

DNA EVIDENCE

Part 2: DNA in the Courtroom

How do Defense Attorneys Successfully Challenge DNA Evidence?

DNA evidence has taken on mythic proportions in the courtroom, the media, and the public eye. There is a widespread belief that DNA evidence can be used to make or break a case. As Kim Kruglick notes in her "Beginner's Primer on the Investigation of Forensic Evidence:

Crime lab reports seem to have this aura of invincibility about them that lead few trial lawyers to confront their conclusions head on in front of a jury. Maybe it's because some part of us believes that the reported results are based upon "science"...Or maybe it's because we tremble at how excruciating high school chemistry was...Or maybe, jut maybe, it's because we simply don't realize how extremely vulnerable to challenge the crime lab work product really is."

In fact, the presence (or lack thereof) of DNA evidence does not definitively establish guilt or innocence. While DNA evidence can be very daunting, it is not infallible. Mistakes can and do occur in the testing, analysis and presentation of DNA evidence. Often, it is up to the defense attorney to discover these mistakes and bring them to light. This fact sheet offers suggestions for defenders faced with DNA cases and offers suggestions for building a strong DNA defense.

Collection from the Crime Scene and Transport to the Laboratory

Thoroughly examine the chain of command used in handling the forensic evidence. The more hands it has been through, the more likely it is that it has been contaminated. This is especially serious when labs use PCR based methods - by amplifying a sample, a miniscule amount of contamination can easily become a huge problem. In examining the chain of evidence, points to consider include:

- How was the evidence first discovered?
- Who collected, packaged, labeled, transported and stored the evidence? How was it done?
- Who removed the evidence from storage and transported it to the lab for testing?
- Once at the lab, who handled the documentation of the evidence before testing?

- Before tests were performed, did the lab unpack, inspect, describe, photograph, weigh and sketch the evidence?
- Were all of the above steps taken according to proper procedure with adequate precaution? Steps that a law enforcement officer must take to ensure that DNA evidence is not contaminated include:
 - Wearing gloves and changing them frequently
 - Using disposable instruments or cleaning them thoroughly between uses
 - Avoiding contact with the area where DNA may exist
 - Avoiding talking, sneezing and coughing over evidence
 - Avoiding touching face, nose and mouth
 - Air-dry evidence thoroughly before packaging
 - Putting evidence into new paper bags or envelopes, not plastic bags. Officers should not use staples.
 - Avoiding storage in direct sunlight or hot environments.

DNA Testing

DNA testing is a delicate and complex process. There is an infinite number of points at which testing can go wrong, and labs have not always been known to maintain the highest integrity. Often, though, labs and technicians will construe their final reports to make their conclusions seem cut and dry. For this reason, it is imperative that attorneys preparing a defense in a DNA case look at as many records surrounding the testing as possible - don't just look at the final report.

- Before doing any investigation into the quality of the lab, find an expert to guide your search. He/she can help you determine what documents to look for, what questions to ask, and can review the technical material that you collect.
- What lab performed the tests? Was the lab certified? If so, by whom? Several organizations, including the

American Association of Crime Laboratory Directors/Laboratory Accreditation Board, the National Forensic Science Technology Center and the College of American Pathologists have standards and offer accreditation. To gain accreditation, labs must produce quality control manuals, quality assurance manuals, a lab testing protocol, and a program for proficiency testing. Also, most labs have implemented internal quality control procedures, including validation studies (tests that confirm a lab's ability to perform a specific procedure). Find out the qualifications of the lab used, obtain copies of all manuals, certification records (and make sure they are up to date) and controls, and compare to other labs in the field.

- Who performed the lab tests? What are his/her credentials? Are they comparable to the standards of other lab technicians in the area? Has the technician undergone proficiency testing – tests which assess a technician's accuracy and abilities? Be sure to get results of the proficiency testing and ask your expert to review them carefully. Many lab technicians belong to organizations such as the American Academy of Forensic Scientists. Find out what the requirements are for membership in these organizations; they may not be as impressive as they sound.
- Lab technicians, especially in government-run labs, have been known to lean toward the prosecution in interpreting results, often because they know the prosecution's theory in a case. Find out if the testing was done in a blind or objective manner. How often have they testified for the prosecution in their case? Does the lab have a record of its conversations with the police (they usually do). Obtain copies of prior testimony given by the experts.
- Has the lab used the appropriate method given the sample? Had the scientific community accepted the method used? Has the method undergone judicial review?
- Has the sample been degraded by exposure to sunlight, moisture, chemicals or other elements?
- If the lab is using a PCR-based method, was the sample extremely pure, or did it come into contact with other sources of human DNA?
- If the lab is using RFLP testing, was the sample large enough in order to obtain accurate results?

- Did the lab perform the test according to proper scientific procedure? Tests can include six or seven distinct procedures, all of which can be done improperly.
- Was the test properly documented? If the lab technician performing the process follows proper procedure, he/she should carefully document everything that happens to a piece of evidence (called benchnotes). Be sure to obtain copies of all documentation and ask your expert to review them carefully.
- Was the evidence properly packaged and labeled after the completion of the test?
- What happened to the evidence after testing? Generally, it transfers hands several more times, going back to the police for storage, to court for examination, and possibly to another lab for testing.
- If the forensic lab has used a PCR-based method of testing, find out which testing method was used. Make sure that the testing method is widely accepted and has undergone judicial review.
- Interview the lab technicians who performed the DNA testing. Find out if all procedures were followed properly and if there was any ambiguity in interpreting the results.
- Find out if the technician knew the prosecution's theory of the case beforehand and whether the results were interpreted through blind scoring.
- Was the defendant in any way related to the victim or to another possible suspect? If so, chances are that they share many DNA traits in common. This is especially important in the case of identical twins, who share identical DNA. It is also important in cases where mtDNA testing has been used because mitochondrial DNA is exactly the same in all people that are maternally related.

Statistical Evaluation

Statistical Evaluation can also be subject to challenge and should be investigated thoroughly for errors.

- Identify a statistician to review the statistical evaluation of the DNA evidence.
- Investigate the credentials of the statistician used by the prosecution. What is his/her educational background? Does he/she make a living offering testimony?

- What database did the statistician use? Is it representative of the population most relevant to that surrounding the defendant? Could the statistics have been calculated using a better or more appropriate database?
- Did the statistician use scientifically accepted standards to calculate the probabilities of a match?
- Chances are, the statistician for the defense did not calculate the likelihood of a false positive testing result. As your statistician to evaluate the results of the lab's recent proficiency tests and to calculate the likelihood of a false positive. It is probably much higher than the chance of a coincidental match.

Admissibility

Rules of admissibility differ from jurisdiction to jurisdiction. The rules listed below offer brief descriptions of the most commonly used standards, but is not meant to be comprehensive:

- *Federal Rule of Evidence 702*: Governs the admissibility of scientific evidence in federal court. It states that an expert's testimony must consist of scientific knowledge that enables the judge(s) to better comprehend evidence.
- *The Frye Standard*:
- *The Daubert Standard*: An interpretation of Federal Rule of Evidence 702, *Daubert* stated that in order for scientific knowledge to be admissible, the underlying theories must be reliable, scientifically valid, and helpful to the court. The court further ruled that, in determining admissibility, a court's decision should be based whether the conclusions of an expert were arrived at in a scientifically valid manner, not on the conclusions themselves. *Daubert* also allowed for the exclusion of evidence if it is so misleading, confusing or prejudiced as to outweigh its value. Factors to consider under *Daubert* include: has the method been tested? Thus, under the *Daubert* standard, courts cannot admit DNA evidence that has been testing using inappropriate methods or methods that have not been accepted by the scientific community.
- *The Kumho Standard*:

Expert Witnesses

- A strong argument can be made in many cases that expert witnesses and labs make a pretty good living off of criminal cases, that they depend on income from prosecutors and that they have a vested interest

in finding DNA results that favor the prosecution. Has the expert witness or other representatives from the lab testified for the prosecution in the past? If so, how often? How often do they testify on behalf of the defense in criminal cases? Does the expert witness him/herself have any stock or ownership in the lab that was used?

Presenting Scientific Evidence to the Jury

- Develop a working knowledge of the science behind DNA evidence as well as the statistical analysis
- Understand the law regarding admissibility
- Master the presentation of the science, and strategize to counter the prosecution's argument (presenting evidence of conviction, prosecutor's perspective, 231/6).

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