

## PROVING A DNA NEGATIVE: THE MAN WHO WASN'T THERE

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In October, 2008, Tamir Thomas was fatally shot outside the McKeesport Elks Club in southwestern Pennsylvania. The gunman fled, discarding his weapon and dropping his Boston Red Sox baseball cap before evading the police. Two years later, DNA from the cap matched Leland Davis, who was already in jail on a probation violation.

With no witnesses coming forward, the prosecutor wanted two independent items of DNA evidence. The cap gave a strong match (RMP of 5.7 quadrillion) to the defendant, but the gun's CPI statistic was only 420. Both items were three person mixtures. TrueAllele® computer interpretation of the gun mixture yielded a genotype having a stronger match to Mr. Davis (LR of 18.6 billion) that supported inclusion.

As the trial approached, the public defender requested a comparison between the DNA items and another man. TrueAllele found that a match between the inferred evidence genotypes and this man was a million times *less* probable than coincidence – a LR exclusion.

The prosecutor wondered whether the defender would argue that the true killer was someone else (other than defendant Leland Davis) who had also contributed their DNA to both the hat and the gun. Since this hypothetical killer could not be found or tested for DNA, perhaps that theoretical possibility might raise reasonable doubt about Mr. Davis' guilt. How could the DNA evidence prove a negative, and eliminate the man who wasn't there?

TrueAllele had produced three contributor genotypes from the hat, and three genotypes from the gun. We compared these hat and gun genotypes against each other in TrueAllele to form nine evidence-to-evidence LR match statistics. The genotypes from each evidence item that had previously matched Mr. Davis now matched each other (LR of a billion). But the other two genotypes from the hat did not match either of the other two gun genotypes (all the LRs were less than one). Thus there was no indication that any person, other than Leland Davis, had contributed their DNA to both items of evidence.

The positive DNA match results to the defendant were presented at trial during direct examination, followed by the negative match findings for the man who wasn't there. Because TrueAllele infers separated genotypes (allele pairs with probability) and not aggregated alleles, the results were easily presented to the jury. Since TrueAllele enjoys statewide precedent in Pennsylvania, admissibility was not at issue. Leland Davis was convicted of third degree murder and weapons charges in the slaying of Tamir Thomas.