APPENDIX: Characteristics of Forensic Testimony at DNA Exonerees' Trials

**Brandon L. Garrett, *Convicting the Innocent: Where Criminal Prosecutions Go Wrong*
Ch.4 (Harvard University Press 2011)**

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Abbitt, Joseph	OH	DNA	Valid – no prosecution analyst testified		DNA exclusion presented by the defense and by stipulation

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[1] Invalid testimony is defined in detail in the Garrett & Neufeld article; it refers to testimony that rendered a conclusion not supported by empirical data. *See* Brandon L. Garrett & Peter J. Neufeld, Invalid Forensic Science Testimony and Wrongful Convictions," 95 Va. L. Rev. 1, 5 & n.17 (2009). Validity is separate from the question whether a forensic methodology produces consistent results, nor whether errors were made in the laboratory. *See also* Daubert v. Merrill Dow Pharmaceutical, 509 U.S. 579, 590 n.9 (1993) ("[S]cientists typically distinguish between 'validity' (does the principle support what it purpots to show?) and 'reliability' (does application of the principle produce consistent results?)").

Vague testimony, as explained in Chapter 4 of *Convicting the Innocent*, refers to the use of vague and potentially highly misleading terminology such as "associated with" "consistent with" "similar" or "match." The NAS Report also explained in some detail the lack of standardization and clarity concerning such terminology, noting, for example, "the problem with using imprecise reporting terminology such as 'associated with,' which is not clearly defined and which can be misunderstood to imply individualization." *See* Comm. On Identifying the Needs of the Forensic Science Comty., Nat'l Research Counsel of the Nat'l Acads., Strengthening Forensic Science in the United States: A Path Forward 5-25 (2009).

Cases with a note of "error" refer to those few in which subsequent reanalysis of the laboratory records uncovered an error in the laboratory analysis itself, as opposed to the framing of conclusions based on the underlying data.

A note of "not disclosed" indicates not a judicial determination of a violation of Brady v. Maryland, but is rather just shorthand for a case in which exculpatory forensic evidence came to light only after trial, and it was later determined that the evidence had not been disclosed at the time of trial.

Finally, I note cases in which there was no trial transcript located – as well as four cases in which there was a trial, but there was no forensic testimony because both sides stipulated to the forensics.

[2] Six types of invalid testimony are used here and referred to by number along with a short description. Those types are invalid testimony that in concluding that evidence inculpated the defendant: (1) interpreted the non-probative evidence as inculpatory (2) discounted exculpatory evidence; (3) presented an inaccurate statistic; (4) provided a frequency or probability in the absence of any empirical data; (5) provided non-numerical statements of probability or frequency were offered despite a lack of any empirical data; (6) concluded that evidence did in fact come from the defendant and was unique to the defendant, despite no empirical data permitting such conclusions. These categories are described in Garrett & Neufeld at Part I.B.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Abdal, Habib Warith (aka Vincent H. Jenkins)	NY	H	Invalid	(2) Claimed hair exclusion would be impossible	Though "the hairs -- hair samples were distinctively different," where, for example, "the hair taken from Mr. Jenkins had a different medulla, which is the center part of the hair," there was no exclusion, because "[i]t's not unusual to have different hairs come from the same person," and speculating that there is a statistical possibility that other unexamined hairs could be similar: "The study shows it would not be unusual to have to look at 4,500 strands of hair from the head in order to get a match with any one particular hair. And, from the pubic hair, one may have to look at as much as 800 hairs, and it can be from the same person. That gives an idea of how much a hair can vary just within one single person." That testimony, if reliance on that study were appropriate, would suggest a statistical basis *not* to rely on the forensic method of hair comparison, which is based on selected exemplar hairs rather than on review of hundreds of hairs from a given person. See Part II.B.2. for a discussion of this case.
Adams, Kenneth	IL	B, H	Invalid, Error	(5) Hair match; Invalid use of serology	The hairs looked "[J]ust like if you dropped two dollar bills and you see two dollar bills on the floor. You see two one dollar bills. It's obvious." See Part II.B.2. for a discussion of this case. Adams's blood exhibited an "H reaction" similar to the A type blood found in samples from the victim. "I believe the population is less than two percent of the people that have that" type of clumping due to an "H reaction." No empirical data supported such a statistic. In addition, serological retesting by Edward T. Blake, an independent forensic scientist, established that the original testimony had been incorrect and that co-defendant Dennis Williams in fact was a type A non-secretor.
Alejandro, Gilbert	TX	DNA	Invalid, Error / Not disclosed	(6)	The analyst concluded there was a DNA match, where banding patterns "could only have originated from him," without offering a random match probability. In fact, the analyst did not disclose that at best only partial testing had been conducted; subsequent DNA testing excluded Alejandro. See Part II.C. for discussion of this case.
Alexander, Richard	IN	DNA, H	Valid (Exclusion)		The analyst testified that "none of the DNA was consistent with Richard Alexander." Hairs compared exhibited similarities and differences from Alexander, so were not deemed a match.

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Anderson, Marvin	VA	B	Valid (Non-probative)		Due to the phenomenon of masking and quantification, "there would be no one eliminated" by the serological results.
Atkins, Herman	CA	B, H	Invalid	(1) Masking; destruction of evidence	The victim and Atkins were both A secretors, PGM 2+1+, and the vaginal swab exhibited type A, PGM 2+1+. The analyst testified that "the activity that I detected could have come from the victim herself, or it could have come from a combination of individuals with those blood types." The analyst then, however, testified that the combination of people who are A secretors and are PGM type 2+1+ "comes out to about 6.1 percent of the general [white] population" and about 4.4 percent of black people. See Part II.A.1 for an extended discussion of this case.
Avery, Steven	WI	H	Valid, Vague		The analyst testified, using unreliable and vague terminology that was accepted in the field, that the defendants' and the questioned hairs were "consistent."
Bain, James	FL	B	Invalid	(2) Failure to exclude	The analyst testified that despite the lack of A blood group substances in the three separate stains tested, that he could not exclude the defendant, who was an AB secretor, hypothesizing that perhaps the defendant was only a "weak" A secretor, although blood tests of the defendant did not reveal him as such a "weak" A secretor.
Barnes, Steven	NY	B, H, tire tread, fabric and soil comparison	Valid (Exclusion, Non-probative), Vague		The analyst testified that the serology was non-probative, where the blood group substances observed were consistent with the victim and defendant was a non-secretor. The tire treads did not match defendant's vehicle. Hairs were compared and found to be "similar." Soil was compared and found "similar." The "impression and weave patterns" on jeans were found "similar." Such terminology was vague.

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Bauer, Chester	MT	B, H	Invalid	(1), (2), (5) Masking; false probability; hair match	The analyst provided a 7.5% figure, including invalid division of the population statistic in half for males. The serology testimony was also invalid in its limitation of the population to O secretors, ignoring masking and non-quantification. The victim and Bauer were both O secretors. Thus, absent quantification, the victim's O substances could have masked any material from the semen donor and 100% of the male population could have been the donor. Regarding hairs, the analyst provided unsupported statistics which were then multiplied as if the hairs represented independent events: "To have them both match, it would be the multiplication of both factors so as an approximately using that 1 out of 100, you come out with a number like 1 chance in 10000." See Part II.B.1 for a discussion of this case.
Beaver, Antonio	OH	P	Valid (Exclusion)		The defendant was excluded based on analysis of latent fingerprints. No prosecution analyst testified; the defense called the analyst.
Bibbins, Gene	LA	B, P	Valid (Non-probative), Not disclosed		The analyst claimed state lab analysis of latent fingerprints were not identifiable and one could not reach a conclusion when in fact they excluded the defendant. See Part II.F.2 for a discussion of this case.

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Blair, Michael	TX	F, H	Invalid	(5)	The analyst testified that the victim had unusual hairs: "the interesting thing about Ashley's hair, when you look at her standard, is that she has microovoid bodies. These are very small air inclusions that are smaller than a true ovoid body. Ovoid bodies are mostly found in cattle hair and they're much larger, but Ashley, thoughout her standard or known head hairs, has these microstructures." He linked the characteristics of the hair to the commission of an assault, claiming he observed evidence that "the hair has been crushed or particle filamant or frayed ends. The other end of this hair has a similar appearance indicating that this hair piece has been subjected to some sort of blunt force." The hairs found at the crime scene included hairs he identified as Michael Blair's. Using side by side photos for jury, the analyst explained "I've never seen a Caucasian or Mongoloid hair that was opaque like that. Q. That's in seven years or more of looking at hair under a microscope about 85 to 90 percent of your day? A. That's right." The analyst added, "I haven't seen a hair like that before. Not a human hair." The analyst also identified a fiber in Blair's car as being from the victim's "sleep rabbit" toy, stating that "This is a fiber seldom encountered in forensic work." See Part II.B.2 for a discussion of this case.
Bloodsworth, Kirk	MD	Shoe print	Valid (Non-probative) (Excluded)		The analyst concluded, in comparing shoe prints to the defendants' shoes, "I was unable to determine general wear, size of the shoe, or I was unable to find any specific identifying features." A latent print in the case excluded Bloodsworth.
Booker, Donte	OH	B, H	No Transcript		

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Bosquete, Orlando	FL	B	Invalid	(1), (2) Masking, Failure to exclude	The victim and Bosquete were both O nonsecretors. Two spots on victim's panties had type A substances, while two other spots had no blood group substances. The analyst did not exclude based on the A blood group substances. Instead the analyst testified: "The only conclusion I could draw is that the -- the stains where no blood group factors were found, that is, on the pajama top and two areas or two cut areas of the pair of panties, are consistent at least in that no blood group factors were found and Mr. Bosquette is a non-secretor…" The analyst testified that 20% of the population is a non-secretor. However, those stains could have come exclusively from the victim and thus no conclusion could be made regarding the donor population. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Bradford, Marcellius	IL	B	Guilty plea (no trial)		(Nor was forensic analysis in co-defendants' trials linked to Bradford)
Bravo, Mark	CA	B	Invalid	(3) False probability	The analyst testified that 3 percent of the population is PGM 2–1+, but then falsely divided that population statistic in half, supposedly eliminating females, and claiming that 1.5 percent of men could be the donor. The Analyst was asked "Q. So it would be more than likely that one and a half percent of the population of males in L.A. county, he fits in that group; is that correct?" and answered "A. Could have donated that sample, that's correct." See Part II.A.3 for discussion of this case and similar cases.
Brewer, Kennedy	MS	Bite mark	Invalid	(6)	The analyst concluded that Brewer's teeth in fact left the marks: "Within reasonable medical certainty, the teeth of Kenneth—un, Mr. Kennedy Brewer inflicted the patterns described on the body" of the victim, and explaining that reasonable medical certainty means "yes, he did" leave the marks. See Part II.D for discussion of similar cases.
Briscoe, Johnny	MO	H	Valid, Vague		The analyst testified that hairs exhibit "similar microscopic characteristics and could have come from the same source."
Brison, Dale	PA	H	Valid, Vague		Analyst testified that hairs from crime scene were "similar" to Brison's standard hairs.

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Bromgard, Jimmy Ray	MT	B, H	Invalid	(4) Hair match testimony with false probabilities	"The hair from the blanket on the left matches all the characteristics of the known pubic hair from James Bromgard on the right and they almost look like one hair." The analyst then made up probabilities and multiplied them in an invalid fashion, testifying: "Well there are actually two mutually exclusive events because they come from different areas of the body and their characteristics are not necessarily the same. So if you find both head and pubic hair there you have one chance in a hundred for the head hair matching a particular individual and one chance in a hundred for the pubic hair. If you find both it's a multiplying effect, it would be one chance in 10,000, it's the same as two dice, if you throw one dice with a one, one chance out of six; if you throw another dice with a one, it's one chance out of six, you multiply the odds together. You do the same in this case so it's one times one hundred, times one, times one hundred, and you get one in 10,000." See Part II.B.1 for a discussion of this case.
Brown, Danny	OH	P	Valid (Excluded)		The analyst testified that the latent print from the victim's apartment did not match either the victim or the defendant.
Brown, Dennis	LA	B	Invalid	(1) Masking	Victim and Brown were both O secretors. Stains also type O. The analyst testified "I detected the presence of 'H' antigens [on the victim's panties] and that indicates Type-O. And this is the only antigen which I detected, which indicates that it came from either a Type-O secretor or a nonsecretor." The analyst told the jury that 46.5% of the population could have been the donor. Absent quantification, that statistic regarding a subset of the population was irrelevant and misleading. The relevant statistic was that 100 percent of the population could have been the semen donor. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.

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Brown, Roy	NY	Bite mark	Invalid, Not disclosed	(2) Invalid failure to exclude	At least four bite marks "entirely consistent" but noted also an "apparent inconsistency." Rather than exclude, the analyst called this an "explainable consistency" citing to curvature of the thigh surface that the mark appeared upon.

In addition, the inconsistency was gross and apparent; Brown had two incisors removed years before and only possessed two incisors, while the marks showed four incisors.

The state also did not disclose that Dr. Levine, chief odontologist for NY State Police office, found the marks inconsistent and excluded Brown. See Part II.D. for a discussion of this case. |
| Bryson, David | OK | B, H | Invalid, Not disclosed | (2) Failure to exclude, (4) non-numerical probability statement. | The analyst testified that as to the hair comparison, "it would be impossible not to be able to distinguish hairs from two different individuals." As to serology, although A blood group substances were found, which were inconsistent with the victim and defendant, yet the analyst did not exclude.

DNA testing was not conducted at the time of trial, because the analyst had represented that the relevant evidence had been destroyed. |
| Buntin, Harold | IN | B | No transcript | | No transcript could be obtained, however, according to a Statement of Facts obtained by the Innocence Project, the analyst provided invalid serology testimony failing to account for the problem of masking and non-quantification. |
| Burnette, Victor | VA | B, H | Invalid, Vague | (1) Masking | The analyst testified that one of the hairs was "consistent" with the defendant and "could have" come from him. The analyst also observed blood group substances entirely consistent with the victim, yet claimed that as a non-secretor, the defendant was "any one of 88 percent" of the population that could have been a contributor. |

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Byrd, Kevin James	TX	B, H	Invalid	(1) Possible masking and degradation	Byrd is a nonsecretor. Since no antigens were detected in stain, the analyst simply assumed both the victim and "the semen donor would also be a non-secretor." The analyst then testified that 15-20% of the population are non-secretors. In fact, no donor could be eliminated. No determination had been made as to the victim's secretor status. Further, the sample could have lacked antigens not because the contributors were non-secretors, but due to degradation. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. Hair comparison excluded the defendant.
Callace, Leonard	NY	B	No Transcript		
Charles, Clyde	LA	H	Valid, Vague		The analyst found hairs "similar," explaining "If the two do match, then the probabilities are that the hair could have come or did come from the same individual, however, it is not an absolute science, since you can find people whose hair is the same."
Charles, Ulysses Rodriguez	MA	B	Valid (Non-probative), Error / Not Disclosed		Acid phosphatase was detected, but no semen, and the results were consistent with the victim's type O. It was highly relevant that no semen was observed, because while the victim was Type O, Charles was a Type B secretor. The error was one of testing or failure to disclose presence of spermatozoa. When Cellmark performed typing of the same crime scene evidence years later, they readily observed sperm under the microscope. See Part II.F.2. for a discussion of this case.
Chatman, Charles	TX	B	Valid		Chatman was a Type O secretor and consistent with that, H substances were detected on the rape kit evidence. The victim was a Type A (though apparently no test was conducted to assess the victim's secretor status).
Clark, Robert	GA	H	Valid (Excluded)		The analyst testified that the questioned hair did not match either the victim or the defendant.
Coco, Allen	LA	B	Valid		No semen was detected in the rape kit evidence; instead blood stains from the scene were analyzed, and they exhibited the same substances as Coco.
Cole, Timothy	TX	B,H, P	Valid, Vague		Hairs described as "similar" and fingerprint excluded defendant

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Cowans, Stephan	MA	P	Invalid, Not Disclosed	(2) Failure to exclude	See Part II.E. for a discussion of this case. The evidence was presented to the jury in a misleading manner and Boston Police auditors reached the unanimous conclusion that Officer LeBlanc realized prior to trial that Cowans was excluded but nevertheless did not present that fact in his trial testimony.
Criner, Roy	TX	B, H	Invalid	(1) Masking	H blood group substances detected, fully consistent with victim, if she was a secretor, which could not be determined, and also with Criner. The analyst testified that 44% of the population are O secretors and could have been the donor. If the victim was a secretor, however, the H substances could have originated solely from her. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. Hairs compared excluded defendant.
Cromedy, Michael	NJ	B, P	Valid (Exclusion) (Non-probative)		Analyst testified that latent prints excluded Cromedy.

Analyst correctly explained masking where the victim was an A secretor and Cromedy was an A non-secretor and the specimens had A and H antigens. "Q. So, what you are basically saying is that the underpants, the panties, and vaginal swab, the source of the blood groups A H could have been either from the victim or from the attacker? A. Correct." |
| Crotzer, Alan | FL | B, H | Invalid, Vague | (1), (2) Masking; false probability | Victim and Crotzer were both O secretors and were PGM 1. Swabs also exhibited blood group substances consistent with Type O, PGM 1. The analyst testified, "I can only say it was either from a nonsecretor or person of ABO Type O secretor PGM Type 1" which constitute "38.4 percent of the total population." Dividing that figure by two, she testifies that only "approximately nineteen percent" of males could have contributed. Not only was that division false, but more fundamental, where the substances found were entirely consistent with the victim, they could all have originated from the victim. Any male could have been the donor. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. Analyst testified that hair "could have" originated from defendant. |

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Cruz, Rolando	IL	P, Shoe print	Valid (Exclusion), Not Disclosed		Latent fingerprints sufficient for comparison were all found to exclude defendant and co-defendant. It later came to light that boot print evidence, concerning the fact that the print did not in fact match a co-defendant, was not disclosed to the defense.
Dabbs, Charles	NY	B	Invalid	(1), (2) Failure to exclude; Masking; no elimination testing	The victim was an AB non-secretor and Dabbs an O secretor. No blood type was detected on vaginal slides, but this was entirely consistent with the victim as a non-secretor or with degradation. There was no testimony, however, that this could be due to masking. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The B substances on pants belonging to sister of victim excluded Dabbs and were foreign to the victim. Yet the analyst testified that he drew no conclusion from that finding where Dabbs could have been a contributor to the stain. This exclusion was explained by the State with testimony that the sister had a boyfriend; however, no elimination testing was done on the sister or boyfriend to test that theory.
Dail, Dwayne Allen	NC	B, H	Valid (Non-probative) (Excluded)		The victim and Dail were both nonsecretors. The analyst testified that "When I analyzed the semen that I found, I did not detect any ABO type. That would be what you would expect if you had two nonsecretors. However, it's also possible that there was not enough semen present and I did not pick up any ABO type." Hair comparison excluded the defendant.

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Danziger, Richard	TX	B, H	Invalid, Vague	(1) Masking	Victim is PGM 1+1+, Danziger is PGM 1+2+. A small quantity of semen and the type PGM 1+ was identified which was consistent with the victim and also with Danziger. When asked "Could any other type O secretor with a 1+ PGM partial subtype have been that donor?" the analyst answered, "Yes." However, because the 1+ detected could have solely originated from the victim, the donor could have been any type. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The analyst testified that questioned hairs were "consistent" with the defenant.
Davidson, Willie	VA	B, H	Invalid, Vague	(1) Masking	The victim was an O secretor and Davidson was a nonsecretor. The analyst was asked "Q. Assuming that on this tissue was fluid from the woman's body and she's a type O secretor, what percentage of the male population would be eliminated in determining the identity of the man who emitted the seminal fluid you found?" and answered, "A. About 42 percent of the population." (The analyst also had stated the figure was 58%, all except the 38% who are O secretors and the 20% who are non-secretors). No donor could in fact be eliminated where H substances found were entirely consistent with the victim. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The analyst testified that questioned hairs were "consistent" with the defenant.

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Davis, Dewey	WV	B	Invalid	(1), (2) Masking and Degradation used to Ignore Exclusion	The victim and Davis were both O secretors and were both PGM 2+1+. The stain analyzed exhibited A blood group substances, inconsistent with both the victim and Davis. The analyst testified: "The A could possibly be a false positive and be due to bacterial contamination because of the condition of the evidence when it was submitted, not so much the way it was submitted, but because of the condition the materials were in and the stains deposited on them." The analyst not only failed to exclude Davis, but then testified that putting to one side the A, the perp would have to be an O secretor, PGM 2+1+. "What I am saying is that it would be approximately 7 to 8 percent of the general population of West Virginia, and half of that would be approximately three and a half percent of the male population of West Virginia." However, that O PGM 2+1+ material could have come solely from the victim. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion this case.
Davis, Gerald	WV	B	Invalid	(1), (2) Masking and Degradation used to Ignore Exclusion	See above; though the victim and Davis were both O secretors and A substances were found, no exclusion was reported. The analyst testified: "There was an indication of an A blood type. When I have an indication of any blood types, they are reported out…. You can have different factors that can cause contamination in stains. One of the most prevalent factors that we encounter are bacterial contamination. Bacterial contamination can give you what is called false positives and give you blood types separate and aside from what you're truly identifying…" See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of this case.

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Daye, Frederick Renee	CA	B, P	Invalid	(1) Masking	Both the victim and Daye were Type O secretors. The analyst "found the presence of O secretions" on the victim's pant legs," and concluded that "[i]t is likely that it is not a mixture of semen and vaginal secretions. It is likely it's just semen." Finally, the analyst concluded that the stains "would be consistent with Mr. Daye's blood type." However, the blood group substances in those stains could have entirely originated with the victim, where the stains could have been a mixture, and thus no donor could be excluded. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. Analyst testified that latent print excluded defendant.
Dedge, Wilton	FL	H, Dog scent	Invalid	(5) Hair match	The analyst in comparing questioned hairs with those of Dedge testified that "it would not be a million white people" who would possess such hairs. The analyst also testified that "[o]ut of all the pubic hairs that I have examined in the laboratory, I have never found two samples, two known samples to match in their microscopic characteristics." See Part II.B.2 for a discussion of this case.
Deskovic, Jeffrey	NY	DNA	Valid (Exclusion)		DNA testing had excluded Deskovic.
Diaz, Luis	FL	B	Invalid	(1) Masking	The victim and Diaz were both A secretors and the vaginal washings had A and H blood group substances. The analyst testified that 10 percent of the population, B and AB secretors, could not have been the donor and that 90% of world's population could be donor. While this testimony was not very probative, it was not accurate. Where the substances could have entirely originated from the victim due to masking, 100%, not 90%, could have been the donor. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Dominguez, Alejandro	IL	B	Invalid	(1) Masking	The victim was a B secretor and Dominguez was an O secretor. Two stains had B and H antigens, consistent with the victim. The analyst testified that Dominquez could not be eliminated and that type O secretors are 36 percent of the population. Due to masking, none in the population could be eliminated. For another stain, the testimony was valid, where having detected only H antigens, the victim could be eliminated but Dominguez could not. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.

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Doswell, Thomas	PA	B	Valid (Non-probative)		The analyst accurately described that all substances observed were consistent with the victim.
Dotson, Gary	IL	B, H	Invalid, Vague	(1), (2) Masking, Failure to Exclude	The victim and Dotson were both B secretors. B blood group substances were identified on the victim's panties and the analyst testified that the donor was a B secretor. However, due to masking, those substances could have entirely originated with the victim and any male could have been the donor.

The analyst also did not exclude Dotson despite finding in another stain A antigens foreign both to the victim and Dotson, explaining "The A stain - - I can't say the A stain, I can't say that blood is A, I can't say that blood is B, all I can say is that material was blood, and a mixture of - - it could be perspiation [sic], could be other body fluids in combination of B and H activity" and that those A substances could have come from "lots of materials; dust, wood, leather, certain kinds of clothes, different cloth materials, detergents in materials…" See Part II.A.2 for a discussion of this case.

The analyst testified that questioned hairs were "consistent" with the defenant. |
| Durham, Timothy | OK | DNA, H | Invalid, Error | (4), (5) Hair frequency and unique characteristic testimony | The analyst testified that both Durham's and the questioned hairs possessed a supposedly rare characteristic in which the hairs would not curl. The analyst had not seen this "in Caucasoid hairs. Typically in Mongoloid hairs, their hairs are typically very round and extremely difficult to mounted," and adding "I haven't" ever seen that occur in Caucasoid hair. The analyst also assigned a percentage to the reddish hue observed in the hairs, stating "I have seen it in less than 5 percent of the hairs that I examined. These particular hairs were especially light. I have not found any pubic hairs as light as these before."

See Part II.B.1 for a discussion of the hair comparison aspect of the case and II.C. regarding error in the laboratory analysis concerning the DNA testing. |
| Echols, Douglas | GA | B | Valid (Non-probative) | | Spermatozoa detected but no further analysis conducted. |

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Elkins, Clarence	OH	DNA	Valid (Exclusion)		A defense witness testified that mitochondrial DNA excluded Elkins. No latent prints were compared; all were deemed insufficient for comparison.
Erby, Lonnie	MO	B	Invalid	(1) Masking	The victim and Erby were both O secretors. The analyst testified that "the victim had intercourse with someone who was either a type O secretor, in which case the H antigen came both from the victim and the suspect or the victim and the male or the person she had intercourse with was a non-secretor and everything came from her. We know that it could not have been a type A person or a type B person because neither of those antigens were present, therefore, she had intercourse with either an O secretor or a non-secretor." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Fain, Charles Irvin	ID	H, B, Shoe print	Invalid	(5), (6) Invalid individualization using shoe print, hair unique characteristic testimony	The analyst testified that the shoe wear pattern was unique to the defendant, stating "I found, therefore, that the shoe which made this impression, and this left shoe had sustained wear in the same area. To a - - a shoe print examiner, this would indicate that the individual who walked with these shoes has the same walking gait." Though explaining that hair examination is subjective, the analyst noted a bifurcated medulla, testified that this gave "the sample uniqueness" explaining "It's not often seen in hair samples. The bifurcated medulla, for instance, is not - - it's not a characteristics that is very common, so that's - - that's the reason why I remember this particular characteristic." See Part II.E. for a discussion of this case. Serology was described as inconclusive.
Fappiano, Scott	NY	B	Valid (Exclusion)		Fappiano was an O secretor and cigarettes and a white towel recovered from scene exhibited A and H blood group substances.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Fritz, Dennis	OK	B, H	Invalid	(1), (5) Masking; hair match testimony	Though lack of blood group substances found could have been due to degradation, or due to masking if the victim was a non-secretor, the analyst testified that only a non-secretor could have been the donor. "Q: Okay. If the victim was a non-secretor, and the donor was a non-secretor, and their body fluids were mixed on the swab, what would you expect to find? A: No antigen activity." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The analyst testified that a total of 11 pubic hairs and 2 head hairs were "consistent" with Fritz's hairs. "There's generally three main results can be considered, but there's actually five or more ways of reporting hair examinations. One is that hairs are consistent microscopically and could have the same source. This means that they match if you want it in one word." The analyst testified that there was an increased significance to finding that both pubic hairs and head hairs matched.
Fuller, Larry	TX	B	Invalid	(1), (2) Masking, failure to exclude	The victim was an O nonsecretor and Fuller an AB nonsecretor. The rape kit sample exhibited substances consistent with a Type O. "A. The individual who left the seminal fluid could have been a nonsecretor, which is consistent with Mr. Fuller, yes. Q. And that's twenty percent of the population? A. That's correct." The analyst never explained that Fuller was excluded, as was the victim, since neither secretes any blood group substances in their body fluids.
Gates, Donald Eugene	D.C.	B, H	No transcript		No transcript could be obtained.
Giles, James Curtis	TX	P	Valid (Exclusion)		There was only a defense analyst, who presented the evidence excluding the defendant.
Godschalk, Bruce	PA	B	Valid (stipulation)		The sides stipulated as to the forensic analysis.
Gonzalez, Hector	NY	B	Valid		While the direct examination provided incomplete information, the valid statistic regarding the included population was first provided during cross-examination.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Good, Donald Wayne	TX	B	Invalid	(1) Masking; failure to provide percentage	Good was an O secretor. A blanket exhibited H substances consistent with an O type while the swab tested exhibited blood groups A and H. As to the swab, the analyst stated, "you cannot put the percentage on that because it can easily be a mixture of the vaginal secretions plus the seminal fluid." However, as to the blanket, which could also be a mixture, the analyst included Good and stated that "one-third of the Caucasian male population" are O secretors. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Goodman, Bruce Dallas	UT	B, H	Valid (exclusion)		The analyst testified that A blood group substances were identified that were foreign to the victim and Goodman was an A secretor. Crime scene hairs were found to be dissimilar to both Goodman and the victim.
Gray, David	IL	B, H	Invalid	(2) Failure to exclude	The analyst did not perform secretor testing on the defendant, which would shed light on whether his blood group substances could have been observed in the sample. Although the questioned hair from crime scene had a central medulla, while defendant's hair did not, despite this difference the analyst found the results "inconclusive. I felt that there were enough--- that there was a balance between similarities and dissimilarities that, when you reach a point, you just have to give up on it..."
Gray, Paula	IL	B, H	Invalid	(2) Invalid use of serology	*See* Adams case above on the testimony concerning a supposedly unusual agglutination phenomenon. The analyst here testified: "Q. And could you please tell the ladies and gentlemen of these two juries what if any determination you were able to make as result of your test. A. That it contained Group A blood and also had distinct characteristic of showing up slight agglutination in the O well which would indicate person had H substance found in his blood." The analyst testified that questioned hairs were dissimilar to Gray's.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Green, Anthony	OH	B	Invalid	(1) Masking, (5) invalid non-numerical probability statement	The analyst testified that the hair characteristics "eliminated a large percentage of the population." As described in Part II.B, there is no statistical basis for hair comparison. The victim and Green were both B secretors and the stain tested exhibited B and H antigens. The analyst concluded that the donor was a secretor and the "ABO type of the donor of this seminal fluid was type B," and that B secretors are approximately 16% of population. "Q. So if we understand you correctly, sir, that 84 percent of the population, male population would be unable to deposit that seminal fluid on State's Exhibit 1? A. That is correct." However, those substances could entirely have originated from the victim and the donor could have been any type. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Green, Edward	D.C.	B	No Transcript		
Gregory, William	KY	H	Invalid, Not Disclosed	(4), (5) Invalid claim of unique characteristic and probability	The analyst testified that Gregory's hair and the questioned hairs shared a set of rare characteristics. The analyst testified: "A. I told you, there is no statistics on this. I can tell you this is the first time I have ever had a negroid origin hair that has not had a medulla in it. Q. What percentage of people have ovoid bodies in them? A. This is probably the first time I have ever seen an ovoid body in a human hair. I have seen them in cattle hair before." The analyst also testified that the ovoid bodies were "an unusual characteristic" and that the hairs "more than likely" belonged to defendant. The analyst also testified that five hairs found in the pantyhose mask came from an African American and matched Gregory's, but failed to disclose that at least one of the two additional hairs didn't match his. See Part II.B.2 and Part II.F.1 for discussion of this case.
Halsey, Byron	NJ	B	Valid (Non-probative)		On cross-examination, the analyst for the first time admitted that one cannot rule out any secretor or nonsecretor: "Q. That sort of takes in the whole population; doesn't it. A. That's exactly right."

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Halstead, Dennis	NY	H, P	Valid (excluded), Vague		The analyst testified that the hairs were "microscopically alike" and fingerprints excluded Halstead.
Harris, William	WV	B	Invalid	(1), (3) Masking; false probability	Victim and Harris both O secretors, PGM 1+. Swabs were type O, PGM 1+. But the analyst testified, "[All characteristics identified] were consistent with the blood characteristics identified from Mr. Harris' known blood. There were no inconsistencies identified. Q. She could not have deposited that seminal fluid; is that correct? A. That's correct." "And when you combine those percentages, it would be approximately 11.8 percent of a given population could have those three blood characteristics, the three blood characteristics being an O, a 1+, and a secretor." "Taking in conclusion, it would be approximately 5.9 percent or 5.9 percent of that given population being the combination if they were males." The testimony ignored masking and falsely divided the Invalid statistic in half. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases and Part II.A.3 describing such invalid division.
Harrison, Clarence	GA	H, B	Invalid	(1) Masking	The victim was an A secretor and Harrison was an O secretor. The swabs exhibited A and O antigens. The analyst testified: "The only group of the society that could be definitely eliminated would be type B secretors and type AB secretors." "That would eliminate approximately 22 percent -- I think that's right, about 22 percent of the population." "Considering that Mr. Harrison is a type O secretor, he would fall within that group of the population who could not be eliminated as a semen donor." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. Hair comparison excluded the defendant.
Hatchett, Nathaniel	MI	DNA, H, B	Valid (Exclusion), Vague		DNA testing excluded Hatchett. Serology testimony correctly explained the problem of masking. Analyst who conducted hair comparison stated that the hair at the crime scene was "consistent" with Hatchett's (though no comparison with the victim's hair was conducted).
Hayes, Travis	LA	DNA	Valid (Exclusion)		Testimony by defense witness that DNA testing excluded defendant.

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Heins, Chad	FL	DNA, H	Invalid	(3) Incorrect frequency provided	The analyst failed to provide the relevant statistic for population included by DQ Alpha type. See Part II.C. for discussion of this case. Hair comparison excluded the defendant.
Hernandez, Alejandro	IL	P, Boot print	Valid (Exclusion), Not Disclosed		The analyst testified that latent fingerprints excluded defendant and co-defendants. Boot print evidence that excluded a co-defendant, *see* Cruz, was not disclosed to the defense.
Hicks, Anthony	WI	H, P	Valid (Exclusion), Vague		Analyst who conducted hair comparison stated that the hair at the crime scene was "consistent" with the defendant. Analyst testified that the latent print excluded the defendant.
Holdren, Larry	WV	B	Valid (Non-probative)		Testing for seminal fluid inconclusive or negative.
Holland, Dana	IL	B	Brady, Error		There was no testimony by an analyst at trial, however, the analyst submitted a report claiming that the material was insufficient for DNA testing, which it was not even at the time,
Honaker, Edward	VA	H	Invalid	(5) Hair match	"One of the Caucasian head hairs found on the shorts was consistent with the head hairs reportedly from the defendant. That means the hair either originated from him or from another person of the exact same race who had the same color, the same physical visual characteristics and the same microscopic characteristics. It is unlikely that that hair would match anyone other than the defendant; but it is possible."
Hunt, Darryl	NC	B	Valid (Non-probative)		"In this particular case, what I obtained from the analysis of the vaginal swab was type O. That is the same blood type as Deborah Sykes. Therefore, I have no opinion as to what the type of the semen was and it in no way includes or excludes any individual."
Jackson, Willie	LA	Bite marks, B, H	Invalid, Vague	(6) Individualized bite testimony	Regarding the bite mark, the analyst testified, "My conclusion is that Mr. Jackson is the person who bit this lady." Analyst who conducted hair comparison stated that the hair at the crime scene was "similar" with the defendant.
Jean, Lesly	NC	B	Valid		Victim was an O secretor, but stains exhibited type B blood group substances, which were consistent with the defendant's type.

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Jimerson, Verneal	IL	B, H	Invalid, Error	(2) Invalid failure to exclude	The victim was Type O as was Jimerson. Yet though the stain had A and O antigens, the analyst did not exclude Jimerson: "Q. So when we say that the defendant could not be excluded, that is based simply on the proposition that he has O, and O grouping blood was found on the smear? A. O blood group substance was found, yes, on the swab. Q. And that would represent possibly 47 percent of the population, is that not correct? A. Approximately, yes." Regarding laboratory error, *see* Adams.
Johnson, Calvin Crawford	GA	B	Invalid	(1) Masking	The victim was an A secretor and Johnson an O secretor. Vaginal swabs had A and H blood group substances. The analyst told the jury that the donor group is 44% who are O secretors + 20% who are non-secretors + however many are A secretors (analyst never said), leaving out the B and AB secretors. Yet 100% could have been the donor where the substances found were consistent with the victim's. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Johnson, Larry	MO	B	Valid (Non-probative)		Testified only that he found spermatozoa.
Johnson, Richard	IL	B, P	Valid (Exclusion)		Analyst testified that latent fingerprints excluded the defendant.
Johnson, Rickey	LA	B	Valid		Only on cross-examination did the analyst testify what the included population was, 35-40 percent of the black male population.
Jones, David Allen	CA	B	No Transcript		
Jones, Ronald	IL	B	Invalid	(1) Masking	Jones was an O nonsecretor. Vaginal swabs exhibited A antigens and the victim was a Type A secretor. The analyst testified that the relevant percentage was the percent of nonsecretors added to the percent of A secretors. In fact, no donors could be excluded. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Karage, Entre Nax	TX	DNA	Valid (Exclusion)		Analyst described an "absolute exclusion."
Kogut, John	NY	H	Invalid	(4) Invalid statement of hair probability	"I'm saying that in this particular instance that the questioned hair could have originated from the scalp of Theresa Fusco, with a high degree of probability." No empirical data supports such a statement regarding probability.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Kordonowy, Paul D.	MT	H, B	Invalid	(2), (4) Invalid hair probability; failure to exclude based on unsupported selective degradation theory	The analyst testified that unknown hairs "match" Kordonowy's, that for each there is a 1 in 100 probability of a match. The analyst then multiplied that made-up number, claiming that hairs from different parts of the body are "independent events," and multiplied that figure to arrive at a 1 in 10,000 probability of a match. Kordonowy and the victim were both O secretors but A secretions found on swabs. Kordonowy should thus have been excluded. However, the analyst testified when asked "Q. Is there anything else that could be responsible for the presence of the A secretion?" that, "A. Yes, in this case there was a large amount of bacteria, which I noted, and it has been reported that a large amount of bacteria can give you an A Substance reading in your analysis because your ABO substances are sugars, and bacteria also produce sugars." No such phenomenon regarding selective degradation exists. See Part I.A.2 for a discussion of this case.
Kotler, Kerry	NY	B	No Transcript		
Krone, Ray	AZ	Bite mark, B, H	Invalid, Not Disclosed	(1), (6) Invalid individualization as to bite marks; masking	The analyst testified: "A. My opinion is that the teeth that are represented to me as being Ray Krone's teeth did cause the injury patterns that we call bite marks. Q. And how certain are you of your opinion? A. I'm certain. It's a very good match." Claims that bite mark comparison "has all the veracity, all of the strength that a fingerprint would have." The defense also never learned that FBI expert Skip Sperber had examined the bite marks before Rawson, and concluded, "It could not have been clearer. . . Ray Krone had two higher teeth than his incisors that would have marked when he bit. Those weren't there in the evidence." See Part II.D. for a discussion of this case.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Laughman, Barry	PA	B	Invalid	(2) Invalid failure to exclude, speculation re. selective degradation	The victim was an A secretor, while Laughman was a B secretor. Though no B blood group substances were detected, the analyst testified that "There is a possibility that a bacteria could have worked on these antigens or that they could have broken down that I could no longer detect that they were there." Also speculated that medication could interfere, or that antigen material is "secreted into the other body fluids but in a weak condition." "The witness had mentioned changes related to drugs but there's even a fourth one which is uncommon and that is that bacteria can actually convert one blood group substance to another. Given sufficient time for those bacteria to act, it would be possible to convert a group A substance to a B or a B substance to an A." See Part II.A.2 for a description of the problem of masking and non-quantification and discussion of similar cases.
Lavernia, Carlos	TX	H, B	Invalid	(1) Masking	Analyst testified that the victim was an O secretor, while Lavernia was an O non-secretor. The analyst testified "That the semen donor was either a blood group O Secretor or a non-secretor" and that "O secretor is found in 33 percent or the populationm so that's a third of the people, of males." See Part II.A.2 for a description of the problem of masking and non-quantification and discussion of similar cases.
Linscott, Steven	IL	H, B	Valid, Vague		Analyst found several hairs to be "consistent" and blood group markers detected were consistent with a mixture of the defendant and the victim's markers.
Lowery, Eddie	KN	B	Invalid	(1) Masking	While analyst properly testified that certain stains on bedsheets were consistent with the defendant, the analyst testified that the vaginal swabs, which were wholly consistent with the victim's blood type, nevertheless could be attributed to the semen donor.
Mathews, Ryan	LA	DNA	Valid (Exclusion)		Testimony by defense analyst only regarding DNA that excluded.

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Mayes, Larry	IN	B, P	Valid		Fingerprint exclusion. The serology analyst for the first time during cross-examination agreed that all non-secretors and O secretors could have been the donor. The analyst was never asked but never offered that anyone could have been the donor, raising the question whether the problem of masking and non-quantification was properly explained to the jury, or at minimum the correct conclusion that any male could have been the semen donor. While raising a close question, the testimony was nevertheless included as valid because of statement stating agreement with question, "[Y]ou cannot say with any specificity that that is his semen?" Analyst concluded that latent print excluded the defendant.
McCarty, Curtis	OK	B, H, P	Invalid, Not Disclosed	(1), (3), (5), Masking; false probability; hair match	The victim and McCarty were both A secretors. The analyst explicitly denied masking could occur, stating "My opinion is that the seminal [sic] fluid found in [victim's] pubic combings was not mixed with [victim's] own body samples." The analyst then testified that 26 percent of population is type A, then divided that in half stating half of that population is female. See SERI Report for discussion of this testimony, Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases and Part II.A.3. for discussion of false division cases.

The analyst concluded as to comparison of hair from the crime scene with McCarty's hair that "That he was in fact there."

This differed from earlier results that were concealed. Soon after the murder in 1983, the analyst compared hairs from the crime scene with McCarty's and found that they were not similar. Police interviewed McCarty several times over the next three years, but he was not arrested until 1985. At that time, analyst covertly changed her notes and reversed her findings, saying now that the crime scene hairs could have been McCarty's. Attorneys for McCarty did not discover the change in analyst's notes until 2000, when analyst was under investigation for fraud in other cases. See Part II.B.2 and II.F.1 for discussion of the hair comparison aspects of this case. |

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
McCray, Antron	NY	H	Valid, Vague		The analyst was clear that as to hair comparison, one can only find hairs "similar" to a "reasonable degree of scientific certainty" but one cannot "individualize" or give probabilities.
McGee, Arvin	OK	B, H	Valid		The victim was a nonsecretor and the analyst testified that the B substances detected were consistent with the defendants B type. Analyst testified that hairs compared excluded the defendant.
McMillan, Clark Jerome	TN	B, P	No Transcript		
McSherry, Leonard	CA	B	Invalid	(2) Failure to exclude	The analyst testified that although one of the stains had A activity which excluded the defendant, that the result was inconclusive, because "based on my experience," that result could be the result of "bacterial contamination" although no tests were conducted to examine that conjecture.
Miller, Neil	MA	B	Invalid, Not Disclosed	(1) Masking; failure to exclude	The victim and Miller were both O secretors. Yet the analyst testified that "The H blood group substance that I found had to be deposited by a Group O individual, a Group O secretor." Those substances could have originated entirely from the victim, and could have come from any type, not just an O secretor. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. Although B substances were also detected, which excluded the defendant, the analyst testified that "Well, neither one would have secreted the B blood group substance because they were both O. The H portion of that, the O portion, could have come from either a semen portion of the stain or vaginal secretions. We cannot distinguish from which fluid the actual O came from." The State also failed to disclose the presence of a B secretor in three other cases. The State also speculated that roommate could have had consensual sex with a B type without any evidence of that.
Miller, Robert	OK	B, H, fingernail comparison	Valid, Vague, Error		The analyst concluded that Miller's hairs were "similar" to questioned hairs and excluded a person later shown by DNA testing to have been the perpetrator. Hair analysis later conducted also disagreed with the analyst's conclusions.

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Mitchell, Marvin	MA	B	Invalid	(1) Masking	Stains exhibited blood groupings consistent with Type O, which was the victim's type. However, Mitchell was an A secretor. The analyst testified, "Mr. Mitchell could not be excluded. No secretor could be excluded from depositing that stain because the stain may have been too diluted or graded to pick up Mr. Mitchell's blood type. So I cannot exclude him, but I cannot say that I found the A blood group type." While it was correct that Mitchell was not excluded, the analyst never explained that no donor could be excluded; the analyst stated that only secretors can not be excluded. See Part II.A.1 for a description of this case.
Mitchell, Perry	SC	B	Invalid	(3) False probability	The victim was an A secretor and the defendant an O secretor, and the samples were consistent with an O secretor. After testifying that 35% population secretes O, the analyst explained that "You would probably have to also cut that by another 50% because we're dealing with males." When the defense pointed out that the 35% of both men an women are O secretors, and that as to the 35% that "[t]here's no difference between men and women in that regard," the analyst answered "In that regard but there is a difference in regard to semen." See Part II.A.3 for a description of this invalid division.
Moon, Brandon	TX	B, H	Invalid, Vague	(1) Degradation	The analyst claimed that there was enough semen observed to conclude that the donor was a non-secretor. The victim was an A secretor and Moon was an O nonsecretor. However, the finding of no blood group substances could have been due to degradation. Analyst who conducted hair comparison stated that the hair at the crime scene was "similar" with the defendant.
Mumphrey, Arthur	TX	B	No Transcript		
Ochoa, Christopher	TX	B	Guilty plea – no trial		*See* Danziger regarding invalid analysis in co-defendant's case.
Ochoa, James	CA	Dog scent, DNA, P	Guilty plea – no trial		
O'Donnell, James	NY	Bite mark	Valid, Vague		The odontologist found defendant's teeth "consistent" with the bite marks.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Ollins, Calvin	IL	B, H	Invalid, Error, Vague	(1), (2), (3) Masking; false probability, failure to exclude	The analyst never explained the finding in lab report of a PGM type foreign to victim. Instead, the analyst testified that 37% of the population shared Ollins' type, without explaining that Ollins was not a secretor and could not have been the donor. Further, the PGM allele 1+ that was attributed to Ollins could have originated from the victim. As Dr. Edward Blake concluded in his report evaluating the case, the analyst "failed to state that her findings eliminated Larry and Calvin Ollins, Sa[u]nders, and Bradford unless there was another semen source who was an ABO type O secretor." Dr. Edward Blake, Review of the Testimony of Pamela Fish, January 9, 2001. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The analyst testified that questioned hair was "similar" or "could have" originated from defendant.
Ollins, Larry	IL	B, H	Invalid, Error, Vague	(1), (2), (3) Masking, false probability, failure to exclude	See above – the same problematic testimony was at issue in this related trial. The analyst testified that questioned hair was "similar" or "could have" originated from defendant.
Pendleton, Marlon	IL	B	Error / Not Disclosed (stipulation)		The defense stipulated to the forensic analyst's conclusion that the evidence was insufficient for DNA testing, after the court denied motions to conduct an independent DNA test; later analysis found that sufficient material existed that DNA testing could have been readily conducted at the time of trial.
Peterson, Larry	NJ	H	Invalid, Error / Not Disclosed	(5) Hair match (Gross Error in testing)	"Q. So my understanding is what you are telling is is that every hair that was known as a questioned hair has been identified as either belonging to the victim or as belonging to Mr. Peterson? A. Yes." Thus, the analyst identified the hair as actually "belonging" to the defendant. See Part II.B.2 for a discussion of this case. Further, no serology evidence was compared to the defendant, where no spermatozoa was observed; later testing readily observed spermatozoa. See Part II.F.2.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Pierce, Jeffrey Todd	OK	B, H	Invalid, Error	(1) Masking, (5) invalid claim of unique or unusual characteristic	Pierce was an AB non-secretor and the victim was an O secretor. The analyst's testimony ignored masking: "A. I detected the ABO secretor blood group substance H. Q. Okay. Now that's consistent with the body fluids of Ms. Burton. A. Consistent with the blood type secretor status of Ms. Burton, yes. Q. Now did you have a sufficient quantity of semen stain to have made an analysis for the blood type of the semen donor? Q: Again, open to subjection, that semen donor's going to be a type O or he's going to be a non secretor." See SERI Report for discussion of this testimony, and Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The analyst also testified that hair exhibited a supposed unusual characteristic - "a banding effect. You have a blonde, but then right there you had a brunette individual or dirty dishwater blonde individual. So, led me to believe that this individual was wearing something around his head and that part of the hair was not exposed to the sun as the rest of the hair was." Pierce regularly wore a bandana.
Piszczek, Brian	OH	B	Valid (Non-probative)		Analyst admitted that any male could have been the donor.
Pope, David Shawn	TX	spectorgr. (voice comparison)	Invalid	(6)	"Q. The bottom line analysis on the known voice and the unknown voice in this situation were only made by one single person in the whole wide world? A. Exactly. Q. Just like fingerprints, it is unique? A. Exactly." See Part II.E. for a discussion of this case.
Powell, Anthony	MA	H	Valid, Vague, Error		Analyst concluded that one hair was "dissimilar" to victim and defendant, but revised conclusion that a second also excluded defendant, testifying that this conclusion was altered after examining additional exemplar hairs and found to be "similar" to the victim; analyst admitted that exemplars examined were not adequate. Later analysis found that not only where exemplars not adequate, but DNA testing could and should have been conducted on the questioned hairs.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Rainge, William	IL	B, H	Invalid, Error	(5) Invalid use of serology; hair match	See Adams, described supra. The analyst testified that hairs looked "[J]ust like if you dropped two dollar bills and you see two dollar bills on the floor. You see two one dollar bills. It's obvious. And that's how it looked there." See Part II.B.2 for a discussion of this case. Codefendant Adams' blood exhibited an "H reaction" similar to the A type blood found in samples from the victim. "I believe the population is less than two percent of the people that have that" type of clumping due to an "H reaction." *See* Adams concerning error in typing co-defendant's contribution.
Restivo, John	NY	H, P	Valid, Vague		The analyst testified that hairs were "microscopically alike." The latent fingerprints excluded.
Reynolds, Donald	IL	B	Invalid, Error	(1), (3) Masking; false probability	The victim was an A secretor and Reynolds an O secretor. "When I ran that swab I picked up both A and H activity which is indicative of a Type A individual and a Type O individual." "Donald Reynolds is included in the group that could have deposited the semen on that swab." The analyst agreed that more than 43% has that type. The analyst ignored masking, where the substances detected were entirely consistent with victim. *See* Dr. Edward Blake, Review of the Testimony of Pamela Fish, January 9, 2001. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Richardson, James	WV	B	Invalid	(1), (3) Masking; false probability	Ignored masking where substances were consistent with victim, and divided statistic in half claiming to eliminate females. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Richardson, Kevin	NY	H	Invalid	(5) Hair probability statement relying on experience	The analyst testified that based on experience examining hair standards, that the finding of a similarity has greater probative value. The analyst testified, "I've looked at thousands of hair standards over the course of my work and I haven't seen any that have the same range of physical characteristics yet. . . . But I have in fact looked at thousands of standards and haven't seen two that matched exactly." See discussion of the case at Part II.B.

Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Robinson, Anthony	TX	B	Invalid	(1) Masking	Both victim and defendant were A secretors; "the sub type found in the semen was the same as the sub type found in the blood of the victim and the suspect." However, analyst provided statistic that 40% are type A. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Rodriguez, George	TX	B, H	Invalid, Vague, Error, Not Disclosed	(1), Masking; failure to exclude; Concealment; incorrect testing	The victim and Rodriguez were both O nonsecretors. Another suspect was an O secretor. The stains exhibited A blood group substances. The analyst testified that Rodriguez could not be excluded, but the other suspect could, "because he is a secretor and the grouping would be O, one would predict his genetics would show up as a donor in a sexual assault or intercourse. None of those O secretions did show up by the testing by Ms. Kim." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. However, the A substances excluded Rodriguez. In addition, later analysis by independent lab found that other suspect was in fact an O nonsecretor, not a secretor. See http://www.innocenceproject.org/Content/246.php. The analyst found questioned hairs to be "consistent" with the defendant.
Rollins, LaFonso	IL	B	Valid, Not Disclosed		The analyst had excluded Rollins and requested DNA tests, but supervisors refused the request for DNA testing; the stipulation regarding his analysis disclosed only that spermatozoa had been detected. See Maurice Possley, *Lab Didn't Bother with DNA*, Chi. Trib., Aug. 25, 2006.
Roman, Miguel	CR	DNA	Valid (Exclusion)		Testimony by defense analyst only regarding DNA that excluded.

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Rose, Peter	CA	B, H	Invalid, Vague	(1) Masking	The victim was an O secretor, PGM 1+, while Rose was an A secretor, PGM 1+. The stain on the underwear exhibited PGM 1+, and the ABO typing was inconclusive. "Q. So based on your studies, you can't say it came from the victim, the suspect or a combination? A. That is correct. In other words, I cannot eliminate Peter Rose is the donor of the semen." However, the analyst gave the relevant statistic as "about 30 percent of the general population" that possesses PGM 1+, when the statistic was 100% where the 1+ could have come entirely from the victim. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases. The analyst found questioned hairs to be "similar" to those of the defendant.
Ruffin, Julius	VA	B	No Transcript		
Salaam, Yusef	NY	H	Valid, Vague		Hair was found "similar" to those of the victim.
Salazar, Ben	TX	B	Invalid	(3)	The analyst described B and PGM 2- substances detected that were both foreign to the victim, who was a non-secretor, and the victim's husband. However, A, B and O substances were observed. The statistic presented to the jury assumed that the semen donor exhibited just the B type consistent which the defendant possessed, and did not present the entire included population, which could possess A and B.
Santana, Raymond	NY	H	Valid, Vague		Hair was found "similar" to those of the victim.
Saunders, Omar	IL	B, H	Invalid, Error	(1), (2) Masking, Failure to exclude	See L. Ollins, above. H blood group substances detected eliminated Saunders, who was a non-secretor. However, the analyst included co-defendants ignoring the problem of masking and non-quantification. As Dr. Edward Blake concluded in his report evaluating the case, the analyst "failed to state that her findings eliminated Larry and Calvin Ollins, Sa[u]nders, and Bradford unless there was another semen source who was an ABO type O secretor." The analyst testified that questioned hair was "similar" or "could have" originated from defendant.

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Scott, Calvin Lee	OK	H	Invalid	(5) Hair match	"Q. Would he have given, or would there be any number type odds to the probability of the hair found on May Ann Fulsom's bottom sheet and the hair, unknown hair found in her pubic combings, both belonging to anyone other than the defendant Calvin Scott? A. His hair, I would say this: his studies were made on caucasian hair, I believe. In this case having two hairs identified, two hairs of different kind, I mean, head hair from one person would be quite large, I would say, I would not give a figure. It would be quite large." See Part II.B.2 for a discussion of this case.
Scott, Samuel	GA	B, P	Valid (Non-probative)		Latent fingerprint match was to a glass in Scott's house and thus not highly probative. Spermatozoa detected but no further analysis conducted.
Shepard, David	NJ	B	No Transcript		
Smith, Billy James	TX	B	Valid (Non-probative)		The analyst testified that "there was not a sufficient quantity of seminal fluid to determine genetic markers in this case."
Snyder, Walter	VA	B	No Transcript		
Stinson, Robert	WI	Bite mark	Invalid	(6)	The analyst testified that "there was no question that there was a match to a reasonable scientific certainty" that features in the bite marks were "unusual and remarkable," and "They would have to have been made by Robert Lee Stinson."
Sutherlin, David Brian	MN	B	Valid (Non-probative)		Victim an AB secretor, PGM 1+; Sutherlin a B secretor, PGM 2+1+. Swab was PGM 2+1+. "Q. So that test – you can't tell anything about the donor because she masks all of those blood groupings? A. That is correct." The analyst further testified that approximately 22% of the population has PGM 2+1+.
Sutton, Josiah	TX	B, DNA	Invalid, Not Disclosed	(2), (3) Invalid DNA testimony, failure to describe exculpatory test results	The analyst testified that "No other two persons will have same DNA except in the case of -- of identical twins" without mentioning any random match probability. Evidentiary samples were mixed and findings on one test in combination with the second test excluded Sutton as a contributor; see description of the case at Part II.C.
Taylor, Ronald Gene	TX	B	Valid (Non-probative), Error / Not Disclosed		No semen detected on bra or underwear. "I didn't have anything to link Ronald Taylor or anyone else." Later analysis detected sufficient spermatozoa that could have been analyzed, including by using DNA testing.

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Name of Exoneree	State	Type of Evidence	Valid, Invalid, Vague, Error, Not Disclosed, or No Transcript[1]	Type of Invalid Testimony[2]	Brief Quote / Description of Testimony
Thurman, Phillip Leon	VA	B	No Transcript		
Tillman, James	CT	B, P	Invalid	(1) Degradation	"Q. But didn't you say that it is possible that a stain or a portion of a stain might be from a secretor but might be a portion of the stain that did not include the antigens? A. No, that's not what I said. Q. So is that not possible? A. No, that's not possible." This testimony ignored that a finding of no antigens could be due to degradation. Indeed, later it was discovered that the DNA profile on the dress stain matched the DNA profile on the pantyhose, highlighting how the failure to see antigens on the pantyhose stain was nothing more than degradation or due to the quality or quantity of the stain on the pantyhose. See http://www.innocenceproject.org/Content/272.php. The analyst testified that a latent fingerprint excluded the defendant.
Turner, Keith	TX	B	Invalid	(1) Masking	The analyst excluded non-secretors and testified that 75-80% of the population could have contributed to the sample, when all results were consistent with the victim.
Vasquez, David	VA	H	Guilty plea – no trial, Vague		An analyst had concluded that the defendant's hairs were "consistent with" questioned hairs from the crime scene.
Velasquez, Eduardo (Angel Hernandez)	MA	B, H	Valid, Vague		Hairs were described as "within the range of the known submitted hairs from" the defendant and serology analyzed stain on defendants' own underwear.
Waller, James	TX	H	Invalid	(2) Testimony ruled out possibility of exclusion	While agreeing that the hair did not match, refused to exclude him, explaining that "if you wanted to say that this hair did not come from this individual, you would have to check it against every hair to be positive that it did not come from that individual" and agreeing that one would "practically have to denude a person to make a proper comparison." See Part II.B.2 describing this case.
Waller, Patrick	TX	B	Invalid	(1) Masking	The analyst testified that the results were consistent with the defendants' type, and 42% of the population could be a contributor, yet the defendant was a non-secretor.

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Wallis, Gregory Wayne	TX	H	Valid (Exclusion)		The questioned hair was "different in characteristics of Greg Wallis and therefore did not come from Greg Wallis."
Wardell, Billy	IL	B	Invalid, Error	(1), (3) Masking; false probability	See Reynolds, above. The victim was an A secretor; Wardell was a B secretor; and codefendant Reynolds an O secretor. "When I ran that swab I picked up both A and H activity which is indicative of a Type A individual and a Type O individual." "Donald Reynolds is included in the group that could have deposited the semen on that swab." The analyst agreed that more than 43% had that type, yet the findings were entirely consistent with the victim. See Dr. Edward Blake, Review of the Testimony of Pamela Fish, January 9, 2001. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Warney, Douglas	NY	B, F, P	Valid (Exclusion)		The analyst testified that "the blood deposited on the blue tissue could not have come from either the Defendant Mr. Warney or the victim Mr. Beason." As a blue towel, "The blood could not have been deposited by the victim nor the suspect."
Washington, Calvin	TX	Bite mark	Valid (Exclusion), Vague		The marks compared were found consistent, not with Calvin Washington, but with co-defendant Joe Sidney Williams. The odontologist testified that the marks were not from Calvin Washington. Indeed, Washington was missing most of his teeth, so the odontologist did not and could not plausibly have connected Washington with the case. Instead, Joe Sidney Williams charged with acting along with Washington was said to have teeth "consistent" with the marks, though the odontologist could not say with a "reasonable degree of dental certainty" that it was Williams' bite mark.
Washington, Earl	VA	B	No testimony at trial, Not Disclosed		A written report altered the blood type described in a first report never provided to the defense that excluded Washington. See Part II.F.1.
Waters, Kenneth	MA	B	Valid, Not Disclosed		In the grand jury, the police testified that there were no usable fingerprints from the murder scene. In fact, the prints were usable and other suspects were cleared on the basis of prints. The latent fingerprint analyst cleared Waters as well, but the exclusion was not shared with the prosecutor or the defense.
Waters, Leo	NC	B	Valid		Serological analysis detected substances foreign both to the victim and her husband.

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Watkins, Jerry	IN	B	Invalid	(2) Failure to exclude based on selective degradation	The victim was an A secretor and Watkins an O secretor. Swabs from the victim exhibited A and B substances. Rather than excluding the defendant, the analyst speculated that bacteria might explain the inconsistent finding: "You are dealing with a dead body in which you have decomposition and sometimes bacteria will acquire a B Blood Group substance activity which could possibly be causing it." See Part II.A.2. for a discussion of this case.
Webb, Mark	OK	B	No Transcript		
Webb, Thomas		H	No Transcript – but Vague		According to judicial opinion, analyst had testified that questioned hairs were "consistent with" those of the defendant.
Webb, Troy	VA	B	Invalid	(1) Masking; (2) Failure to exclude	Webb was a nonsecretor and the rape kit swabs exhibited an A type that could not have come from victim. Yet Webb was not excluded and was said to be included in the 20% of the population who are non-secretors. The analyst testified that "it's a possibility because I stated you have to have two or more seminal fluids present in that mixture. If that is indeed true, then, yes. There's one possibility a non-secretor can be present. Definitely an A secretor is present because we found A which is foreign to the victim." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Webster, Bernard	MD	B	Invalid	(1) Masking	The victim was type B (secretor status not determined), and Webster was type A. The stain exhibited A and B blood group substances, so the perpetrator could have been an A or AB secretor. However, the analyst testified that perpetrator "should have been a Type A." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
White, John	GA	H	Invalid	(5) Invalid	The analyst testified that the questioned hair and the defendants hair "shows sufficient similarity to say or conclude that the hairs were of the same origin."
White, Joseph	NE	B, H, P	Invalid	(1) Masking	Fingerprint and hair comparison excluded defendant. Analyst testified that serology was consistent with two co-defendants, without providing any statistics or explaining that those findings were also entirely consistent with the victim and none could be excluded.

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Whitley, Drew	PA	Shoe print, B, H	Invalid	(2) Evidence unsuitable for comparison	"Because they were so small, they had very little in characteristics. Except for the two that had no roots, all of them had no tips on them, so they had very limited characteristics, what characteristics were there. . . In examining these questioned hairs and the facial hairs of Drew Whitley, I concluded there were many, many overlapping characteristics and similarities." See Part II.B.2 for a discussion of this case.
Williams, Dennis	IL	B, H	Invalid, Error	(5) Hair match; incorrect testing	See Adams, supra and Part II.B.2. In addition, the analyst testified that Williams is an A secretor. Later analysis disclosed that Williams is actually an A nonsecretor. See Part II.F.2.
Williams, Willie	GA	B	Invalid	(1), (3) Masking, false probability	The victim was an O secretor, O blood group substances were found, and Williams was a non-secretor. The analyst claimed to exclude 44% and include O secretors and all non-secretors - but not A or B secretors. In fact none could be eliminated. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Williamson, Ronald	OK	B, H, P	Invalid	(1) Masking	The victim was type A (not tested for secretor status) and Williamson was an O nonsecretor. The analyst detected no antigen activity in the stains, but rather than attribute this to degradation, instead included Williamson, testifying: "Q: And that would indicate that the person could have been a nonsecretor, is that correct? A: That's a possibility." See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Willis, Calvin	LA	B, H	Valid (Exclusion)		"The hair that was collected from the bedspread was compared against the hair of Calvin Willis and of Cynthia Johnson. These were not able to be matched, or the hairs did not match hairs from Calvin Willis or pubic hairs from Calvin Willis."
Willis, John	IL	B	No transcript, Not Disclosed		No transcript was obtained, but according to news reports, the analyst failed to disclose that suffcient generic material was present to conduct DNA testing at the time of trial.

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Wise, Kharey	NY	H	Invalid	(5) Hair probability statement using experience	See Richardson, supra; see also discussion of the case at Part II.B.2.
Woodall, Glen	WV	B, H	Invalid	(3), (5) False serology probability; hair match	Woodall was a B secretor, GLO I Type 2-1 and both victims also were GLO I Type 2-1. Perpetrator could have had one of several GLO types, but the analyst claims that 6 out of 10,000 have the same blood groupings as Woodall, "based specifically just on male population of Cabell County." The analyst testified also as to a hair comparison, that "it would be very highly unlikely that due to no dissimilarities identifiable and distinguishable, that the hair could have originated from anyone else."
Woods, Anthony	MO	B	Invalid	(1) Masking	The victim was an A secretor and stains all exhibited A blood group substances. The analyst excluded AB and B people, which added up to 11% of black population. However, none could be excluded where the substances could entirely have originated with the victim. See Part II.A.1 for a description of the problem of masking and non-quantification and discussion of similar cases.
Wyniemko, Kenneth	MI	B, H	Valid (Exclusion)		A blood group substances were detected on sheets, "Which means that these could not have originated from Ken Wyniemko because he's blood type O." "We also looked at some hair samples that were checked off a sheet, and those hair samples were not similar to the known head hairs of Ken Wyniemko."
Yarris, Nicholas	PA	B	Valid		The analyst described that B substances foreign to the victim were observed and that Yarris was a B secretor. The victim's husband was also Type B.