August 9, 2004 Prepared by attorney Robert D. Blasier

DNA LITIGATION OUTLINE

How to approach a case with DNA evidence

GENERAL CONSIDERATIONS

1. **ALWAYS, ALWAYS, ALWAYS** – WHEN YOU GET A CASE – MAKE A CLEAN COPY OF THE DISCOVERY AND MAINTAIN IT IN THE ORIGINAL DISCOVERY ORDER

    a. This will be your master discovery file.

    b. Do not staple anything together as you may be using this file to make copies for your experts or others

    c. Do not ever write on it – you may later want to make copies of certain pages to prepare exhibits.

    d. If there are original quality or laser copy photos connected to the DNA evidence in your discovery [which there should be], do **not** keep them with your master discovery, but have laser copies made that go with the master discovery [the original photos will go to your primary expert].

    e. You may want to put the master discovery in a binder and set it aside. Label it "MASTER DISCOVERY - DO NOT ALTER OR REMOVE" so that anyone working on the file will know this is your master set and should not be disturbed.

    f. When you make your laser copies, it's a good idea to make several sets just in case [saves you a trip to Kinkos unless you have this capability in house].

2. **NEVER, NEVER, NEVER** keep loose papers floating around if at all possible

    a. If you are not careful, a DNA file can get quickly out of control, particularly if you have more than one DNA case at the same time. File organization is vitally important. If you are the kind of attorney who never fastens down any documents and lets them sit loose in a box, you should not be doing DNA cases.

3. **WHAT'S THE FIRST MAJOR THING TO DO AFTER YOU GET A DNA CASE?** - line up an expert to help you work through the material.

a. Lining up a good defense DNA expert early on is vitally important - good ones are few and far between.

b. Consider hiring a non-testifying expert to help you "learn" DNA.

c. Once you have a relatively good hand on what the important issues are, then look for testifying experts to use for any pretrial and/or trial testimony you will need.

   i. There are several very good experts out there who will consult with you but will refuse to testify because they have been so poorly treated and even harassed by prosecutors and law enforcement agencies.

   ii. Strangely, this is a very political area of the law in the sense that law enforcement [led by the FBI] wants to push this technology up to [and way beyond in the author's opinion] its limits.

4. **MAINTAIN ELECTRONIC FILES OF EVERYTHING YOU CAN**

   a. Utilizing your computer is most essential in these cases – there are a ton of resources on the web where you can accumulate information.

   b. Electronic transcripts of expert witness testimony from most prosecution and defense experts who routinely testify in these cases can be obtained over the internet.

5. **TRY TO EVALUATE NEW DISCOVERY AS IT COMES IN AND INCORPORATE IT INTO YOUR FILING SYSTEM ASAP**

   a. It is extremely important that you keep ahead of the case as much as possible.

6. **DO NOT BE AFRAID TO REORGANIZE YOUR FILE AFTER YOU ARE FULLY INTO THE CASE**

   a. Once you identify the good [and bad] issues in your case, you may want to change the way the file is organized so it is in the most useful format when you start court hearings

7. **A TIP ON MAINTAINING YOUR FILES AND EXAMINING NEW DISCOVERY OR OTHER DOCUMENTS**

    a. You will simply be unable to keep the issues in the case "in your head." This means you will have to develop a system of note taking that will allow you to quickly review the important issues in your case and to quickly locate those issues in your file. These cases tend to take a long time and you don't want to have to reinvent the wheel every time you pick up the file.

    b. Some suggestions:

        i. Log your discovery as it comes in – spread sheets and databases are great for this. Also, a word or word perfect table works well.

        ii. As I review discovery, I dictate notes to myself – assigning a topic to each note [such as "DNA REPORT – 6/10/00" or "EVIDENCE BOOKED-CLOTHING"]. I then dictate everything I think is important about the report or that page of discovery, including my assessment about strengths and weaknesses of various issues in the report and questions I have. I do this throughout the entire case, having the notes typed up periodically so they are in electronic form. I can then sort the notes periodically so all of my thoughts about a particular issue will be together. It is very important to indicate the source of the information in each note, such as the discovery page number. This works extremely well for me in both DNA and non-DNA cases.

        iii. Another technique is to precede your note with the discovery page number [ie. "204 - INJECTION LIST"]. You will find that you need to jump around a great deal as things will not be in a neat order. Then you sort your note file and it will be in discovery page number order. This can then be sent to your expert for his or her evaluation as to how well you are understanding the issues.

8. **MAINTAIN COMMUNICATIONS WITH LEAD COUNSEL ON A REGULAR BASIS**

    a. You will find that most lead counsel are exceeding grateful to have you helping them and will probably rely on your assessment without hesitation. Make sure you carefully explain the strengths and particularly the weaknesses on your DNA arguments to them.

    b. You will also find that most lead counsel will try to stay as far away as possible from the DNA part of the case – **this is not good**

i. Try to be as helpful as possible in keeping lead counsel up to speed

ii. If they show an interest, try to educate them on the issues

iii. Your ability to explain the issues to them will be a very good exercise for you to assess your own ability to explain the issues to a lay person – **this one of the most important and most difficult issues to master – you may feel you have a good grasp of the material, but if you can't explain it intelligently to a lay person to the point where they start to understand the basic issues, you won't be much good to anyone!**

c. If you are handling the entire case yourself, try explaining the DNA issues to your spouse or child. You will probably find that there is a big difference between understanding the issues yourself and being able to explain them to someone else

9. **EXAMINING EVIDENCE IN THE CASE**

a. At some point in the case preparation, after you are comfortable that you know the key DNA issues, you should arrange to inspect **all** of the physical evidence in the case with lead counsel

b. It is not at all unusual for law enforcement to miss key evidence that they should have analyzed. **Do not find evidence while you do this, or at least don't let on that you see something they may have missed – make a note and talk to lead counsel later.** Don't assume that lead counsel will know this – tell him/her in advance.

c. It is particularly important that you examine **all** of the evidence, including everything at the lab. You will often be told when you get to the law enforcement agency that some things are still at the lab. You will then need to make arrangements to view it at the lab

d. Have a photographer with you at all times, take a lot of photographs

e. ***KEY POINT:*** in the O. J. Simpson case all DNA counsel and experts examined the evidence several times. You may not have this luxury, but it is important in most cases that **you** at least examine the evidence.

i. In the Simpson case we examined the brindles that contained items sent to the lab. In the brindles which contained the collected blood swatches, we found that some of the blood from the swatches had transferred to the paper bindle – this meant that the swatches were put into the brindles while they were still wet – a real no-no. We also found some imprints that

didn't correlate in size to swatches in that bindle, which led to the inference that some swatches had been removed. This became a huge issue at trial. We prepared large exhibits with blown up pictures and recreated the swatches [enlarged for effect] to demonstrate these points. **A VERY SMALL POINT LIKE THIS CAN MEAN THE DIFFERENCE BETWEEN WINNING AND LOSING THE CASE**

THE DNA REPORT

10. **CAREFULLY REVIEW THE DNA REPORT**

a. Are there any typos in the report?

i. ***Reason:*** labs refuse to report error rates in their testing results. If there are typos in the report, this shows they do make mistakes. They will usually testify that they have never made an error in any of their proficiency tests [they usually only take 2 tests per year]

ii. If there are typos this can be a good line of cross to develop. You can present this in many different ways. For instance:

1. Do a word count and calculate the error rate
2. if there are several, you may want to blow up the report with the errors highlighted
3. develop the cross by determining how many people reviewed the report before it was issued
4. use your imagination to come with other ways to highlight this

b. Isolate the boilerplate language from the substantive information in the report

i. ***Reason:*** you will want to compare boilerplate language from other reports from the same lab to see if there are any differences from one case to another. You will also want to compare it to boilerplate language from other labs as well

ii. Are there any technical misstatements or misleading statements in the boilerplate?

11. CAREFULLY ANALYZE THE REPORT FOR ANY COMMONALITY OF GENOTYPES

a. Do the genotypes between the suspect and the victim share any alleles in common?

   i. ***Reason:*** to the extent there is overlap, this can radically effect how the probabilities are calculated. This may allow for alternative calculations of probabilities by the defense expert

b. Are the alleles between 2 samples at any loci within one type of each other

   i. ***Reason:*** stutter may effect the interpretations

12. ARE THERE ANY MIXTURES INVOLVED?

a. The presence of mixtures, which are almost always present in sexual assault cases, greatly complicates the analysis and presents many avenues for lines of cross.

b. One of the great weaknesses of this technology is that different experts can look at the same data and come to different interpretations. This aspect of the technology should be brought out in cross as often as you can. This is not a very good system of forensic identification if two experts looking at the same data could come to different conclusions. After all, two fingerprint experts should be able to look at a print and come up with the same conclusion. Why isn't DNA testing like this?

   i. The answer to that question is that DNA testing only compares the lengths of very small fragments of DNA with each other. There can also be many possible artifacts that can be confused with DNA and can alter the interpretation of the results.

13. ARE ANY LOCI BETWEEN TWO SAMPLES WITHIN ONE REPEAT OF EACH OTHER?

a. ***Reason:*** depending on peak size, an allele may be misidentified as stutter when it is really DNA from an unidentified additional contributor.

14. **CHECK FOR PEAK HEIGHT IMBALANCE WITHIN LOCI AND BETWEEN LOCI**

a. ***Reason:*** may indicate some problem with the testing process

b. May also bring into question the prosecutions expert's interpretation of the results.

15. **ARE THERE ANY SECTIONS OF THE REPORT WHICH HAVE WORDS TO THE EFFECT THAT A RESULT COULD EITHER BE DUE TO ONE THING OR ANOTHER?**

    a. ***Example:*** "results may indicate the presence of a third contributor but are most likely due to an artifact."

        i. There is real gold present where you see this kind of a statement and can lead to many good lines of cross.

16. **ARE THERE ANY "*" IN THE REPORT?**

    a. Many times the results in the genotype table will have asterisks with notes at the bottom. This is usually because of some result in the testing that they do not like. Explore this thoroughly in the work papers when you get them. Go over these anomalies with your expert as soon as you can.

17. **ARE THERE ANY OTHER QUALIFIERS IN THE REPORT?**

    a. This may be an indication of possible alternative explanations – flesh these out in the work papers and with your expert(s).

    b. Usually DNA reports are written so that they appear to be completely incriminating. If there is some weakness that appears in the report itself, dig into the work papers and explore any weaknesses in the report itself. There will usually be gold there just waiting to be explored and developed by the defense.

18. **MAKE CAREFUL NOTE OF WHAT ITEMS WERE TESTED**

    a. ***Reason:*** Different labs and police agencies use different numbering systems. It can be very confusing to figure out exactly what item or part of an item was tested.

    b. It is recommended that you start at the beginning to build a table of each piece of evidence that was tested along with the various different numbers that have been assigned to that item.

    c. ***Example:*** it is not unusual for the law enforcement agency to assign a number, then the DA assigns a different number, then the lab may break the item up into subunits with yet again different numbers. You can waste a lot of time if you don't start building a concordance table for all of the evidence items from the beginning. Spreadsheets are an excellent way of dealing with this problem

19. **MAKE CAREFUL NOTE OF WHAT ITEMS WERE SENT TO THE LAB BUT WERE NOT TESTED**

    a. You need to determine why items were sent to the lab but were not tested
    b. I have seen several cases where too aggressive an approach by defense counsel leads the prosecution to test other evidence - tests which often hurt the defense

NON-DNA DISCOVERY

20. **OBTAIN FROM LEAD COUNSEL AND READ**

    a. ***Reason:*** You need to understand the context of the case, particularly in light of the possibility of both inculpatory and exculpatory evidence, both biological and non-biological.

    b. If it is a huge case with many thousands of pages of reports, you probably do not need everything

    c. HOWEVER: be sure to obtain all forensic reports and all reports of officers who collected evidence

        i. Example: saliva is found on a ski mask that matches the defendant. On the same ski mask, a hair was found that clearly does not match the defendant. You may be able to argue that the hair evidence clearly excluding the client trumps the DNA evidence since it cannot be determined when the hair **or** the DNA was deposited - the hair suggests that the ski mask was worn by at least 2 people - the last one [at the robbery] being someone other than the client

21. **YOUR TABLE OF EXHIBITS SHOULD INCLUDE ALL ITEMS OF EVIDENCE SEIZED, NOT JUST THOSE ITEMS WITH BIOLOGICAL EVIDENCE**

    a. ***Why:*** You need to have an understanding as to how the exhibits with biological evidence fit with all other items of evidence

    b. A spreadsheet is perfect for this. You can add information to the spreadsheet as you go through the discovery, such as chain of custody issues

22. **START A CHAIN OF CUSTODY FILE**

    a. Put all documents relating to chain of custody together in one place

b. At some point down the road, you may want to start a separate file for each item of evidence which will also contain the chain documents for each item

    i. You don't want to do this too soon, wait until you have a good handle on you strategy for the case. Different cases may call for a different organizational structure

REQUEST DNA DISCOVERY

23. STANDARD DISCOVERY REQUESTS

a. There are standard discovery forms available for the particular method of testing used in your case

b. Obtain the correct form and tailor it to your case

c. These form requests are continually evolving – make sure you have the most current one

d. Don't hesitate to make suggestions for additions depending on the circumstances of your case

ONCE YOU RECEIVE THE DNA OR OTHER FORENSIC WORK PAPERS

24. COUNT THE PAGES

a. See if there are any gaps, missing pages, or unreadable pages.

b. Check for bottoms of pages that were not copied.

c. Request replacements as necessary.

25. MAKE EXTRA SETS OF COPIES AS NEEDED FOR YOUR EXPERT[S]

a. Your experts will want the originals of the photographs of testing strips, electropherograms if provided in color, autorads, slot blots, etc. Be sure to make color copies for yourself or even duplicate photographs [a one hr photo can take a photo, make a negative, and then make a number of prints].

b. Get the STR data disk to your expert ASAP so that he/she can generate colored set of charts with different parameters changed

i. ***Reason:*** there are <u>many</u> ways for an analyst to cover up results they do not like by printing out the data in particular ways that cover-up possible problems

26. **MAKE A WORKING SET OF THE WORKPAPERS FOR YOU TO BEGIN YOUR ANALYSIS.**

a. You will want to start writing down comments, questions, etc as you go through the workpapers.

i. You may want to do this directly on the workpapers themselves, using red ink or some color that will allow you to determine which notes are yours.

ii. You may want to do this on separate paper, making sure to note the discovery page number so you can go directly to the page you want.

iii. Evaluating workpapers requires going through them many times - you will find that you understand them much better after you have been through them several times.

27. **ONCE YOU HAVE AN IDEA OF WHAT SOME OF THE IMPORTANT ISSUES WILL BE, YOU MAY WANT TO START BREAKING DOWN THE WORKPAPERS INTO MANAGEABLE PARTS BY ISSUE**

a. As mentioned earlier, there will usually be multiple numbering systems used - ie. One for the police, another for the crime lab, another for the DNA lab doing the testing, etc.

i. If you have not done it already, start a master table of assigned numbers so you can quickly correlate items of evidence from seizure through testing - this will save you a tremendous amount of time in the long run. Your spreadsheet of evidence items is perfect for this

b. It is often very difficult to track individual items of evidence through the testing process

i. Consider making several copies of the workpapers and organizing it by each item of evidence; this will help you track the evidence - item by item.

ii. Since each page of discovery may refer to several items of evidence, you may need several copies of each page - **but be careful**, it is easy for the file to get out of control.

c. Consider starting a time line showing when each step of the testing process started and finished - you may discover that some testing had to be redone - it will be important to determine why this happened.

d. Make sure you understand what controls are being used at various stages of the testing

process

i. You will need to analyze each control to see if it functioned properly.

ii. Labs sometimes have control failures, yet fail to re-analyze samples as they should. You need to find out why.

28. **KEY ISSUES TO LOOK FOR IN EVERY CASE**

a. Quantities of DNA available for testing

i. Always determine how much DNA the lab was able to extract from each sample tested.
ii. This is very important as the lab will sometimes only be able to recover an amount of DNA smaller than the minimum amounts to get a valid result, in which case you should be notified before testing to see if you want to have an expert present.

b. Estimate the amount of DNA that might be present in items that were not tested

c. Slot blots - how much DNA did they claim they found?

d. Yield Gels - Did the lab do a yield gel?

e. "Cross-outs" - do the workpapers contain any entries that were crossed out and corrected? If so, try to determine why.

f. Disparities in quantities of DNA

i. Example: Sometimes labs will estimate the quantities of DNA they believe they have present by more than one method. Be sure to compare their results to see if there are any significant differences

g. Where any tests re-run? If so, determine why. Compare the results of the items retested with the first set of results.

h. Were the controls run with the same injection time as the samples? They should be.

i. Do the lab notes describe any specific problems encountered during the testing process? If so, determine if the proper corrective action was completed.

j. The workpapers will always contain a handwritten chart showing the various genotypes found for each sample. Always compare those findings with what was reported in the typed report. Many times you will find some interesting discrepancies.

k. Statistical issues - mixtures. Did the lab present any statistics for various components of a mixture. If they did, there's a good chance they did not do it properly. This is a very controversial issue and should be looked at carefully.

l. Did all of the controls work properly?

m. Was there any opportunity for contamination of the sample or a sample mix-up?

TRIAL LITIGATION ISSUES

29. **FIRST AND FOREMOST - BE CREATIVE IN YOUR APPROACH AND DO NOT LOOSE SIGHT OF WHO YOUR AUDIENCE WILL BE -**

a. You will find that it is great fun to spar with prosecution experts about the various limitations and weaknesses of DNA evidence, but it is useless if you loose the jury.

b. Example: in the Simpson case the prosecution made an excellent, comprehensive, and thorough presentation describing the various DNA testing methods that were used in the case. The only problem was that the only people who understood the presentation were the DNA attorneys. The eyes of the jurors, court personnel, and all other counsel, glazed over after the first few minutes!

30. **WHAT SHOULD YOUR LEVEL OF INVOLVEMENT BE AS DNA COUNSEL?**

a. That depends on how important the DNA evidence is and what the defense is. You should be present at the beginning to be introduced to the jury, at opening statements [see below], for all DNA witnesses, and usually when all evidence collection witnesses testify.

b. You may want to do part of the opening to begin educating the jury on some of the limitations of DNA testing.

31. **QUESTIONNAIRES**

a. These can be very helpful at seeing what the jury's attitude will be about the DNA evidence

b. include questions specifically about their level of training and experience with scientific issues

c. Very important to include some open-ended question to try to find out what they know or

have heard about DNA evidence and where they heard it. Once you get into the subject matter you will realize that there are many misconceptions about DNA evidence

32. **PREPARATION OF DNA EXHIBITS PRIOR TO TRIAL**

a. Consider using PowerPoint presentations to highlight the issues you and your expert have decided are important issues you want the jury to understand.

b. This stuff is hard enough to understand as it is. A picture is worth a 1000 words.

33. **VOIR DIRE**

a. A good tactic is to try to get a commitment from the jurors that they will not convict unless they understand the DNA evidence.

b. If they use the six-pack system, let DNA counsel handle the 4th or 5th group so you get some "face time" - so the jury will know who you are and will get used to you. You can also use that opportunity to educate the jury on the DNA issues you think are important.

34. **OPENING STATEMENTS – DO YOU PARTICIPATE?**

a. If you have some good issues, it may be a good idea to present them to the jurors in opening [without giving away too many secrets of course].

b. Lead counsel should be very wary about getting too deeply into the DNA issues in opening statement.

i. ***Example:*** in the Simpson case, Barry Scheck, Peter Neufeld and I spent many hours going over some very elementary points about the DNA evidence with Johnny Cochrane. He seemed to have them well in hand, yet when he did the opening, he really botched up that part of it. That is one of the reasons Barry Scheck did the closing on all of the forensic evidence.

35. **CLOSING ARGUMENTS – WHAT IS YOUR ROLE?** -

a. Again, depends on the case. If you feel you came up with some really good issues, you may want to ask lead counsel to let you handle that part of the closing. Remember how hard it was for you to learn how to describe these issues - do not assume that lead counsel will be able repeat the points you have developed during the trial.

MISCELLANEOUS POINTS TO CONSIDER

36. EXPERTS

a. To do an effective job, it is essential that you review and understand every page of the DNA discovery.

b. The key to this is not to just hand the discovery to your expert and ask him or her to identify the issues - you will be ineffective in court if this is all you do.

c. You will, of course, have your expert also do a detailed analysis of the data looking for issues.

d. You will be able to assess your own success in mastering this material when you are able to find many or most of the significant issues on your own that match up with the expert's assessment of the issues.

37. DID THE COPS SCREW UP IN EVIDENCE COLLECTION?

a. In Simpson, there was DNA testing conducted on approximately 100 items of evidence by three different labs. All of the results were EXTREMELY incriminating. One of the basic themes we presented was "garbage in - garbage out." That is, it did not matter how good the testing was, if the evidence given to the labs was compromised, the results should not be trusted.

38. ALWAYS BE AWARE OF TRANSFER POSSIBILITIES

a. Because labs are able to get profiles from ever smaller quantities. The possibility that a client's DNA has arrived at an incriminating location via an innocent transfer.

b. ***Example:*** there is a study that has shown that sperm can be redistributed in the laundry. In other words, finding an alleged perpetrator's sperm in a small victim's panties, can be explained by a transfer occurring when their clothes were routinely washed together.

c. ***Example:*** studies have shown that DNA can be transferred by shaking hands. For example, you can shake hands with a perpetrator wearing latex gloves, and your DNA can be transferred to a gun that he uses in a robbery.

39. **EXCULPATORY EVIDENCE**

a. Always keep in your mind that there may be exculpatory value in the evidence, even if it looks terrible

   i. ***Example***: Victim claims she did not have sex with anyone else in weeks prior to the assault. Evidence of a possible small second semen contributor [which the lab may characterize as a probable artifact] can be used to challenge the credibility of the complaining witness.

   ii. ***Example:*** Victim claims she was sodomized, yet there is absolutely no evidence of any foreign biological material in the anal area.

40. **SHOULD THE DEFENSE RETEST?**

a. This is one of the most difficult questions you will have to confront

b. Remember, we will never see <u>exclusions</u> [except possibly in multiple defendant cases]

c. Assume the jury will find out you tested - even if you try to hide it

d. You must make it absolutely clear to the client that if you retest the evidence, the jury will almost certainly find that out and if the results confirm the prosecution results, the client is probably history

41. **HOW MUCH PRETRIAL AND/OR IN LIMINE LITIGATION IS APPROPRIATE**

a. There are very significant tactical issues to consider in deciding how much pretrial litigation is appropriate

b. One school of thought is to litigate everything as thoroughly as possible and at every opportunity possible.

c. Another approach is to consider holding back on pretrial litigation so that you:

   i. Insure that your prosecutor will not "learn" DNA from you and your experts before trial

   ii. Will not reveal good case specific issues you and your experts have identified until it is too late for the prosecutor to prepare for them

d. The ultimate consideration, of course, is what is in the best interests of the client. You

can only make that decision if you have a good understanding of the DNA issues in your case and how they are likely to play-out in court

42. LOOK FOR SITUATIONS WHERE THE LAB ANALYST HAS INTERPRETED THE RESULTS IN A CONTRADICTORY MANNER

a. For instance, if they have interpreted some small peaks as stutter and other small peaks in the same case as DNA, you can use this to show analyst bias or confirmatory bias [analyst finds what he expects to find].

b. There is an excellent law review article on the issue of examiner bias, also referred to as confirmatory bias or observer bias. It was written by Dr. Michael Reisinger, Michael J. Saks, Dr. William Thomson, and Robert Rosenthal. It can be found at the California Law Review, Volume 90, 2002, No. 1, at Page 1.

USEFUL WEBSITES ON THE INTERNET

43. VALUABLE WEB SITES TO LEARN MORE ABOUT DNA

A list of various methods on how to evaluate information on the web can be found at the Librarians' Index to the Internet at http://www.lli.org. Search the subject "Evaluation of Internet Resources."

http://www.scientific.org.

This is where you can find all three of the cases where the trial courts have ruled that STR is inadmissible under both Frye and Daubert reasoning. Make sure you read the articles at this site.

www.for-swgdamin.htm.

This is the SWGDAM web site - the DNA Advisory Board - The group of forensic scientists who set up their own guidelines for forensic DNA testing.

www.fbi.gov/programs/lab.fcs

This is the web site for the US Department of Justices' publication Forensic Science Communications that has a number of interesting articles about DNA, i.e. mtDNA evidence, CODIS, STR population statistics and it also has the latest version of the SWGDAM guidelines.

www.bis.med.jhmi.edu/Dan/DOE/prim6.html

This is an excellent Glossary of DNA terms. It is very helpful to have when you first start to learn about DNA.

www.kumc.edu/gec/glossary.html

This is a listing of 25-30 DNA Glossaries.

http://on.to/dictionary

This is the Dictionary of Cell and Molecular Biology.

www.ncjrs.org/txtfiles/dnaevid.txt

"Convicted by Juries, Exonerated by Science: Case Studies In The Use of DNA Evidence To Establish Innocence After Trial." This is the text of that article.

www.highveld.com/protocols.html

This is a listing of molecular biology laboratory protocols.

www.ornl.gov/hgmis/publicat/primer/intro.html

This is a Primer on Molecular Genetics.

www.gdb.org

This is "The Genome Database" and has helpful information for the novice and the experienced DNA attorney.

www.pitt.edu/~edugene/resource

This is "The Genetics Resource Center" and has information about basic DNA.

www.nhgri.nih.gov/

This is the site for the National Human Genome Research Institute.

http://vector.cshl.org.

This is the DNA Learning Center - its name is fitting, it can teach you about DNA.

www.reliagene.com

This is a private company who has basic useful information which can help the beginner learn more about DNA.

www.criminalistics.com/ABC/

This is the web site for the American Board of Criminalistics. Most crime lab DNA technicians belong to this Board and their web site provides useful information about what it means to be a member.

www.promega.com

This is the web cite for the Promega Corporation. The Corporation is trying to sell their kits and machinery for crime labs to use. The site also lists training and testing courses they have available and they publish their own reports regarding DNA.

www.dnalawyr.com

This is a homepage of an attorney who has written articles about the forensic use of DNA.

Atwww.dnalawyer.com/nrc_ol.html you will find a critique of the National Research Council Second Report.

www.dnafiles.org/resources

This has a number of different sites from basic genetics to genes and cloning, including a good section on genes and identity.

www.ojp.usdoj.gov/hij/dna/welcome.html

This is the web site for the National Commission on the Future of DNA.

www.interpol.int/public/forensic/dna/

This is an example of how DNA is treated in other countries.

www.nap.edu/readingroom/books/DNA

This is the web site that you can find the National Research Council's Evaluation of Forensic DNA Evidence ll.

www.rdg.ac.uk/EIBE/ENGLISH/U2.HTM

This is an English version of the European DNA profiling.

www.pebio.com/ab/techsupp/gasoftware.html

This is where you can find all of the Genescan and Genotyper User Manuals and the Reference Guides for the 310 Genetic Analyzer and it's User Manual.

www.pebio.com/ab/techsupp/310.html#ref310

This is where you can find Reference Guide and the User Manual for the 310 Genetic Analyzer.

www.seoulin.co.kr/protocol/tmd008.html

This is the Gene-Print Power Plex.1.1

www.shpromega.com.cn/tmd004.html

This is the GenePrint STR System.

www.promega.com/tbs/tmd/004/tmd004.html

This is the GenePrint STR Tests (Silver Stain) Technical Manual.

www.promega.com/profiles/302/302_03/

This is the GenePrint PowerPlex 2.1 System for the FBI Selection of Thirteen CODIS Core ST Loci and the Seven Standard STR Loci for ENFSI.

www.promega.com/tbs/TMD012.html

This is the Abstract for PowerPlex 16 System by Promega.

www.promega.com/geneticidentity/datasheets/power.html

This is the PowerPlex 1 and 2 Systems by Promega.

www.mitotyping.com/

This is a web site all about mitochondrial DNA [a different kind of DNA that can be used for identity testing - it is far less discriminating but you can get results with even smaller quantities than nuclear DNA typing]. It is abbreviated as "mtDNA."

www.gen.emory.edu./mitomap.html

This is the Mitochondrial Genome Database.

www.promega.com/geneticidproc/ussymp7proc/ab01.html

This is Promega's web cite that has mtDNA information.

www.promega.com/geneticidproc/ussymp8proc36.html

This is Promega's web site that has mtDNA information.

http://www.forensic.gov.uk/forensic/conference/papers/mitochondrial.html

Great information from UK about forensic mtDNA.

www.fbi.gov/programs/lab/history/hvict13.htm#

This is the FBI's web site, has information about mtDNA.

www.forensic-entomology.com/literature.htm

www.csfs.ca.journal/journal98.htm

www.shelob.bioanth.cam.ac.uk/mtDNA/

www.ancientdna.com/

www.lakeheadu.ca/~lucas/newwpost.htm

Useful Links about mitochondrial DNA:

www.hfni.gsehd/gwu.edu/~fforensic/FSLinks/listoflinks.html

www.kruglaw.com/f_dna.htm

Links to find articles and books about mitochondrial DNA:

www.forensicdna.com/Forensic.Bibliography.html

www.gen.emory.edu/MITOMAP/biglist.html

All good sites, particularly Kruglaw.com.

The following sites contain graphic presentations and PowerPoint slide presentations.

www.accessexcellence.org/AB

This is the web site of the National Health Museum. Click on wither Biotech Applied or Graphics Gallery for great photos of DNA.

Http://vector.cshl.org/resourdes/BiologyAnimationLibrary.htm

This is a great resource for DNA animation - very useful to help visualize DNA and also useful to teach others about DNA.

www.genelex.com/genomicshtmls/ndaarchive.html

This is an archive of sequence typing, DNA in the Courtroom and has an excellent site point slide show.

http://dna-view.com/downloads/info.html

This site contains more DNA graphics.

The following sites deal with the statistics of DNA

www.fbi.gov/programs/lab/fsc/backissu/july1999/budlowe.htm

This site lists the population statistics for the 13 CODIS STR Loci.

www.fbi.gov/programs/lab/fsc/current/weir.htm

This is a Comment and Replies article by Bruce S. Weir who is an authority on DNA statistical information.

www.fbi.gov/programs/lab/fsc/backiss/oct2000/fung/htm

This is an article on Interpreting DNA Mixtures based on the NRC-II recommendation 4.1.

Http://dna-view.com/

This is a web site that is titled "Forensic Mathematics" and is very helpful for the discussions of the

various types of statistics applied in DNA cases.

www.nr.no/sand/porj/dna/html

This is "The DNA and Forensic Statistics" site and it explains DNA statistics.

www.csfs.ca/databases/index.html

This is "The Population Studies Data Centre" - it illustrates how DNA is used in other countries.

Other useful web links. Most of these websites will hyperlink you many of the other websites.

www.cstl.nist.gov/div831/strbase

This is the government's STR-DNA Database that has links to other STR sites. This is a great place to start for the beginner or for someone more familiar with DNA.

www.highveld.com/pcr.html

This is the Polymerase Chain Reaction (PCR) Jump Station. It is a list of links to many places to find out ore about DNA.

http://membersl.tripod.com/Allegon/

This is someone's personal home but has numerous links to forensic information.

www.kumc.edu/gec/

This is a useful link to other DNA sites.

www.forensic.to/forensic.html

This is the "Zeno forensic Site" and has many useful forensic links.

Books and publications

www.corpus-delecti.com/DNA.html

This is a forensic bookstore on-line that has a number of books on DNA and other forensic subjects.

www.law.asu.edu/personal/kaye/pubs/p_dnalhtml

This is a web site about DNA evidence publications.

Other good books:

Forensic DNA Typing: Biology and Technology Behind STR Markers, by John M. Butler, Academic Press. [an excellent book - everyone doing DNA litigation should have this book]

An Introduction to DNA Analysis (2nd Ed.), by Inman and Rudin, CRC Press, Boca Raton, FL (1997).

Evaluation of Forensic DNA Evidence, National Academy Press, (1996).

Mind over Murder: DNA and Other Forensic Adventures, by Jack Batten, McClelland & Stewart, (1996).

The Evaluation of Forensic DNA Evidence, National Research Council, National Academy Press, Washington. D.C. (1996).

And the Blood Cried Out: A Prosecutor's Spellbinding Account of the Power of DNA, Harlan Levy, Basic Books, (1996).

DNA In The Courtroom: A Trial Watcher's Guide, Eric Swenson, Howard Coleman, Genelex Press, (1995).

Ancient DNA: Recovery and Analysis of Genetic Material from Paleontological, Archaeological, Museum, Medical and Forensic Specimens, Bernd Herrmann, Susanne Hummel (Editor), Springer Verlag, (1993).

DNA Is Here To Stay, Frances R. Balkwill, Mic Rolph (Illustrator), Carolrhoda Books, (1993).

DNA Technology in Forensic Science, National Research Council, National Academy Press, Washington, D.C. (1992).

DNA Fingerprinting, Christopher Lampton, Impact Books, Published by Franklin Watts, (1991).

DNA and Other Polymorphisms in Forensic Science, Henry C. Lee, R.E. Gaensslen (Editors), Year Book Medical Pub, (1990).