# Improper use of Forensic Science in the First 200 Post-Conviction DNA Exonerations

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# Evidence Supporting Innocent Appellants' Convictions
## (Table 2 from "Judging Innocence")

| Type of Evidence | Percent convicted due to type of evidence (N) | |
|---|---|---|
| | (of all 200 cases) | (of the 133 cases with written decisions) |
| Eyewitness Identification | 79 (158) | 74 (104) |
| Forensic Evidence | 57 (113) | 59 (77) |
| Informant Testimony | 18 (35) | 23 (30) |
| Confession | 16 (31) | 15 (20) |

# Factual Challenges Brought by Innocent Appellants
## (Table 3 from "Judging Innocence")

| Type of Evidence | Percent of those in Table 2, Col. 2, who brought direct constitutional challenges to evidence (N) | Percent who had their claim granted (N) [a] | Percent who brought any claim to challenge evidence (N) | Percent who had any challenge to type of evidence granted (N) [a] |
|---|---|---|---|---|
| Eyewitness Identification | 31 (32) | 0 | 45 (47) | 4 (4) |
| Forensic Evidence | 0 (0) | 0 | 32 (25) | 8 (6) |
| Informant Testimony | 10 (3) | 3 (1) | 34 (12) | 3 (1) |
| Confession | 50 (10) | 0 | 65 (13) | 0 |

[a] These columns include only cases in which the court granted a vacatur of the conviction and where that reversal was affirmed on appeal.

# Types of Forensic Evidence that Supported the 200 Exonerees' Convictions

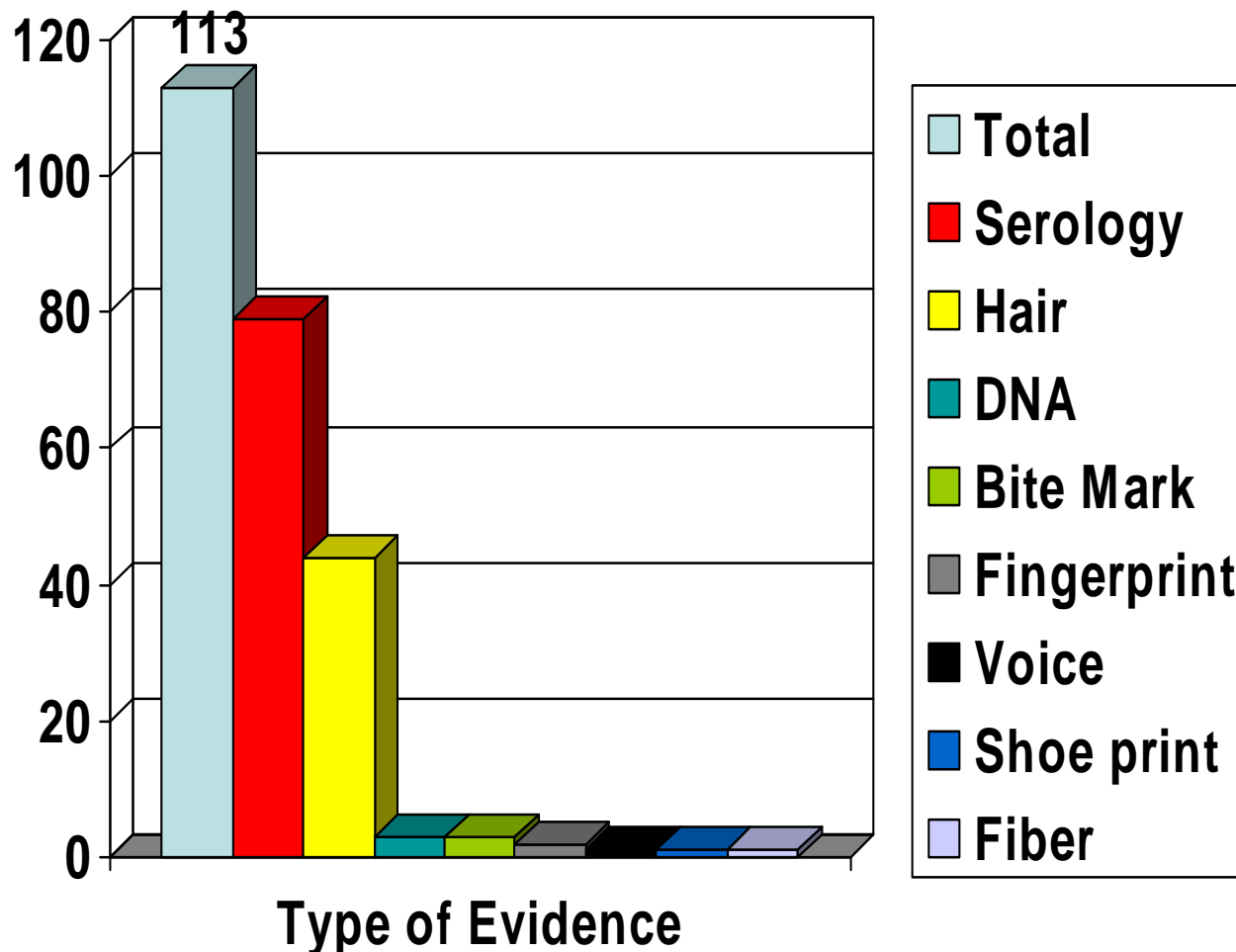**113 cases total**

**Serology – 79**

**Hair – 43**

**DNA - 3**

**Bite Mark - 3**

**Fingerprint - 2**

**Voice analysis - 1**

**Shoe prints - 1 case**

**Fiber - 1**

# Additional Data: 113 Forensic Evidence Cases

**25 appellants challenged that forensic evidence in their appeals – or 32% of 77 with written decisions**

**77 of the 113 had written decisions,** or 59% of all 133 innocence appellants with written decisions studied in "Judging Innocence"

**46 cases had only serology and eyewitness identification evidence**

**6 had claims related to forensic evidence granted during appeals:**

R. Krone – state law claim re. expert evidence on bite mark

S. Linscott – prosecutorial misconduct misrepresenting hair

R. Williamson – hair evidence

W. Rainge, D. Williams - Ineffectiveness of counsel including
    failure to move to suppress physical evidence such
        as hair evidence

W. Dedge – state law claim re. dog scent i.d.

**These exoneration cases were tried in 28 jurisdictions.**

# 43 Hair Comparison Cases by Jurisdiction

**Florida (2):** A. Crotzer, W. Dedge
**Idaho (1):** C. Fain
**Indiana (1):** R. Alexander
**Illinois (5):** K. Adams
               G. Dotson
               P. Gray
               S. Linscott
               W. Rainge
**Kentucky (1):** W. Gregory
**Louisiana (1):** C. Charles
**Massachusetts (1):** A. Hernandez
**Missouri (1):** J. Briscoe
**Montana (3):** C. Bauer
               J.R. Bromgard
               P.D. Kordonowy
**New Jersey (1):** L. Peterson
**New York (8):** D. Halstead, J. Kogut
               A. McCray
               J. Restivo
               K. Richardson
               Y. Salaam
               R. Santana
               K. Wise

**Ohio (1):** D. Booker

**Oklahoma (7):** T. Durham
               D. Fritz
               R. Miller
               J. Pierce
               C. Scott
               T. Webb
               R. Williamson
**Pennsylvania (2):** D. Brison
               D. Whitley
**Texas (2):** R. Danziger
               G. Rodriguez
**Virginia (2):** E. Honaker
               D. Vasquez
**West Virginia (2):** L. Holdren
               G. Woodall
**Wisconsin (2):** S. Avery
               A. Hicks

# 18 Jurisdictions Total

# 79 Serology Cases by Jurisdiction

California (4)

Connecticut (1)

Dist. of Columbia (1)

Florida (1)

Georgia (3)

Illinois (11)

Louisiana (4)

Maryland (1)

Massachusetts (4)

Michigan (1)

Minnesota (1)

Missouri (2)

Montana (2)

New Jersey (1)

New York (6)

North Carolina (2)

Ohio (2)

Oklahoma (4)

Pennsylvania (3)

Texas (13)

Tennessee (1)

Utah (1)

Virginia (5)

West Virginia (5)

**24 Jurisdictions Total**

# Review of Trial Transcripts In Post-conviction DNA Exoneration Cases Involving Forensic Science

- Trial transcripts were located for **61 cases** (54% of the 113 cases involving forensic science).

- **35 cases** involved trial expert testimony contrary to accepted science ("Improper Science Testimony Cases")

  **= 57%** of the 61 cases in which transcripts were located involved improper science testimony.

- *Known* misconduct *not* during trial testimony in **7** more cases: **3** cases involved altering / concealment of forensic testing that excluded; **1** involved concealment of the existence of forensic evidence, **3** involved improper extension of expert testimony during closings.

  – **42 cases total = 69%** of 61 cases with transcripts.

# Improper Science Testimony Cases

- **22 had improper <u>serology</u> testimony**
  - Of those, **14** involved "masking" problems
  - 2 involved claims regarding degraded evidence
  - 41 cases with transcripts involved serology evidence; 22 / 41 = **54% with improper testimony**
- **21 had improper <u>hair comparison</u> testimony**
  - 20 involved claims regarding a "match"
  - 33 cases with transcripts involved hair comparison; 21 / 33 = **64% with improper testimony**

# 35 Cases Involving Improper Science by Laboratory (N) and Examiner (N)

**Boston Police Department crime laboratory**
> David Brody

**California Department of Justice**
> James Hall, Riverside Crime Lab.

**City of Tulsa Police Department**
> Carol English Cox

**City of Houston Police Crime Lab (2)**
> James Bolding (2)

**Cleveland Police Department Forensic Lab.**
> Joseph Serowick

**Florida Department of Law Enforcement (2)**
> Ruth Wilbarger, Tampa
> David Jernigan, Sanford Regional

**Illinois Department of Law Enforcement (4)**
> Michael Podlecki (4)

**Los Angeles County Sheriff's Crime Lab**
> Richard Williams Catalani

**Louisiana State Police Crime Lab (2)**
> Jerry Miller
> Shirley Philips

**Montana Laboratory of Criminalistics (3)**
> Julie Long
> Arnold Melnikoff (3)

**Nassau County P. D., Scientific Inv. Bureau (3)**
> Charles A. Fraas (3)

**Northern Illinois Crime Laboratory**
> William Wilson

**North Louisiana Crime Lab**
> Pat Wojtkiewicz

**Oklahoma State Bureau of Investigation (4)**
> Melvin R. Hett, Criminalist supervisor (2)
> Mary Long
> Claud Berry

**Oklahoma City Police Department (2)**
> Joyce Gilchrist (2)

**St. Louis Metropolitan Police Department**
> Joseph Crow

**Texas Department of Public Safety (2)**
> Joe Ronald Urbanovsky
> Glen Adams

**Virginia Bureau of Forensic Science (2)**
> Elmer Gist, Jr.
> David Allen Pomposini

**West Virginia Crime Lab**
> Frederick Zain

## 19 Laboratories / 26 examiners

# Examples of Improper "Match" Testimony in Hair Comparison Cases

# Improper hair "match" testimony

**K. Adams, W. Rainge, Dennis Williams: Michael Podlecki, Illinois Department of Law Enforcement, Crime Lab.  TT 2188**

Testifying, while displaying side-by-side photo-micrograph comparisons, regarding two hairs in trunk of Dennis Williams' car:

"I couldn't distinguish if was I looking almost at two hairs. They looked just like one." TTT 2224

"What I saw was hair like this where I could see all the pieces like a puzzle.  Like in the previous hair.  A line would just fit in.  In other words it wasn't a type of situation of sitting down and looking for it.  Just like if you dropped two dollar bills and you see two dollar bills on the floor. You see two one dollar bills.  Its obvious. And thats how it looked there." TT 2226

# Improper hair "match" testimony cont'd

**<u>Calvin Scott</u>: Claud Berry, Oklahoma State Bureau of Investigation**

Q.  Do you know whether or not, Mr. Berry, there have ever been any studies done as to the probabilities of finding another person with hair like ours or –

A.  Well there is one gentleman out of Canada his name is B.D. Goday, he made a study. **He's the only one that has made study thats been published and he has found that head hair, one person in forty-five hundred would have chance of -- in other words identification of one hair to – I mean, one person in forty-five hundred may have features of hair comparison in head hair.** Now one in eight hundred in pubic hairs. That's his results.  That's the only one I have been able to find who has ever come up with any results with figures. Others have made statements in theory, but they haven't made any practice or made any study."

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 figure. It would be quite large**. TT 47-48

# Improper hair "match" testimony cont'd

**Timothy Durham**: **Carol English Cox**, **City of Tulsa Police Department**

A. This one was fairly hard to mount, because instead of just being oval, it had a slight roundish character to it. So it tended to straighten out a little bit more and this was found in the known hairs.

Q. Let me ask you this: When you say that the hairs tended to straighten out, is that a common occurrence in your business?

A. Not in Caucasoid hairs. Typically in Mongoloid hairs, their hairs are typically very round and extremely difficult to mounted. But hairs do very in their special configuration and this particular – these particular hairs were oval to round and that's what caused this problem with the being hard to mount.

Q. Was it the same for the known head hairs of Timothy Durham and the questioned hair?

A. Yes, I found it in both.

Q. When you say they were particularly hard to mount, because normally hairs curl up and these straightened out, have you ever had that occurrence occur before in known Caucasoid hair?

A. No, I haven't.

Q. Never?

A. Not yet. TT 384-85

# Improper hair "match" testimony cont'd

**Jimmy Ray Bromgard**:  **Arnold Melnikoff, Montana Criminalistics Laboratory**

"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" TT 236

"A. Well the best way that I know to answer that question is to relate to my own case work experience and I have done over 700 cases involving head hair and have only had five or six cases where I could not distinguish the head hair between two individuals." TT 237

"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 hundred for the head hair matching a particular individual and one chance in hundred for the pubic hair.  If you find both it's a multiplying effect, it would be one chance in 10,000 its the same as two dice if you throw one dice with one, one chance out of six; if you throw another dice with 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."  TT 237

# Affidavit of Harold A. Deadman, 9/14/2007, <u>Bromgard v. State of Montana et. al.</u>

- I am currently a forensic examiner in the Forensic Biology Section of the Washington D.C. Metropolitan Police Department Crime Laboratory.

- The students attending the FBI hair comparison course that I taught were advised to return to their home laboratory and request that they be provided the necessary time, equipment and appropriate testing in their home laboratories so as to develop self confidence and demonstrate skill in obtaining correct associations in comparing hairs.

- In practice, I have not testified about hair associations using probability statements containing actual numbers in any direct testimony about hair evidence at any of my trials. In addition, I was not taught at the FBI to use probability statements with actual numbers at any time In hair testimony.

# Improper Closing: *People v. Linscott,* 159 Ill.App.3d 71, 78 (Ill.App. 1 Dist.,1987)

The strongest hair testimony that Tahir gave to support the State's case against defendant is that defendant's hair samples were "consistent" with the hairs to which he had compared them, and that therefore he could not exclude the possibility that the hairs that were found were from the defendant. . . .

Tahir did not testify that the hairs matched or that they were identical. Moreover, any reasonable reading of Tahir's testimony establishes that Tahir did not intend his testimony to mean that the hairs were consistent in the sense that they matched or were identical. Specifically, when the prosecutor attempted to get Tahir to state that the hairs that were found and defendant's hairs matched, **Tahir very carefully avoided testifying that they matched**:

> **Q. So again all we are talking about is that they match in every respect, is that correct?**
> **A. They were consistent.**

**Yet, the prosecutor told the jury in his rebuttal closing argument:**

> **The like hairs, more than one, more than two, more than three and you heard the probabilities from his own expert. Pubic hair in the woman's crotch matching Mr. Linscott.**

# Examples of Improper Serology Testimony

# Improper "masking" testimony cont'd

**Herman Atkins:** **James Hall, Riverside Crime Laboratory, California**
    **Department of Justice**

Victim:    type A secretor, PGM 2+1+; Herman: type A secretor, PGM 2+1+

Vaginal swab test results: type A secretor, PGM 2+1+

Q: Based on the information that you received, what kind of conclusions could you
    tell me about the swab and the blood type of the two persons?

A: Well, the blood type of the swab was the same blood type of the two individuals.
    That tells me that possibly the semen could be of that blood type combination or
    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.

Q. Do your results exclude the person that you identified as Herman Atkins's blood?

A. No, they don't.

B. Q. Are there certain percentages of the population that have this ABO typing
    and PGM that you discovered?

Serologist Hall steps down from the stand and makes a chart in front of the jury. He
    writes the number 4.4% next to the word black.

Q: It would be 4.4% of the black population.?
A: That's right. TT 231-36

1.  The Correct Scientific Principle:

    The only frequency statistic that is ever considered by a forensic scientist investigating a sexual assault is the combined frequency of all possible genotypes potentially possessed by the semen source. In the usual case of commingled samples (a vaginal swab with the victim's secretions mixed with semen from the rapist), there are usually multiple possible ABO and PGM types for the semen source.   in those cases where all of the traits detected in the sample could originate from the female body fluids and there is no assessment of the semen dilution, the potential types for the semen source encompass the entire population and no one can be eliminated as a potential semen source.

2. In the Atkins case:

The serologist found nothing foreign to the victim and he made no assessment of the quantity of semen in the mixed body fluid sample. Rather than testifying that no conclusion could be drawn about the genetic profile of the semen donor, Hall presented a statistic - 4.4% of the black population having type A secretor, PGM 2+1+ - thus deceiving the jury into thinking that more than 95% of the population was excluded and that Mr. Atkins was included as a potential semen donor.

# Improper "masking" testimony cont'd

**Kevin James Byrd: James Bolding, City of Houston Police Department Crime Laboratory.**

TT 163 – examination of vaginal swab from rape kit, no antigens detected.

TT 169 - The victim was Type B non-secretor, Byrd a Type A non-secretor

A.  My conclusion would he that the individuals present or the samples present contained nonsecretor status that is we could not determine whether or not they had type A, B, or O blood factor.

Q. Does that mean the victim in the case would have been a nonsecretor?

A.  That would be the conclusion we would draw.

Q.  What would the conclusion you would draw be regarding the suspect  of the attacker in this case?

A.  That would also mean that the semen donor would also be a non-secretor. TT 164-65

TT 165 –  Bolding testifies that 15-20% of the population are non-secretors and that the defendant was a non-secretor.

# Improper "masking" testimony cont'd

**Dennis Brown: Jerry Miller, Louisiana State Crime Lab**

**TT 39- 40 – Miller testifies that Brown was a Type O secretor, the seminal stains were also Type O, and the victim was a Type O secretor.**

**"And I detected the presence of 'H' antigen 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." TT 40**

**TT 52 – Miller agrees that a total of 52.5 % of the population has those types.**

# Improper "masking" testimony cont'd

**<u>Neil Miller</u>: David Brody, Boston Police Department**
TT 197-8 – Both the defendant and the victim were Group O secretors, vaginal swab test results were Group O.  Brody testifies:

Q.  So what would be the significance of that finding in light of the fact that both the defendant and the victim are Group O secretors?

A.  It does not eliminate the donor of the semen.  That would have to have been in a Group O individual in order to eliminate the victim's vaginal secretions. Again all this shows that H or the O blood type was present in that stain which could be all semen or a combination of semen and vaginal secretions.

A.  The H blood group substance that I found had to be deposited by a Group O individual, a Group O secretor.

Q. Can you give us an idea of the percentages in the population of the different blood types, taking first Group O.

A. Approximately forty-five percent of the population are Group O individuals.

## Brody's testimony in the Marvin Mitchell Trial:

Victim Type O secretor, M. Mitchell an A secretor, vaginal swab was just ABO blood group H (O).

A: 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 [sic] to pick up Mr. Mitchell's blood type [emphasis added]**. So I cannot exclude him, but I cannot say that I found the A blood group type. In other words, again no secretor can be totally excluded from the stain.  TT 20

# Improper serology testimony cont'd

**Paul Kordonowy** – Julie Long, Montana State Forensic Laboratory

The Victim and Kordonowy were both Type O secretors; testing of underpants revealed Type A.  TT 369.

Explaining the presence of A antigens:

"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."  TT 361

# Report of Dr. Edward Blake, <u>Montana v. Paul Kordonowy</u>, March 13, 2003

- "[T]here is no evidence whatsoever that bacteria produce water soluble ABO antigens of any sort much less ABO antigens of type 'A'.  If this assertion were true, the ABO typing of sexual assault evidence would be inherently unreliable because no scientist could ever know whether or not the ABO antigens detected in vaginal or oral samples were from ubiquitous bacteria or the human being from whom the sample was collected or some other human being contributing a body fluid to the sample.  Like the claim that bacteria preferentially destroy spermatozoa, the claim that bacteria preferentially secrete ABO 'A' antigens is without scientific basis; and, if true, would  undermine the entire scientific foundation for the ABO typing of body fluid evidence." p.3-4