



Challenging DNA in Paternity Cases: Finding Weaknesses in an Evidentiary Goliath

By Carl W. Gilmore

Though it's difficult to overcome DNA evidence in a paternity case, you should be prepared to mount a challenge when circumstances warrant. Here are some ways to challenge DNA evidence collection and test-result interpretation.

Few technologies have enjoyed as much acceptance in as short a period as DNA testing. Parentage law – the law revolving around establishment of parent-child relationships – was revolutionized by DNA testing. Statutory enactments allow DNA tests to establish paternity and to exclude a putative father, even to overcome the legal presumption of paternity (see the preceding article by Glenn and Brucker). These enactments streamline the process of determining paternity.

The theory behind some DNA tests is as widely accepted as the theory behind radar guns in speeding cases. Like radar guns, however, DNA tests depend upon human operation and are subject to misuse. DNA evidence is, at its core, scientific evidence and should be scrutinized – and, where appropriate, challenged – like other scientific evidence.

Attacks on DNA test results generally focus on two areas: (1) collection of and testing the sample, and (2) interpretation of test results. This article offers pointers about challenging both evidence collection and test interpretation.

I. DNA Tests as Evidence

Section 11 of the Illinois Parentage Act of 1984 (“Tests to determine inherited characteristics”) states that as soon as practicable, the court may on its own motion and upon the request of a party order the mother, putative father, and child to submit to DNA tests to determine inherited characteristics.¹ The parentage statute also requires that testing data be provided to all parties and allows for alternative testing if the DNA test does not exclude the putative father.² Test results are admissible with-

out foundation, unless a motion objecting to the admission of the results is filed within 28 days of receipt of the report.³

A. Illinois Cases Governing Acceptance of Scientific/DNA Evidence

Typically, scientific evidence is presented by an expert who can explain data or test results and, if necessary, the scientific principles that give the evidence reliability.⁴ The 1923 case of *Frye v United States*⁵ articulated the accepted standard for scientific evidence for many years: the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.

While federal courts have adopted the *Daubert* test,⁶ the *Frye* test remains the standard in Illinois. In *People v Watson*,⁷ a criminal case in which DNA evidence was offered, the first district refused to reject the *Frye* test as the standard for admission of scientific evidence, saying that until such time as the Illinois Supreme Court ceased to recognize *Frye*, it remained the applicable standard. The Illinois Supreme Court in *People v Moore*⁸ and *People v Miller*⁹ had the opportunity to reject *Frye* and accept

1. 750 ILCS 45/11(a).

2. 750 ILCS 45/11(c).

3. 750 ILCS 45/11(e).

4. Graham C. Lilly, *An Introduction to the Law of Evidence* §12.4 at 493 (West, 2d ed 1987).

5. 293 F 1013, 1014 (DC Cir 1923).

6. See *Daubert v Merrell Dow Pharmaceuticals*, 509 US 579 (1993), and progeny. See also FRE 702.

7. 257 Ill App 3d 915, 629 NE2d 634 (1st D 1994), holding DNA testing method used was generally accepted; see also *People v Bynum*, 257 Ill App 3d 502, 629 NE2d 724 (1st D 1994).

8. 171 Ill 2d 74, 662 NE2d 1215 (1996).

9. 173 Ill 2d 167, 670 NE2d 721 (1996).

the newer rule but did not.

It is a cardinal evidentiary rule that scientific testimony must be helpful to the trier of fact.¹⁰ DNA testing was rejected in 1994 by the first appellate district in *Franson v Micelli*.¹¹ *Franson* was vacated and dismissed by the supreme court for having been decided without appellate jurisdiction.¹² Nevertheless, the *Franson* appellate decision instructed that DNA test results were insufficiently accepted as being reliable to justify its acceptance as evidence.¹³

The first district took issue with the statistical probability calculation. In other words, the court found that the testing methodology was valid but the interpretation of the results was not. For example, DNA matches may occur more frequently than statistics indicate because of a recurrence within a population subgroup or because certain DNA characteristics do not occur independently.

"It cannot be disputed that the theory behind DNA testing is well-accepted. This does not mean, however, that simply because the concept is recognized the procedures used are not subject to a *Frye* analysis," the *Micelli* opinion stated.¹⁴ Thus, the first district held use of DNA results for determining paternity probability did not satisfy a *Frye* analysis regarding general scientific acceptability, because the statistical interpretation was not generally accepted.¹⁵

Franson relied upon *People v Watson*, from Illinois' first district. *Watson* deemed DNA evidence inadmissible, based upon the *Frye* test. Like the *Franson* court, the *Watson* court held the principle behind DNA testing was generally accepted, but the case was remanded for a determination of statistical reliability.

Since...the probability of a coincidental match is an essential part of the DNA evidence, and since there is no consensus as to the accuracy of the...statistical calculation, we decline to accept the State's assertion that the defense objections to that precise calculation go only to its weight....[D]emonstration of a consensus within the appropriate scientific community as to a more conservative approach to determining the statistical significance of a [DNA] match would be sufficient for the DNA evidence to be admitted.¹⁶

Conversely, the fourth district *Miles* case, also cited in *Franson*, decided that DNA tests are reliable, so statistical ex-

trapolations from the test results should also be reliable.¹⁷ *Miles* summarily reasoned as follows: (1) The DNA testing process is reliable, (2) the process of generating probability statistics is an integral part of the process, and thus (3) the probability statistics are admissible.¹⁸

The fourth district in *Miles* relied in turn on *People v Lipscomb*, which stated as follows:

[T]he DNA identification or fingerprinting procedure...is generally accepted within the particular scientific fields involved and is admissible. This includes the six-step RFLP procedure used in developing the autorads, the visual interpretation of these autorads, the manner of determining the bins, the development of frequencies, and [the] procedure whereby the individual frequencies are multiplied together to determine the ultimate frequency of the pattern.

Any question concerning the specific procedures used by the company or expert goes to the reliability of the evidence and is properly considered by the jury in determining what weight to give to this evidence. If it is shown that the procedures used give an unreliable result, then the court may find it necessary to exclude this evidence entirely.¹⁹

The upshot is that the basic reliability of DNA evidence has been accepted by Illinois reviewing courts, and challenges will have to be brought on a case-by-case basis.

B. The Collection, Handling, and Testing of DNA Evidence

The cases discussing DNA evidence focus upon one-half of the equation – the statistical analysis of the test results. No cases discuss the collection, handling, and testing procedures themselves, which may actually provide more grounds for challenge than statistical analysis.

Illinois' statutory scheme does not take into account risks inherent in DNA testing itself. DNA evidence has been attacked based upon misinterpretation of test results and the failure of machine and software manufacturers to prove the validity of the test equipment development.²⁰ But subjecting a DNA result to analysis and re-creation of the result requires the sample to be available, and availability may be a problem. One type of test, for example, consumes the entire DNA sample.²¹ Some laboratory policies mandate destroying underlying data.²²

The Illinois Parentage Act of 1984

establishes the following four-part scheme relating to DNA test results.

(1) If the court finds that the conclusion of the expert or experts, as disclosed by the evidence based upon the tests, is that the alleged father is not the parent of the child, the question of paternity shall be resolved accordingly.

(2) If the experts disagree in their findings or conclusions, the question shall be weighed with other competent evidence of paternity.

(3) If the tests show that the alleged father is not excluded and that the combined paternity index is less than 500 to 1, this evidence shall be admitted by the court and shall be weighed with other competent evidence of paternity.

(4) If the tests show that the alleged father is not excluded and that the combined paternity index is at least 500 to 1, the alleged father is presumed to be the father, and this evidence shall be admitted. This presumption may be rebutted.

10. Michael H. Graham, *Handbook of Illinois Evidence* §702.4 (Aspen Law & Business 1998).

11. 269 Ill App 3d 20, 645 NE2d 404 (1st D 1994).

12. 172 Ill 2d 352, 666 NE2d 1188 (1996).

13. 645 NE2d at 411: The appellate court did not make the distinction between blood testing and DNA testing.

14. *Id.*, 645 NE2d at 410.

15. *Id.*

16. *Watson*, 629 NE2d at 646-47.

17. *People v Miles*, 217 Ill App 3d 393, 577 NE2d 477 (4th D 1991).

18. 577 NE2d at 485.

19. *People v Lipscomb*, 215 Ill App 3d 413, 432, 574 NE2d 1345, 1357 (4th D 1991), cited in *Miles*, 577 NE2d at 483.

20. Gregory W. O'Reilly and Allan Sincox, *Forensic DNA Case Evaluation and Litigation*, 28 *Litigation* 43, 46 (Fall 2001) ("O'Reilly and Sincox").

21. Charles M. Strom, *Genetic Justice: A Lawyer's Guide to the Science of DNA Testing*, 87 Ill B J 18, 22, 24 (January 1999) ("Strom").

22. O'Reilly and Sincox at 45 (cited in note 20).

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by clear and convincing evidence.²³

Putative fathers who are "included" by DNA tests should have the results reviewed by an independent expert, who can review the documentation relating to the tests and determine whether there are holes in the final report. But this review can be prevented by a number of factors.

To begin with, the underlying test data might have been destroyed. There is no statutory requirement that under-

Also consider whether other, extrinsic evidence is available. If the client was unavailable during the probable conception period – for example, during military service – it may be possible to prove nonparentage through records showing the whereabouts of the client. Such evidence is inexpensive to obtain through subpoena. On the other hand, if the challenge is based upon evidence of an alternative explanation for the results – for example, the paternity is that

ations in the shipping environment may cause DNA contamination or spoliation.

B. Determining Whether Samples have been Properly Collected and Handled

Depending upon the type of test used – polymerase chain reaction (PCR) and restriction fragment length polymorphism (RFLP) – the collection process itself can be critical to the outcome of a DNA test. (See the online sidebar, available at <www.isba.org/ibj/sep02/dna.pdf> for more on PCR versus RFLP testing and other DNA basics.) Seemingly innocuous procedures such as licking an envelope containing a hair can result in DNA contamination, as can "sneezing, coughing, breathing closely, or handling specimens without gloves."³⁰ Similarly, samples may be contaminated through contact with other evidentiary samples at the blood draw site or in the lab itself.³¹ Proficiency testing requires laboratories to report random-match probabilities to make sure proper calculations are performed.³²

PCR testing runs more of a risk of contamination than RFLP tests. An uncontaminated DNA fingerprint cannot display more than two bands per sample. The presence of three bands proves contamination from another source of DNA. DNA also degrades, depending upon temperature and exposure to oxygen and water. Counterintuitively, exposure to gasoline, motor oil, acids and alkali has been shown not to render the DNA untypable. With RFLP analysis, degradation testing is necessary, because RFLP analysis requires relatively undegraded DNA samples. PCR tests, conversely, can be performed using degraded DNA, hence the use of PCR testing for crime scenes.³³ PCR testing's sen-

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lying data be maintained, which could leave a reviewing expert with nothing more than a summary report.

A more typical hurdle to a DNA challenge is cost, which favors the proponent of the initial test results. A DNA test is relatively inexpensive, in the range of \$500. But costs of retesting and hiring experts to review the statistical analysis can be overwhelming.

Occasionally, the putative father may be a professional basketball player, with sufficient resources for retesting and review.²⁴ More likely, both parties are young and without financial resources. The defendant is often facing a paternity case where the mother receives litigation costs from the state, through the Illinois Department of Public Aid or the state's attorney's office. The result is that the DNA tests provide the only objective evidence relating to paternity, and rightly or wrongly, the test results are conclusive, even if the paternity index is less than 500 to 1.²⁵

Before launching a DNA test challenge, determine whether the client has legitimate doubts about the test results.

of a twin – then a challenge may be the only route toward disproving the conclusion.

The remainder of the article looks in more depth at how to challenge collection and testing procedures and test results.

II. Challenging DNA Collection and Testing

No provision of the Illinois Parentage Act of 1984 requires a paternity testing expert to retain samples used or the test results themselves. Under the statute, an expert shall prepare a written report of the test results. The report must contain a combined paternity index showing the probability of paternity.²⁶ Chain of custody evidence may be established by nothing more than affidavit or certification,²⁷ and absent a challenge the report is admitted without foundation.²⁸ Independent tests may be made using other experts.²⁹

A. Potential Problems with Chain-of-Custody Evidence

The affidavit or certification of chain of custody is sufficient to establish the chain, but that does not mean it is sufficient (see II(D) below for more). Genetic testing centers are located around the country. The DNA sample is taken at one location, shipped to the genetic testing center, analyzed, and the test results returned to the requester.

Depending upon how the DNA package is shipped, there is a risk the DNA sample can be switched with another. Additionally, temperature vari-

DNA Basics

For a brief primer on DNA science and testing, read the online sidebar at <www.isba.org/ibj/sep02/dna.pdf>.

23. 750 ILCS 45/11(f).

24. See *Finley v Scott*, 707 So2d 1112 (Fla 1998), where NBA player Dennis Scott was involved in a paternity action in Florida.

25. 750 ILCS 45/11(f)(3).

26. 750 ILCS 45/11(c).

27. 750 ILCS 45/11(d).

28. 750 ILCS 45/11(e).

29. 750 ILCS 45/11(c), (j).

30. *Strom* at 25 (cited in note 21).

31. *Id.*

32. Federal Judicial Center, Reference Manual on Scientific Evidence, *Reference Guide on DNA Evidence* at 511(West Group 2000).

33. 2 Lawyer's Guide to Medical Proof, *The Medico-Legal Status of DNA* § 410.09 (Matthew Bender 2001) ("*Lawyer's Guide, Medico-Legal*").

sitivity to contamination from another source of DNA may pick up even trace amounts of DNA.³⁴

Be sure to inquire into the collection technique. A too-small DNA sample may force the use of a certain test. Since DNA blood draws provide significant amounts of DNA, there is no reason for DNA insufficiency. Ensure that the samples are clearly labeled and there is a quality control plan. Some organizations, like the American Association of Blood Banks, set standards, which you should review. If the lab does not have some sort of lab-maintenance system or protocol, fully investigate that failure.

C. Validation – What to Look for in a Lab

To be valid, any scientific procedure must be subject to repetition. The Illinois Parentage Act recognizes as much by allowing a party to seek an independent analysis.³⁵

The DNA scientific process per se is now generally accepted. The great danger in DNA evidence is that many labs that attempt to analyze it are not qualified to carry out the tedious, painstaking checks and balances the tests require before they are considered reliable.³⁶ Be prepared to review a lab's validation procedures and challenge them if they are inadequate.

A proficient lab should provide validation tests that include the testing of known samples to determine reliability. Additionally, blind testing, in which the technicians are not aware they are being evaluated, ensures reliability.³⁷

Documentation is a critical element, including documentation of laboratory organization and management, personnel qualifications and training, facilities, evidence control procedures, validation methods, analytical procedures, calibration methods, standards for documentation and report writing, proficiency testing, audits, and review of subcontractors, to name but a few of the required documents. Similarly, validation requires independent, controlled analyses to confirm accurate results are obtained. Validation involves testing known samples from various tissues including blood. The lab should maintain proficiency among its staff, including subcontractors.³⁸

There is a clear problem of confirming reliability when checking validity. Discovery processes often will involve

out-of-state labs, so there is an added cost in obtaining the documentation about validation. Witnesses, due to their extra-jurisdictional status, will be difficult if not impossible to depose.

To obtain a DNA testing order, ask the court for a statement in the order that witnesses will be made available in some form for deposition. Using supreme court discovery rules is usually easy and cost-effective. First, out-of-

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state witnesses may willingly comply with records subpoenas, even if they cannot be compelled to do so.³⁹ Second, you can use requests for admission to prove lack of validation.⁴⁰ Third, depositions on written questions are available.⁴¹ Finally, you can combine rules; for example, there is no reason why you cannot take a telephone⁴² evidence deposition⁴³ before an officer of a foreign court.⁴⁴

D. Challenging the Qualifications of Personnel

Closely related to validation and ability to reproduce test results is expert qualification. The first target is the testifying expert. However, DNA tests rely upon a chain of people as well as a chain of custody. The expert witness may not be able to testify to the qualification of personnel at the blood draw site. At the very least, a routine should be established between the facility analyzing the sample and the intervening handlers of the sample.

In a criminal case, if the chain of custody of evidence cannot be established, the evidence can be excluded. Essentially, you should establish a chain of custody for DNA samples as well. The chain should include the qualifications of each person who handles the sample. If a handler does not have specific expertise relative to DNA samples, the evidence should still be admissible as long as the handling procedures are reliable.

Before dismissing such inquiry as pointless, consider the example of the FBI. A 1997 U.S. Department of Justice report found evidence analyses were

flawed, inaccurate, and beyond the competence of the examiners. Reports were poorly prepared, with insufficient documentation of results and inadequate record retention.⁴⁵

E. Selection of Tests – PCR versus RFLP

PCR analysis involves synthesizing DNA from a smaller amount of DNA. The technique is useful for crime scenes

or posthumous paternity cases where there may be limited DNA, but PCR analysis carries a risk of contamination. In a criminal context, where the goal is showing that the DNA matches an unknown, the DNA test results are then calculated showing the likelihood of inclusion in certain population groups. (See the sidebar at <www.isba.org/ibj/sep02/dna.pdf> for more.)

The issues in a paternity test are whether there is a match with the putative father and whether the match or lack of match is accurate. Because DNA testing in parentage cases can be performed following a blood draw, there is no need to risk contamination using PCR. Contamination is unlikely to cause inclusion, but may result in incorrect exclusion. RFLP analysis presents its own set of problems, however. Phenomena such as residual bands,⁴⁶ band

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34. O'Reilly and Sincox at 47 (cited in note 20).

35. 750 ILCS 45/11(c), (j).

36. 2 Lawyer's Guide to Medical Proof, *Voir Dire for Admissibility of DNA* § 411.03 (“Lawyer's Guide, *Voir Dire*”).

37. Id.

38. *Reference Guide on DNA Evidence* at 510 (cited in note 32).

39. SCR 204(a)(4).

40. SCR 216.

41. SCR 210.

42. SCR 206(h).

43. SCR 212(b).

44. SCR 205(a), (b).

45. US Dept of Justice, Office of Inspector General, *The FBI Laboratory: Investigation into Laboratory Practices and Alleged Misconduct in Explosives-Related and Other Cases* (April 1997), cited in Paul Giannelli, *Scientific Evidence in Civil and Criminal Cases*, 33 Ariz St L J 103, 106 (Spring 2001).

46. DNA bands appearing due to insufficient washing of the DNA probe.