrations of dopamine, noradrenaline, and serotonin (Brunner et al.,

1993). The genetic variant associated with decreased MAOA levels was labeled as MAOA-L (Frazzetto et al., 2007). A study conducted in 2002 by Caspi et al. investigated the interaction between the MAOA-L gene variation and childhood mistreatment. The findings suggested that differing levels of MAOA activity could explain why some individuals who experienced maltreatment during childhood would grow up to abuse others (Caspi et al., 2002). This association has led to the increased use of the MAOA-L gene within criminal defense cases across the globe.

In 2017, a study by McSwiggan et al. investigated criminal cases referencing the MAOA-L genotype between 1995 and 2016, identifying 11 cases within the US and Italy where the defendant was on trial for murder or attempted murder.

**Table 1**

Legal Proceedings with Evidence of MAOA-L Genotype from 1995 to March 1, 2016

Case (Year)	Court	MAOA-L	Reason for Test	Court Proceedings	Outcome
Mobley (1995)	U.S.	N/A	Murder	S	No sentencing reduction; death penalty
Bayout (2009)	Italy	+	Murder	A	Appeal upheld; 9 years reduced to 8 years
Waldroup (2011)	U.S.	+	Murder Attempted Murder	G	Charge reduction; first-degree murder reduced to voluntary manslaughter
Albertani (2011)	Italy	+	Murder Attempted Murder (2)	A	Appeal upheld; life reduced to 20 years
Bourassa (2012)	U.S.	+	Murder	S	Sentenced to life; spared death penalty
Adams (2014)	U.S.	+	Murder (3) Attempted Murder	S	No sentencing reduction; death penalty
Duran (2014)	U.S.	N/A	Attempted Murder	A	Appeal dismissed; 15 years
Driskill (2015)	U.S.	+	Murder (2)	S	No sentencing reduction; death penalty
Colbert (2015)	U.S.	+	Murder	S/A	No sentencing reduction; life sentence
Yopez (2015)	U.S.	+	Murder	G	Evidence inadmissible; second-degree murder
Bathgate (2016)	U.S.	N/A	Murder	A	Habeus corpus dismissed; evidence procedurally defaulted

*Note.* + = MAOA-L genotype carrier; A = Appellate phase; G = Guilt phase; N/A = No test undertaken; S = Sentencing phase.

*Note.* From the author manuscript for “The Forensic Use of Behavioral Genetics in Criminal Proceedings: Case of the MAOA-L Genotype” by McSwiggan et al., 2017, *Int J Law Psychiatry*, 50(4), p. 17

As a collection, the 11 cases listed in Table 1 demonstrate inconsistencies in the use of behavioral genetic evidence during criminal cases, suggesting that different legal settings view this evidence in different ways. As technological developments continue to grow, it can be predicted that the use of behavioral genetics will similarly increase within the justice system. Through the analysis of two case studies, this paper examines the use of MAOA-L evidence in criminal courts and how scientific explanations should be balanced against the legal responsibility of the defendants. *State v. Waldroup* (2011) was chosen as the first case study because it was the only case identified where the MAOA-L evidence was used to reduce the charges of the defendant. *State v. Yopez* (2015) was chosen as the second case study because it was the only case identified where the MAOA-L evidence was deemed inadmissible during trial and not considered during sentencing.

### **Case Study 1**

The first case study investigates the 2011 case of *State v. Waldroup*. In 2006, Penny Waldroup and Bradley Waldroup were newly separated and sharing custody of their four children. On October 13, Mrs. Waldroup planned to drop the children off with their father at his trailer on Kimsey Mountain. Mr. Waldroup had been threatening to kill Mrs. Waldroup, leading Mrs. Waldroup to request that her friend Leslie Bradshaw accompany her (Murder and Moonshine, 2023). When Mrs. Waldroup and Ms. Bradshaw arrived at the cabin, Mr. Waldroup was under the influence of alcohol and carrying a .22 rifle. After they finished unloading the van, Mr. Waldroup began to fire at the women. Ms. Bradshaw was shot eight times. Mrs. Waldroup was shot once and then attacked with a shovel and a machete. Before Mrs. Waldroup managed to escape, Mr. Waldroup told his children to “tell [her] goodbye because that was the last time they

would see her.” When the police arrived on the scene, Mr. Waldroup told the officer that he had killed Ms. Bradshaw and was arrested (*State of Tennessee v. Davis Bradley Waldroup, Jr.*, 2011).

In August of 2008, Mr. Waldroup was indicted for “two counts of especially aggravated kidnapping, one count of first degree murder, and one count of attempted first degree murder” (*State of Tennessee v. Davis Bradley Waldroup, Jr.*, 2011). The trial report was never published, and transcripts were unavailable. In 2010, journalist Barbara Bradley Hagerty conducted interviews with individuals involved in the case. Information regarding the trial and testimony comes from these interviews. The prosecution argued that Mr. Waldroup’s actions were intentional and premeditated based on his request for the children to say goodbye to their mother. After taking Mr. Waldroup’s case, defense attorney Wylie Richardson contacted William Bernet, a forensic psychiatrist at Vanderbilt University. Bernet had been testing criminal defendants for a variant of the MAOA gene since 2004. Bernet found that Mr. Waldroup had the high-risk version of the gene. Combined with his history of child abuse, Bernet claimed that Mr. Waldroup’s genetic makeup “created a vulnerability that he would be a violent adult”. Bernet testified in court that these factors explained why Mr. Waldroup snapped on the night of the attack. Citing studies that showed the MAOA-L gene in conjunction with child abuse caused an individual to be 400 times more likely to be convicted of a violent offense, Bernet told the jury, "A person doesn't choose to have this particular gene or this particular genetic makeup. A person doesn't choose to be abused as a child. So I think that should be taken into consideration when we're talking about criminal responsibility” (Hagerty, 2010).

Co-defense attorney Shari Tayloe said that the MAOA-L evidence admitted during trial was critical for its outcome, as it allowed the jury to understand who Waldroup was and why he committed the murder. In opposition, the prosecution called Terry Holmes, a mental health

institute clinical director, to provide his opinion. Homes encouraged the jury to ignore the genetic evidence, stating that Mr. Waldroup was drunk and angry, and his actions were not the cause of his genetic makeup.

After deliberating for 11 hours, Mr. Waldroup was convicted of voluntary manslaughter, second-degree murder, and two charges of especially aggravated kidnapping. Judge Carroll Ross sentenced Mr. Waldroup to 22 years on the kidnapping charges, six years for voluntary manslaughter, and 12 years for attempted second-degree murder, culminating in a 32-year sentence (Waldroup Gets 32-Year Sentence At 100% In Leslie Bradshaw Slaying, 2009). Sheri Lard of the jury told the press that the genetic evidence factored into the jury's decision to reduce the charges, as they agreed his actions were not premeditated. Jury member Debbie Beaty explained that the genetic evidence convinced her that Mr. Waldroup could not control his actions, saying, "A diagnosis is a diagnosis, it's there. A bad gene is a bad gene" (Hagerty, 2010).

In Tennessee, first-degree murder carries the death penalty if convicted, and attempted first-degree murder is a Class A Felony. Mr. Waldroup's charges were reduced to Class B felonies, which carry lesser sentences on initial conviction and during sentencing for repeat offenses (*Tennessee District Attorneys Sentencing Matrix*, 2023). Given this reduction and the jury's statements, it is clear that they decided Mr. Waldroup's actions were significantly affected by both his psychiatric and genetic makeup (Bastani, 2015). By allowing genetic evidence to influence their decision, the jury risked setting an example that allows genetic essentialist beliefs to influence the justice system.

## **Case Study 2**

The second case study investigates the 2015 case of *State v. Yepez*. In 2012, Yepez and his girlfriend, Jeannie Sandoval, were living with George Ortiz, Sandoval's adoptive mother's

boyfriend. On October 29, they were in the apartment when Sandoval and Yepez began to argue. As the argument escalated, Yepez pushed Sandoval before striking her in the face. Yepez then turned on Ortiz, and the two tumbled into the hallway. Sandoval exited the room and, upon returning, found Ortiz motionless and not breathing. Yepez asked Sandoval to help him clean up the evidence and dispose of the body. Sandoval covered Ortiz's body in cooking oil before Yepez lit a piece of paper on fire. While Sandoval did not see Yepez light Ortiz's body on fire, his cause of death was listed as "homicidal violence and thermal injuries," consistent with being burned. Yepez was charged with "first-degree murder, conspiracy to commit first-degree murder, tampering with evidence, and unlawful taking of a motor vehicle" (*State v. Yepez*, 2018; *STATE v. YEPEZ (2021)*, 2021).

Prior to the trial, Yepez filed a motion to admit expert testimony confirming that he had the MAOA-L genotype and had experienced maltreatment during his childhood. In his motion, Yepez stated that this testimony would serve as the basis of his defense. In addition, he filed a 'Notice of Incapacity to Form Specific Intent,' stating that he would have an expert discuss whether first-degree murder was plausible based on his ability to form the intent required for the crime. In response, the State filed a motion to exclude the testimony, arguing that the evidence was not relevant or reliable. The State claimed that there was not enough information regarding the low MAOA genotype and its interaction with childhood maltreatment to prove that Yepez was predisposed to violence. The motion went on to state that Yepez's childhood abuse claims were self-reported and uncorroborated. The State concluded that the expert testimony would mislead the jury and make them susceptible to a "deterministic interpretation" of the evidence provided (*STATE v. YEPEZ (2021)*, 2021).

At a pretrial evidentiary hearing, the testimony of forensic neuropsychologist James S. Walker, political scientist and psychologist Rose McDermott, and psychologist Adrian Raine was presented. Following a forensic neuropsychological examination, Walker testified that Yopez's childhood abuse and low MAOA gene function contributed to his impulsive and violent crime. After reviewing the evidence, the district court concluded that the science regarding the gene was unreliable and the testimony would not be admissible during the trial. Yopez filed a motion for reconsideration that was denied under the consensus that Yopez's predisposition to violence did not meet "the definition of a mental disease or disorder which might render a person incapable of forming the specific intent to kill." Yopez was subsequently found guilty of second-degree murder, tampering with evidence, and unlawful taking of a motor vehicle and sentenced to twenty-two and a half years in prison (*STATE v. YEPEZ (2021)*, 2021).

Following the trial, Yopez submitted his first appeal against his conviction, stating that the district court improperly excluded expert testimony that could have constituted a defense against the second-degree murder charge. The Court of Appeals concluded that the district court's decision to exclude the testimony was in error, and the jury should have been allowed to debate the MAOA gene's science. However, the Court stated that the expert testimony would have been used to establish Yopez's impulsiveness and, therefore, was not pertinent to the charges he faced. This decision led the State and Yopez to file appeals with the Supreme Court of New Mexico. The State appealed the claim that the district court's decision to exclude the evidence was made in error. Yopez cross-appealed that the error violated his constitutional rights and the testimony's inclusion would have allowed the jury to consider a charge of voluntary or involuntary manslaughter instead of second-degree murder. The Supreme Court of New Mexico rejected Yopez's cross-appeal on the same grounds as the Court of Appeals. The Supreme Court

reversed the Court of Appeals' determination, stating that the "use of genetic tests in forensic contexts should be restricted to tests with proven clinical utility for the diagnosis of a disease relevant to the case judged". The Supreme Court went on to cite psychology literature that claims genetic tests for genotypes have yet to meet the validity requirements created for forensic psychological tests (*STATE v. YEPEZ (2021)*, 2021).

### **Discussion**

In 1993, the U.S. Supreme Court case *Daubert v. Merrell Dow Pharmaceuticals Inc.*, 509 U.S. 579 (1993) changed the landscape of expert witness testimony. Under the "Daubert Standard," it is procedural for a trial court judge to hear and scrutinize expert testimony before it is presented to the jury. The trial court must assess four characteristics to determine if the methodology is valid. First, it must be established that the technique in question has been or can be tested. Second, the technique must have been subjected to both publication and peer review. Third, the technique must have a known or calculable error rate. Fourth, the method must be widely accepted within its relevant scientific community (Robinson, 2023). Without the official court transcripts for the *State v. Waldroup* (2011) case, this paper assumes, based on Tennessee's position as a Daubert-style state, that a Daubert Hearing was held prior to the trial and established the inclusion of the MAOA-L gene evidence.

New Mexico performs an additional Alberico Test to determine if expert witnesses are officially qualified to discuss the scientific discipline in which they are testifying and whether their testimony is relevant to the point that the plaintiff or defendant is trying to prove ("The Daubert-Alberico Test and Expert Witness Testimony," 2023). During the Daubert/Alberico hearing in the *Yepez* case, the court concluded that the MAOA testimony would not be admissible as the experts called by *Yepez* had not demonstrated their qualifications to interpret

his genotypic findings. Under the Daubert Standard, the trial judges in each case were provided the opportunity to hear the evidence presented and rule if it would be admissible. While the admissibility of testimony has guidelines, the final evaluation is up to the judges, leading to a lack of consensus across the U.S. In 2015, the judge in the *State v. Yepez* case ruled that there was not enough scientific evidence regarding the MAOA gene for it to be admissible in court. Four years prior, it is assumed that the judge in *State v. Waldroup* (2011) ruled that the testimony was admissible. While it cannot be determined that the jury would have ruled differently if the MAOA evidence had been included in Yepez's trial, it can be concluded that judicial discretion influenced each case's outcome.

The cases *State v. Waldroup* (2011) and *State v. Yepez* (2015) have fundamentally different outcomes due to the function of genetic evidence within them. *State v. Waldroup* (2011) demonstrated a result of genetic evidence reaching the jury and its impact on a case. Waldroup's charges were ultimately downgraded based on the jury's interpretation of the evidence provided to them. Meanwhile, *State v. Yepez* (2015) showed the results of a judge preventing the evidence from reaching the jury. Both of Yepez's appeals were denied under the courts' decision that the evidence was not scientifically validated enough for the jury to consider it. Together, these cases reveal that the legal relevance of the MAOA-L genotype depends less on the gene itself than on the scientific legitimacy assigned by the judicial system.

The inclusion and exclusion of the MAOA evidence had a direct impact on the narrative framing of violence in each case study. Waldroup was presented to the jury as violent but biologically vulnerable, with a narrative that he was 'born that way.' In contrast, Yepez's violent behavior was framed as a personal responsibility. When the New Mexico courts evaluated the genetic evidence for scientific reliability, it established a distinction between a predisposition to

impulsivity and an inability to form intent. The denials of Yopez's two appeals create a strong precedent for future cases that genetic evidence should not function as a criminal defense but rather as an explanation for how a defendant's behavior may be shaped by their history. However, the court's concern regarding deterministic interpretation demonstrates a belief that this evidence may be misinterpreted as essentialist rather than explanatory.

Alternatively, Waldroup's genetic defense shaped his legal narrative of intent and blame, leading the jury to feel sympathy for him. The MAOA evidence humanized him and created a multifactor explanation for his crimes. As explained by jury members following the trial, the genetic evidence and its narrative framing by the defense had a direct impact on their ruling. The jury's decision reinforces the belief that behavior is biologically fixed. Framing the gene in this way is problematic for future inclusion of genetic evidence in criminal cases, as it undermines the moral responsibility of the defendant.

Within criminal law, there is no standard practice regarding the inclusion of genetic evidence. As demonstrated in the 11 cases described by McSwiggan et al. (2017), different courts have had different outcomes regarding the same MAOA evidence. Until a stronger scientific consensus is reached or a consistent framework is established, behavioral genetic evidence will continue to cause sentencing disparities. Within the current system, the courts are both interpreting the science and shaping its social meaning. Genetic evidence functions as a resource within systems of violence within systems of violence, potentially obscuring the legal responsibility of crime and drawing attention away from structural determinants such as abuse, poverty, and trauma. While these factors occur in combination with the MAOA gene to predispose an individual to violent behavior, the focus has been on the genetic risk rather than the social one. Remaining dependent on the idea that violence is biological may further degrade

interest in social reform under the assumption that it would not deter individuals from committing crimes.

Behavioral genetic research functions on the population level but is being applied to individual defendants within the justice system. While this research is based on risk and correlation, instead of direct causation, it has been historically used to mitigate punishment in a way that risks reintroducing biological determinist thinking into criminal law. This evidence can be interpreted as both mitigating and dangerous. A biological predisposition to violence may make defendants appear less blameworthy, but it can also make them seem more inherently threatening. This creates an important paradox where genetic evidence may function in the future to justify harsher punishments rather than leniency.

## References

- Baker, L. A., Bezdjian, S., & Raine, A. (2006). Behavioral Genetics: The Science of Antisocial Behavior. *Law and Contemporary Problems*, 69(1/2), 7–46.
- Bastani, A. (2015). *The claim of loss of self-control: Some challenges of the genetic-based defence to criminal responsibility*. University of Otago.
- Bedoya, A., & Portnoy, J. (2023). Biosocial Criminology: History, Theory, Research Evidence, and Policy. *Victims & Offenders*, 18(8), 1599–1629.  
<https://doi.org/10.1080/15564886.2022.2133035>
- Berkeley Scientific Journal. (2020, July 21). *Born to Kill? The story of 'Serial Killer' genes*.  
<https://bsj.studentorg.berkeley.edu/born-to-kill-the-story-of-serial-killer-genes/>
- Brunner, H. G., Nelen, M., Breakefield, X. O., Ropers, H. H., & Van Oost, B. A. (1993). Abnormal behavior associated with a point mutation in the structural gene for monoamine oxidase A. *Science*, 262(5133), 578.
- Caspi, A., McClay, J., Moffitt, T. E., Mill, J., Martin, J., Craig, I. W., Taylor, A., & Poulton, R. (2002). Role of Genotype in the Cycle of Violence in Maltreated Children. *Science*, 297(5582), 851–854. <https://doi.org/10.1126/science.1072290>
- Chadarevian, S. de. (2020). 3. X and Y. In *Heredity under the Microscope: Chromosomes and the Study of the Human Genome* (pp. 77–110). University of Chicago Press.  
<https://www.degruyterbrill.com/document/doi/10.7208/9780226685250-004/html>
- Frazzetto, G., Di Lorenzo, G., Carola, V., Proietti, L., Sokolowska, E., Siracusano, A., Gross, C., & Troisi, A. (2007). Early Trauma and Increased Risk for Physical Aggression During Adulthood: The Moderating Role of MAOA Genotype. *PLoS One*, 2, e486.  
<https://doi.org/10.1371/journal.pone.0000486>

- Hagerty, B. B. (2010, July 1). Can Your Genes Make You Murder? *NPR*.  
<https://www.npr.org/2010/07/01/128043329/can-your-genes-make-you-murder>
- Heschl, A., & Sedjo, R. A. (1996). Biological Determinism. *Science*, 271(5250), 743–744.
- Jacobs, P. A., Brunton, M., Melville, M. M., Brittain, R. P., & McClellmont, W. F. (1965). Aggressive Behaviour, Mental Sub-normality and the XYY Male. *Nature*, 208(5017), 1351–1352. <https://doi.org/10.1038/2081351a0>
- Landay, W. (2010, May 11). *The Murder Gene*.  
<https://www.williamlanday.com/2010/05/11/the-murder-gene/>
- Landay, W. (2013). *Defending Jacob*. Dell Books.
- Lombroso, C. (2006). *Criminal Man*. Duke University Press.  
<https://www.degruyterbrill.com/document/doi/10.1515/9780822387800-fm/html>
- MAOA-L on CSI. (2011, February 19). *Truth, Justice, and All-American Allergen-Free Apple Pie*. <https://wildninja.blog.com/2011/02/19/maoa-l-on-csi/>
- Martínez, L. (2024). *Biological Determinism*. EBSCO. EBSCO Research Starters.  
<https://www.ebsco.com>
- McDermott, R., Tingley, D., Cowden, J., Frazzetto, G., & Johnson, D. D. P. (2009). Monoamine oxidase A gene (MAOA) predicts behavioral aggression following provocation. *Proceedings of the National Academy of Sciences of the United States of America*, 106(7), 2118–2123. <https://doi.org/10.1073/pnas.0808376106>
- Murder and Moonshine (Host). (2023, August 15). *The Kimsey Mountain Murder* (No. 31) [Podcast].  
<https://open.spotify.com/episode/2uroeCHdtKAOBipThqAyk0?si=e3d8c659dd5a4a55>

Robinson, J. (2023, August). *Daubert Standard*. Cornell. Legal Information Institute.

[https://www.law.cornell.edu/wex/daubert\\_standard](https://www.law.cornell.edu/wex/daubert_standard)

State of Tennessee v. Davis Bradley Waldroup, Jr., E2010-01906-CCA-R3-CD (Court of Criminal Appeals of Tennessee at Knoxville October 20, 2011).

<https://law.justia.com/cases/tennessee/court-of-criminal-appeals/2011/e2010-01906-cca-r3-cd.html>

State v. Yepez, NO. A-1-CA-35330,A-1-CA-35330 (Court of Appeals of New Mexico July 24, 2018). <https://case-law.vlex.com/vid/state-v-yepez-no-886573763>

STATE v. YEPEZ (2021), No. S-1-SC-37216 CONSOLIDATED WITH No. S-1-SC-37217 (Supreme Court of New Mexico February 25, 2021).

<https://caselaw.findlaw.com/court/nm-supreme-court/2113151.html>

*Tennessee District Attorneys Sentencing Matrix*. (n.d.). Retrieved February 10, 2026, from

<https://www.tndagc.org/wp-content/uploads/2023/10/Sentencing-Matrix-1.pdf>

The Daubert-Alberico Test and Expert Witness Testimony. (2023, October 4). *Slate Stern Law*.

<https://slatestern.com/slates-law-blog/the-daubert-alberico-test-and-expert-witness-testimony/>

Times, L. G. T. the N. Y. (1968, October 15). French Murder Jury Rejects Chromosome Defect as Defense. *The New York Times*.

<https://www.nytimes.com/1968/10/15/archives/french-murder-jury-rejects-chromosome-defect-as-defense.html>

*Waldroup Gets 32-Year Sentence At 100% In Leslie Bradshaw Slaying*. (2009, May 7).

Chattanooga.Com.

<https://www.chattanooga.com/2009/5/7/150676/Waldroup-Gets-32-Year-Sentence-At-100.aspx>