F11   When DNA Alone Is Not Enough: Exoneration by Computer Interpretation

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After attending this presentation, attendees will understand why merely testing DNA is not enough for criminal justice. Even with DNA data, accurate and informative interpretation of that data is needed for accurate identification information.

This presentation will impact the forensic science and legal communities by providing a case example of how sophisticated interpretation of DNA data was needed to exonerate an innocence man, long after the DNA had been tested.

On a freezing December night in 1989, five men savagely gang-raped a motorist after bumping her car on Indiana highway I-65. Darryl Pinkins and two other innocent men were misidentified as her attackers through clothing stolen from their car and left in the victim's car. Pinkins was convicted of rape and criminal deviate conduct in 1991 and sentenced to 65 years in prison. Despite his incarceration, the bump-and-rape crimes continued.

In 1995, Darryl Pinkins sought the assistance of the Innocence Project, then a law clinic at Cardozo Law School in New York. In turn, in 1999, the Innocence Project contacted Frances Watson, clinical professor at the Wrongful Conviction Clinic, IU McKinney School of Law. Professor Watson and her students represented Darryl Pinkins and codefendant Roosevelt Glenn through decades of unsuccessful state post-conviction and federal *habeas corpus* proceedings.

In these proceedings, it was shown that the State used false science to convict the men. There was faulty hair comparison testimony and meaningless blood typing inclusion evidence, yet the courts considered this flawed evidence harmless.

A 2001 DNA analysis of semen on the victim's jacket and sweater showed mixtures of two or more people. Each mixture had a clear 80%–90% major contributor that did not match the accused. But this limited DNA analysis was not enough to exonerate.

In 2007, Greg Hampikian of the Idaho Innocence Project began working with Watson. They demonstrated that the blood typing evidence was incorrectly presented during trial and not relevant in light of DNA exclusions, including new post-conviction DNA evidence. But the court ruled that the two unidentified major DNA genotypes in the semen, plus the three accused, equaled the five perpetrators — so post-conviction relief was denied.

In 2014, Dr. Hampikian recruited Dr. Mark Perlin of Cybergenetics for *pro bono* assistance. The TrueAllele® computer system provided the statistical science needed to establish innocence beyond doubt. More complete analysis of existing DNA data revealed the genotypes of all five perpetrators. This new finding persuaded the State that the wrong man had been convicted.

Genotyping modeling compared evidence with evidence to calculate exclusionary match statistics. The computer discovered new genotypes from 5%–10% minor contributors by jointly analyzing DNA mixture data. Kinship analysis revealed that three of the perpetrators were brothers. These capabilities found the victim and five unidentified genotypes in the semen and hair evidence. The defendants were not linked to the crime.

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Acceding to exculpatory DNA evidence found by science, Lake County Prosecutor Bernard Carter vacated Pinkins' conviction. Instead of holding a hearing on newly analyzed DNA evidence, that morning the court released him from prison. Pinkins had spent 24 years in an Indiana prison for a crime he did not commit. Computer reanalysis of old DNA data proved that Pinkins and Glenn were innocent.

The DNA evidence was available 15 years ago, but limited interpretation methods could not extract its exculpatory information. The interpretation failure in Pinkins' case was ultimately rectified by accurate and objective data analysis. Absent such advanced computer modeling, in thousands of cases, DNA evidence is routinely misinterpreted or wrongly considered to be inconclusive.

Failed DNA interpretation cost Darryl Pinkins 15 extra years in prison. Other innocent people may be wrongfully imprisoned by inadequate DNA interpretation. Accurate and automated computer interpretation can revisit cases with "inconclusive" DNA, examining old forensic data for new exculpatory evidence.

This presentation is a case study in which better interpretation of DNA evidence exonerated an innocent man.

DNA Evidence, Mixture Interpretation, Actual Innocence

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