

S B

275

HOUSE COMMITTEE REPORT

(7)

Date Referred: January 12, 1990

FURTHER REFERRALS:

Date of Committee Action: 4-29-90

The JUDICIARY Committee considered:

SB 275

CS FOR SENATE BILL NO. 275 (Jud)

GENETIC (DNA) PRINT TESTS

"An Act concerning the admissibility into evidence of deoxyribonucleic acid (DNA) print tests in civil and criminal proceedings; and providing for an effective date."

RECOMMENDATIONS:

be replaced with HCS CSSB 275 (Jud) the same title

a new title

have attached amendment(s)

do pass

do not pass

no recommendation

individual recommendations

additional referral to the _____ Committee

ADOPTS: _____ letter of intent

ATTACHES NEW FISCAL NOTE(S):
(Dept)

APPROVES PREVIOUS:
(Date/Dept)

fiscal impact _____

fiscal note(s) _____

zero fiscal note _____

zero fiscal note(s) _____

zero with analysis LAW

zero fn/analysis _____

SIGNING DO PASS:

SIGNING:
(Check appropr. column)

Do Not Pass No Rec Amend

[Signature] Gruenberg
[Signature] Ellis
[Signature] Martin

Signature	Do Not Pass	No Rec	Amend
<u>[Signature]</u> DAVIS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>[Signature]</u> GOLL	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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[Signature]
Chairman's Signature

FISCAL NOTE

REQUEST:

Revision Date: May 1, 1990 Agency Affected: Department of Law
 Title: "A. Act concerning the admissibility... of deoxyribonucleic acid (DNA) print tests..." BRU: Prosecution, Legal Services
 Sponsor: House Judiciary Components: Prosecution - All
 Requestor: House Judiciary Legal Services - Operations

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	-0-	-0-	-0-	-0-	-0-	-0-

CAPITAL						
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REVENUE						
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FUNDING: (Thousands of Dollars)

GENERAL FUND	-0-	-0-	-0-	-0-	-0-	-0-
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME	-0-	-0-	-0-	-0-	-0-	-0-
PART-TIME						
TEMPORARY						

ANALYSIS : (Attach a separate page if necessary)

Please see the attached analysis.

Prepared by: Richard I. Pegues, Director Phone: 465-3672
 Division: Administrative Services Date: May 1, 1990
 Approved by Commissioner: Douglas B. Bailey, Attorney General Date: May 1, 1990
 Agency: Department of Law

Distribution (by preparer):

Legislative Finance
 Legislative Sponsor
 Requestor
 Office of Management and Budget
 Impacted Agency(ies)

CONTINUATION of FISCAL NOTE ANALYSIS

For Bill/Resolution No. HCSCSSB 275 (Jud)

The House committee substitute for SB275 provides that a deoxyribonucleic acid (DNA) print is admissible in a civil action if the DNA print test was performed according to methods approved by the Federal Bureau of Investigation by a person who has been trained according to techniques, methods and standards of training approved by the Federal Bureau of Investigation.

The committee substitute also provides that a DNA print test, authorized in the same manner as for a civil action, shall apply in a criminal action or proceeding. The bill has the effect of amending Rules 401, 703 and 705 of the Alaska Rules of Evidence.

This is a procedure change which acknowledges the scientific reliability of the DNA print test identification method. Because it improves evidence procedures, the bill will not have a fiscal impact on the Department of Law.

STATE OF ALASKA
THE LEGISLATURE

POUCH Y STATE CAPITOL
JUNEAU, ALASKA 99811
907 465 3800

LEGISLATIVE AFFAIRS AGENCY

MEMORANDUM

January 9, 1990

SUBJECT: CSSB 275 (Judiciary), relating to the
admissibility into evidence of DNA print
tests -- sectional analysis

TO: Senator Lloyd Jones

FROM: Jack Chenoweth
Legislative Counsel

The measure provides for the admission in civil and criminal proceedings in the courts of the state evidence that is based on the DNA fingerprinting or genetic identification process.

The substantive provisions are preceded, in bill section 1, by legislative findings supportive of the legislature's decision to amend state law to admit DNA genetic print test evidence.

Bill section 2 adds to the body of law applicable to civil actions authority to admit DNA genetic print test evidence. Following the model used for admission of evidence of chemical analysis of breath and blood for purposes of operating a motor vehicle, aircraft, or watercraft while intoxicated (AS 28.35.033(d)), AS 09.25.300(a) establishes the presumption of the validity and admissibility of test results contingent on the test's performance according to techniques approved by the Department of Public Safety by a person trained according to techniques, methods, and standards approved by that department. Since genetic print test evidence deals in probabilities--in the likelihood that two or more individuals would not have identical genes and therefore would not have identical genetic print test results--AS 09.25.300(b) authorizes admission in a civil proceeding any statistical population frequency computations based upon the DNA genetic print tests. Definitions of two terms used in the section are offered in AS 09.25.300(c).

Senator Lloyd Jones
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January 9, 1990

AS 12.45.035, added to the Criminal Procedure Code by bill section 3, makes the provisions of AS 09.25.300 applicable in criminal prosecutions.

The legislation is given an immediate effective date by bill section 4.

JC:gc
G13/017

A M E N D M E N T

OFFERED IN THE HOUSE

TO: CSSB 275 (Judiciary)

Page 3, lines 4 - 5:

Delete "Department of Public Safety"

Insert "Federal Bureau of Investigation, United States Department of Justice,"

Page 3, lines 6 - 7:

Delete "Department of Public Safety"

Insert "Federal Bureau of Investigation, United States Department of Justice"

MAY 03 1989

COPY

MEMORANDUM

March 17, 1989

SUBJECT: Genetic fingerprinting (Work order 6-1032A)
TO: Senator Lloyd Jones
FROM: Jack Chenoweth
Legislative Counsel

In contemplation of preparation of legislation, you have asked whether the use of genetic fingerprinting in conjunction with investigation and prosecution of certain criminal proceedings

- would conflict with the state's right to privacy;
- would raise other legal problems; and
- performed by laboratories other than police labs would cause legal problems.

Genetic print analysis--"genetic fingerprinting"--is a term of art that is used to describe a kind of evidence by which strands of coding found in a particular genetic molecule may be compared to the coding of like molecules in tissue from a different source for the purpose of identifying the perpetrator of a crime. The genetic molecule examined is deoxyribonucleic acid (DNA). Genetic print analysis subjects human tissue to a procedure that "reads" sequences in the DNA molecule and produces a bar-code like pattern that is unique to the individual.

In the only reported appellate decision considering and upholding the admissibility of DNA print identification evidence, Andrews v. Florida, 533 So.2d 841 (Fla.Ct.App. 1988), reh. den., the Florida Court of Appeals (comparable to the Alaska Court of Appeals, it is not that state's highest court) allowed consideration of DNA print identification evidence at a criminal trial. The Florida court applied the so-called "relevancy approach" that had been substantially adopted in U.S. v. Downing, 753 F.2d 1224 (3d Circ. 1985), a test that required the court to assess

- (1) the novelty of the technique;
- (2) the existence of a specialized literature dealing with the technique;
- (3) the qualifications and stature of expert witnesses (who, in this case, were required to explain the operation of the test and its results to the jury); and
- (4) the nonjudicial uses to which the scientific technique is applied.

Finding genetic print analysis a reliable, well established procedure that has been regularly and successfully used in forensic, paternity, and clinical testing, the Florida court upheld the use of the test in that state's criminal proceedings and admitted the evidence obtained from it.

As regards criminal prosecutions, admissibility of the evidence, not violation of an individual's privacy, is the threshold legal question that the use of DNA print identification evidence must meet. That requires that genetic print analysis must meet the criteria for admission of scientific evidence in the jurisdiction.

Under Rule 402 of Alaska's Rules of Evidence, "[a]ll relevant evidence is admissible . . . ," and "relevant evidence" is defined by Rule 401 of the Evidence Rules as

. . . evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probably or less probable than it would be without the evidence.

The admission of relevant evidence is further limited by Rule 403, giving the trial court discretion to exclude relevant evidence

. . . if its probative value is outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

The Florida court's analysis of the applicability of each of the factors in Andrews suggests generally the type of analy-

sis that an Alaska court might undertake. Andrews, relying on Downing, adopts the so-called "relevancy" approach, an approach "[that] recognizes relevancy as the linchpin of admissibility, while at the same time ensuring that only reliable evidence will be admitted," Andrews, supra, at 846.

In adopting the Downing rationale of "relevancy," the Florida court explicitly rejected the alternative rationale of Frye v. U.S., 293 F. 1013 (D.C. Circ. 1923). Frye involved the question of admissibility of lie detector test results. In the decision, the federal court held that expert testimony relating to novel scientific evidence must satisfy a special foundational requirement not applicable to other types of expert testimony, and that the technique must be sufficiently established to have gained general acceptance in the relevant scientific community. The Florida court noted that

One leading commentator has summarized Frye as requiring courts to determine: (1) the status, in the appropriate scientific community, of the scientific principle underlying the proffered novel evidence; (2) the technique applying the scientific principle; and (3) the application of the technique on the particular occasion.

Andrews, supra., at 843. The Court of Appeals decision criticized Frye as a "general acceptance" approach, "predicated on 'nose counting' [to determine acceptance within the scientific community] . . . [that] may result in the exclusion of reliable evidence" Andrews, supra, at 845, 846.

However, it is the Frye approach--with its rationale that the evidence of the technique "must . . . have gained general acceptance in the relevant scientific community"--that governs admission of the product of new scientific techniques into evidence in Alaska courts.

The initial case is Pulakis v. State, 476 P.2d 478 (Alaska 1970) in which the court determined that the results of polygraph reports should not be received in evidence over objection to their admission. Considering the question, the state Supreme Court cited and relied on Frye:

[T]he general rule precludes admission of the results of polygraph tests. The authority usually cited as the first reported American case holding such evidence inadmissible is Frye v. United States. In Frye, the court said of expert testimony based on a test of blood pressure fluctuations . . . :

Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while the courts will go a long way in admitting expert testimony deduced from a well-recognized scientific principle or discovery, 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.

Frye v. United States, supra, at 1014, quoted in Pulakis, supra, at 478.

Reliance on the Frye approach adopted by the Supreme Court in Pulakis was discussed in Contreras v. State, 718 P.2d 129 (Alaska, 1986) (extending the Frye test to consider hypnotically-induced testimony by a witness) */ and Rodriguez v. State, 741 P.2d 1200 (Ak. App., 1987) (applying the Frye test to admit testimony by an expert witness providing background information to assist jury).

*/ In Contreras, the Supreme Court declared:

The Frye standard is essentially a "prejudice-versus-probative value test," similar to [Alaska] Evidence Rule 403. Since there is a significant danger of prejudice from admitting evidence which appears scientific and is especially likely to be believed, and which has no probative value if it is unreliable, such evidence should be excluded. Application of the Frye test permits the court, rather than the jury, to make a threshold reliability determination.

In the extended discussion of the Frye test appearing in the Contreras decision, the Alaska Supreme Court found in Frye a two-step process that required, first, the definition of a relevant scientific community, and, second, a requirement that testimony and publication in and by that community should be examined to determine where there is general consensus as to the reliability of hypnotically-adduced testimony. As to the first, the court concluded:

We define the relevant scientific community as the "academic, scientific, and medical or health-care professions which have studied and/or utilized hypnosis for clinical, therapeutic, research, and investigative applications. It does not include those whose involvement with hypnosis is strictly limited to that of practitioner, technician, or "operator" We exclude technicians from the group because Frye requires scientific, not merely technical, judgments to be made.

Contreras, supra., at 135. As to the second, the court found:

We note that in determining whether there exists consensus within the relevant scientific community that hypnosis is reliable, it is not this court's duty to decide which side of the debate is correct, but rather to determine if there is sufficient consensus on the reliability of hypnotically aided recall to determine whether it is generally accepted. . . .

. . . .

If hypnotically adduced testimony were to be admitted, the jury would have to decide the question of the credibility of the witness. However, this determination would be predicated upon the jury's understanding of the scientific underpinnings of the methods by which the testimony was developed. The way a jury would evaluate such testimony is closely analogous to the way it would evaluate evidence developed from polygraph testing.

Contreras, supra. at 135.

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Consideration of the hypnosis literature as reviewed by the litigants and as set out by the [Alaska] court of appeals makes it clear that there is no consensus as to what hypnosis is or what it actually does. In its fledgling state, the "science" of hypnosis is far too underdeveloped to qualify under the Frye standard. Moreover, although there is insufficient empirical research to fully substantiate either side's claims about the benefits and dangers of hypnosis, it is quite clear that the previously hypnotized witness may be prey to the distortions wrought by suggestion, confabulation, and increased confidence.

Id., at 135, 136.

My purpose in relating this extended discussion is to note, first, that the Frye test and the rationale used by the Florida courts are quite different and, second, that, if the decision regarding the admissibility of DNA print identification evidence is left to the courts, the rationale cited and applied by the Florida appellate court in Andrews will almost certainly not be followed in Alaska. In considering the admissibility of new evidentiary methods, this state's courts have adhered to the Frye test. The net result of the application of the test is that, in the absence of a evidence that a new scientific method has gained general acceptance within the applicable scientific community, the courts have hesitated to admit the evidence. While the Alaska courts could determine that genetic print analysis meets the Frye test and permit admission of evidence under it, the decisions in Pulakis (admissibility of polygraph evidence) and Contreras (admissibility of hypnotically-assisted evidence) suggest to me that the court will look long and hard to see if there is a consensus that supports use of that evidence.

To the extent the legislature has evidence that genetic print analysis is wholly reliable, it may, by law, authorize and direct its admission into criminal trials.

*

If use of genetic print analysis is limited to use in crimi-

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nal prosecutions, there is little likelihood in my judgment, that a defendant challenging genetic print analysis based on a right to privacy argument would prevail. Genetic print analysis requires the taking of small amounts of tissue samples--blood, hair, or skin samples, for example--and the taking and subsequent use of physical evidence has been upheld against federal Fifth Amendment challenges, Schmerber v. California, 384 U.S. 757, 86 S.Ct. 1826, 16 L.Ed.2d 908 (1966), and similar challenges under article I, section 9 of the Alaska Constitution, Loveless v. State, 592 P.2d 823 (Alaska 1979), Svendlund v. Municipality of Anchorage, 671 P.2d 378 (Alaska 1983). These cases consider assertions that the taking and use of physical evidence violate constitutional guarantees against self-incrimination, surely a stronger source of constitutional challenge than one grounded on an explicit right to privacy, and each decision rejects the claims by not sustaining the asserted violations.

*

Finally, it seems virtually certain that adverse consequence would not attach to genetic print analysis because the test is performed other than in a police laboratory. What was persuasive in Andrews in this regard is that the tests in question had been performed at a licensed clinical laboratory (outside the state) with a record of forensic and paternity testing, with testimony as to the actual procedures used by that lab in performing the particular test. The Andrews court's treatment of the point underscores the essentials relating to admissibility of genetic print analysis: (1) the need for a qualified expert witness to explain the testing process and the underlying scientific process to the court and jury; (2) the need to show that the tests were properly conducted using reliable instruments; and (3) competent and correct interpretation of the test results. Care in the performance of the test to assure accurate results is surely much more important to gaining acceptance of genetic print analysis generally and admissibility of the results of a specific test than is the fact that the test was performed outside an approved police forensics facility.

*

If this memorandum prompts questions, please contact me.

JG:gc
WKG8/029

Alaska State Legislature

Legislative Research Agency



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Juneau, AK 99811-3100
Phone: (907) 465-3991
Fax: (907) 463-3351

JAN 17 1990

January 17, 1990

MEMORANDUM

TO: Senator Lloyd Jones

ATTN: Glenda Carino

FROM: Sheila F. Helgath *RFH*
Legislative Analyst

RE: Recent Developments in DNA Fingerprinting Use in the Courts
Research Request 90.180

You asked this agency to determine if there had been any recent developments nationally in the use of DNA fingerprinting for criminal prosecutions. Also you asked if the reports on DNA fingerprinting by the Office of Technology Assessment and the National Academy of Sciences were available.

The National Academy of Sciences' study has just been funded and the results are expected at the end of 1990. The study panel will be chaired by geneticist Victor McKusick from John Hopkins University.

The Office of Technology Assessment will issue a report on DNA fingerprinting sometime next month. The report will conclude that the method has been generally accepted by the courts as evidence. One of the authors, Kevin O'Conner did mention that the two cases discussed below demonstrate that there is not total acceptance of the methods used in the process.

The state of Minnesota passed a bill which allows DNA fingerprinting to be used as evidence in the courts. This use was challenged before the Minnesota Supreme Court in *State vs. Schwartz* on November 3, 1989. The court found that DNA fingerprinting has gained general acceptance under the Frye Standard. However, it also found that the company doing the tests had failed to standardize the test, provide experimental evidence in peer-reviewed journals and had handled the evidence improperly. The court found that the procedures used by the company were not up to normal laboratory standards. It also raised some procedural issues related to constitutional rights of defendants such as access to the evidence data before the trial. This opinion applied only to DNA testing that was done before August 1, 1989.

Senator Jones
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Page 2

The Maine case involved the rape of a 5-year-old girl. Again it was not the methodology that was found errant but the laboratory procedures in handling the evidence. It also illustrated the capability of the method to show a person innocent as well as guilty. The prime suspect's DNA fingerprint did not match the semen sample and he was released. This evidence was verified by two independent reviewers for *Science*. The second suspect's DNA fingerprint was found to match the semen DNA fingerprint. However, at a pretrial hearing, the second suspect's lawyer found irregularities in how the sample was handled by the company.

A discussion of DNA fingerprinting in *Science* magazine concludes that "In virtually every case in which DNA evidence has been challenged, including the Castro case, judges have ruled that the theory behind DNA fingerprinting is scientifically well established and that the technology can produce evidence that is admissible in court. The practice has, however, occasionally been found wanting."¹

Alaska is in the forefront of using DNA fingerprint technology for non-human investigations. The Alaska Crime Laboratory in Anchorage is doing a DNA population study of moose. They expect to be able to identify individual animals through DNA fingerprinting. This means that if the remains of an animal were found in a closed area they could tell whether the meat in a suspect's freezer came from that animal.

I hope you find this information useful. If you have any questions, or would like additional information, please contact this agency.

Attachments

¹"Maine Case Deals Blow to DNA Fingerprinting" *Science*. Vol. 246. Dec. 22, 1989. The Castro case was the first case to use DNA fingerprinting evidence. Although the evidence was eventually withdrawn the defendant pled guilty in a plea bargaining arrangement.

majority of the Indiana Court of Appeals, First District, held November 6. While the Confrontation Clause of the Sixth Amendment guarantees a defendant a face-to-face meeting at trial with witnesses against him, "the right to physically face one's accusers is not absolute," the majority pointed out. "The Confrontation Clause does not compel a witness to fix his eyes upon the defendant; he may look elsewhere. . . . [t]he Confrontation Clause is fully satisfied when the factfinder can observe the witness's demeanor under cross-examination and the witness testifying under oath and in the presence of the accused. . . . [P]ositioning the witness away from the defendant is but a reasonable limitation on the defendant's interest in physical confrontation." For the same reasons the majority found no violation of the state constitutional right "to meet witnesses face to face," whose boundaries have been interpreted to accord with those of the federal guarantee. Judge Staton, concurring in the result, agreed that the right to confrontation is not to be taken literally. (*Stanger v. State (Indiana)*, Ind CtApp, 1stDist, No. 32A01-8903-CR-00105, 11/6/89)

Double jeopardy — Manifest necessity for mistrial — Appearance of judicial partiality

A trial judge's decision, along with other judges in the jurisdiction, to file a formal grievance petition against a prosecutor did not constitute manifest necessity for aborting a trial in which the judge and prosecutor were then involved, the Michigan Court of Appeals held in an opinion released October 26. The defendant opposed the mistrial declaration, the court pointed out; also, the judge said he felt he could continue to be fair and impartial. The appearance of partiality, which was the ground the judge gave for the mistrial, is not strong enough here to overcome the defendant's right to continue with the jury that had already been sworn, the court concluded. Accordingly, the defendant's retrial violated double jeopardy principles. (*People (Michigan) v. Little*, Mich CtApp, No. 106965, 9/5/89, released 10/26/89)

Drunk driving — Evidence — Refusal to submit to testing

Drawing a sharp distinction between two subsections of the state's implied consent law, a majority of the Pennsylvania Superior Court ruled October 27 that although a motorist's refusal to submit to chemical testing cannot be admitted in a license suspension action if he was not properly warned of the consequences of his act, his unwarned refusal is admissible in a criminal proceeding as evidence of intoxication. Only the license-suspension subsection contains the warnings requirement. It is true that "refusal" should be defined the same for both kinds of proceedings, *Commonwealth v. Hunsinger*, 549 A2d 973, 44 CrL 2130 (Pa SuperCt 1988). But the meaning of "refusal" is not the issue here, the majority said; instead, the question is whether the absence of the license-suspension warning prevents the refusal from being "knowing." The legislature evidently did not intend a warning to be required under the criminal evidence subsection, for it did not expressly require one the way it did in the license-suspension provision, the majority said. What the provision in question does do is build in a protective mechanism by commanding that no

presumptions arise from the refusal evidence and that the defendant can counter the evidence by showing the circumstances surrounding it. Dissenting, Judge Hoffman argued that distinguishing between the two statutory subsections is improper under *Hunsinger*. (*Commonwealth (Pennsylvania) v. Ruttle*, Pa SuperCt, No. 3454 Philadelphia, 1988, 10/27/89)

Drunk driving — Violation of rules governing administration of breath tests — Remedy

The failure of the police to comply with administrative rules governing the administration of breath tests to drunk-driving suspects requires the suppression of the test results at trial, but not necessarily dismissal of the case, the Michigan Court of Appeals decided in a ruling released October 26. The rule violated here requires the administration of at least two breath tests and, if the second result differs substantially from the first, further testing. While exclusion of evidence is not necessarily the appropriate remedy for every violation of an administrative rule, it is in this context, the court said. "A reading of the administrative rules with respect to the administration of Breathalyzer tests indicates that their purpose is to ensure the accuracy of those tests," it noted. "Accordingly, we hold that where the administrative rules concerning the administration of Breathalyzer tests have not been complied with, the accuracy of those tests is sufficiently questionable as to preclude the test results from being admitted into evidence." However, the charges in such a case need not be dismissed if prosecution can proceed without breath-test results, the court added. (*City of Kalamazoo v. Willis*, Mich CtApp, Nos. 107906 etc., 9/5/89, released 10/26/89)

Evidence — "DNA fingerprinting"

The results of forensic DNA analysis are generally admissible in a criminal trial so long as reliable procedures are employed, a majority of the Minnesota Supreme Court ruled November 3 in a decision applicable only to testing conducted prior to August of this year. Such evidence meets the standard enunciated in *Frye v. U.S.*, 293 F 1013 (CA DC 1923), and adapted for state law purposes in *State v. Mack*, 292 NW2d 764 (Minn SupCt 1980); Experts in the relevant scientific field generally agree that the evidence is reliable and trustworthy. But the majority emphasized that "reliability of the test results is crucial," and it concluded that the DNA evidence in this case was inadmissible because the testing laboratory, Cellmark Diagnostics Corp., failed to employ validation protocols such as formal methodology validation and publication of experimental studies in peer review journals. Furthermore, the majority warned that an accused's fair-trial and due-process rights are implicated when data on which DNA typing results are based are not made available prior to trial for review and cross-examination. Accordingly, it instructed that "[i]deally, a defendant should be provided with the actual DNA sample(s) in order to reproduce the tests. As a practical matter, this may not be possible because forensic samples are often so small that the entire sample is used in testing. Consequently, access to the data, methodology, and actual results is crucial so a defendant has at least an opportunity for independent expert review."

The majority added that the rule of *State v. Joon Kyu Kim*, 398 NW2d 544, 40 CrL 2329 (Minn SupCt 1987), barring the use of population-frequency statistics in criminal trials, applies where DNA-typing results are admitted. The majority's opinion applies only to testing conducted before August 1, 1989; new legislation facilitating the admission of such evidence applies after that date and will have to be reviewed in a later case. Justice Kelley, concurring, urged re-examination of *Joon Kyu Kim*. (*State (Minnesota) v. Schwartz*, Minn SupCt, No. C5-89-460, 11/3/89)

Evidence — Other crimes — Possession of gun during armed robbery

The judge in an armed robbery trial did not violate state evidence rules by allowing the introduction of a sawed-off shotgun seized from the accused at the time of arrest, even though mere possession of the gun was a distinct crime, a majority of the Michigan Supreme Court ruled October 31. The admissibility of the shotgun was not governed by MRE 404, which generally bars evidence of extrinsic crimes or bad acts by the defendant except for certain limited purposes, such as proof of motive, intent, or "signature," the majority said. Rather, the weapon was properly admitted as direct evidence of his commission of the armed robbery under MRE 401, which provides that evidence is relevant if it has a tendency to make any fact of consequence more or less probable. "Evidence of a defendant's possession of a weapon of the kind used in the offense with which he is charged is routinely determined by courts to be direct, relevant evidence of his commission of that offense," the majority pointed out. The shotgun was clearly relevant to make the defendant's identity as the robbery gunman more probable than it would have been otherwise, and "[t]he fact that establishing defendant's possession of the shotgun also necessarily constitutes evidence of a separate crime . . . does not along bring the proof within the compass of MRE 404 preclusion. Unlike the 'exceptions' contained in MRE 404(b), in which relevance rests on a circumstantial inference from the other act to the fact in issue, the shotgun itself was equally as direct an item of evidence of defendant's commission of the charged robbery in this case as marked bills or identifiable jewelry would be in another. . . ." Justice Levin, joined by Justice Archer, would have remanded on another evidentiary point. (*People (Michigan) v. Hall*, Mich SupCt, Nos. 81912 etc., 10/31/89)

Forfeiture — Property initially seized without probable cause — Remedy

In a situation in which the government has illegally seized a suspected drug-trafficker's property without probable cause to believe that it is subject to civil forfeiture under federal law, but information later uncovered establishes probable cause for forfeiture, the seized property must nevertheless be returned to its owner, the U.S. District Court for the Western District of New York ruled October 31. The court rejected the view of some federal circuits that an improper seizure does not jeopardize the government's right to secure forfeiture if probable cause can be supported by untainted evidence. It reasoned that "the mere exclusion of

unconstitutionally seized property from a contested procedure for its forfeiture is of no practical effect" and therefore cannot serve to deter the government from "cavalier disregard" for the Fourth Amendment. The better rule, the court said, is "[r]ather than merely excluding the illegally seized property from a proceeding for its forfeiture, the property should be returned to the person from whom it was seized and the government should not be permitted to maintain its proceeding against such property." It pointed out that the government's interest in relaxing the exclusionary rule is diminished in this context, inasmuch as there is no risk of a felon going free because of excluded evidence. (*U.S. v. S37,780*, DC WNY, No. CIV-89-743E, 10/31/89)

Juveniles — Home supervision agreement — Entry of juvenile's room

A "home supervision agreement" between a youthful offender and the state providing that the probation officer "shall have access to the minor . . . at all times" justified the officer's entry into the youth's bedroom, the California Court of Appeal, Fourth District, decided October 19. Accordingly, evidence the probation officer found when he went into the youth's room to take him into custody for violating another provision of the agreement was admissible. The state supreme court has been liberal in construing probation conditions that waive Fourth Amendment rights, the court observed, citing *People v. Bravo*, 738 P2d 336, 41 CrL 2341 (Calif SupCt 1987). Using the objective test set out in *Bravo*, the court decided that a reasonable person would have understood the agreement's language to permit the entry made here. "The purpose of the access condition is to ensure the minor complies with his written promises. Since the home supervision agreement contemplates the minor will be at home . . . the probation officer in charge of the home supervision must necessarily have access to the minor in his home. Reasonably, this access would extend to the place in the home normally occupied by the minor, i.e., his bedroom." (*People (California) v. Curtis Enrique T.*, Calif CtApp, 4thDist, No. D008848, 10/19/89)

Racketeering — Jury instructions — "Enterprise"

An "enterprise" within the meaning of Racketeer Influenced and Corrupt Organizations statute, 18 USC 1961-68, may consist of more than one entity, the U.S. Court of Appeals for the Second Circuit said November 6. With this in mind, the court declined to hold that the jury in a RICO case should have received an instruction on "multiple enterprises" analogous to the instruction required in cases involving possible multiple conspiracies. Such instructions are given in conspiracy trials where the evidence might permit a finding of several illegal agreements, in order to prevent prejudicial "spillover." But the court reasoned that a RICO enterprise is "distinguishable from a criminal conspiracy in that it has cumulative aspects, whereas separate and distinct conspiratorial agreements must be charged and proven individually." Furthermore, it pointed out, there is little danger that a properly instructed jury will convict a RICO defendant of uncharged crimes. Participation in an entity that is not inherently a criminal

they were promising. Like several other experimental AIDS vaccines, the Chiron vaccine is based on a recombinant version of the HIV envelope protein. The envelope protein is combined with an emulsifying oil and an adjuvant, a system Chiron research-

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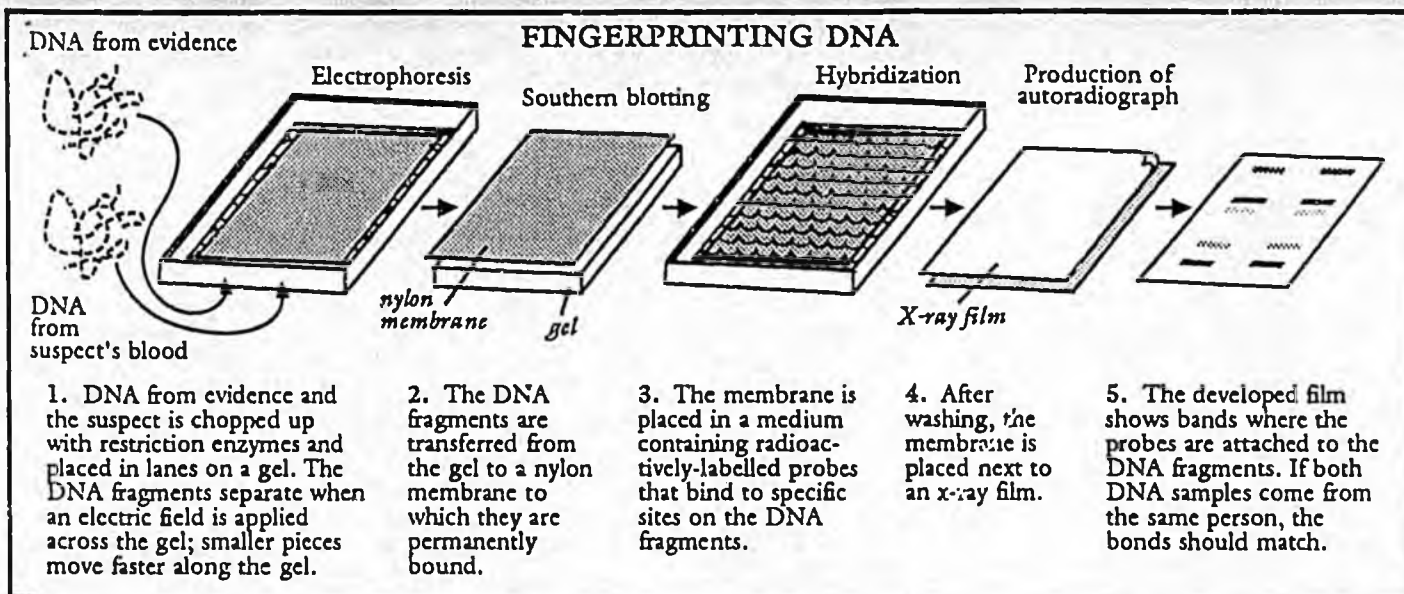
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School in London to develop a polymerase chain reaction-based test for the cystic fibrosis gene.

But advocates of the new bill are unswayed by the potential benefits of such research. Jack Scarisbrick, director of Life, Britain's largest anti-abortion group, says that researchers "want to have embryos in order to detect chromosomal and genetic disorders, not primarily in order to cure them . . . but to be able to detect these defects and to kill them."

As Scarisbrick's use of the word "kill" suggests, the debate on the bill in Parliament, like the abortion debate in the United States, turns largely on the moral issue of when life begins. Those who favor the less stringent version of the bill—the one permitting research on embryos up to 14 days—do so on the grounds that before that time an embryo can hardly be considered "human."

Fourteen days was chosen because it is only at that time that the "primitive streak" appears. The primitive streak is the first group of cells that will go to make up the embryo itself. Until the primitive streak forms, almost the entire conceptus (the sum total of tissues derived from the fertilized egg) consists of membranes, such as the placenta, that ultimately provide support for the developing embryo.

Even a cutoff of 14 days is so late as to be theoretical, given the available techniques for dealing with human embryos. Few investigators have kept a human embryo alive in the laboratory even until the ninth day after fertilization. In most laboratories day 6 or day 7 is the usual limit.

But, as in the United States, British "pro-life" forces believe human life begins at the instant of conception. John McLean, lecturer in anatomy at Manchester University and an adviser to the pro-life members of Parliament, says, "I am convinced . . . that life does begin at fertilization." Experiments on embryos, even before 14 days, "threaten the lives of the subjects," McLean says.

Scarisbrick concurs. "A civilized society," he says, "must not use human subjects without their consent for research and experimentation which results in them being mutilated and killed."

It will take some time to determine which of these opposing views will prevail. After being debated in the House of Lords, the fertilization bill has now been sent to committee. From there it will emerge to be debated again and then passed along to the House of Commons. No one can say for certain when it will see the light of day again, but some observers predict that it could happen as soon as February.

■ JEREMY CHERFAS

Science and PR North of the Border

Were unpublished scientific results used as a weapon in the battle to take over Canada's premier biotechnology firm?

THE UNITED STATES is not the only North American country where the takeover of high-tech firms by foreign corporations generates high stakes—and complex issues in science. Last week a government decision cleared the way for Connaught BioSciences Ltd., Canada's premier biotechnology company, to be sold to Institut Merieux, S.A., of France, ending a complicated takeover attempt that began in mid-1988. One of the many twists and turns along the way was an attempt by Chiron Corp., the American biotech company, to place a story based on unpublished results of its AIDS vaccine research in the *Toronto Globe and Mail*, one of Canada's best known newspapers.

Chiron, with its Swiss partner, the pharmaceutical giant CIBA-Geigy, was competing with Merieux for Connaught. The AIDS vaccine article, reporting promising preliminary results of a phase I clinical trial, appears to have been an attempt to sway public and government opinion in Chiron's favor. Editors at the *Globe and Mail*, fearful of being used, killed the story. But—like the cold fusion case—the episode raises sharp questions about the appropriate use of data that has not been peer-reviewed.

Connaught was founded at the University of Toronto in 1914 and its commercial success was established by production of the first commercial insulin for treating diabetes. The company is currently one of the world's largest vaccine makers, producing vaccines against polio, meningitis, and influenza, among other diseases.

In recent years, as clinical trials have become increasingly expensive, Connaught found itself hard pressed to muster the resources for developing new products and moving them to market. A report prepared for the Canadian government described Connaught as a "shrinking niche player" in the vaccine arena. The company's production and marketing facilities, however, made it a desirable target for a takeover. Enter Merieux.

In April 1988, Merieux first bid for Connaught shares, a move blocked by the securities commissions of Ontario and Quebec. A year later Merieux proposed to merge their vaccine operations with Connaught's, form-

ing a new company based in Holland. Connaught's shareholders were not much interested because the deal would have given them stock in the new venture rather than cash. Two weeks before Connaught's board was to have voted on the offer, CIBA-Geigy and Chiron entered the picture.

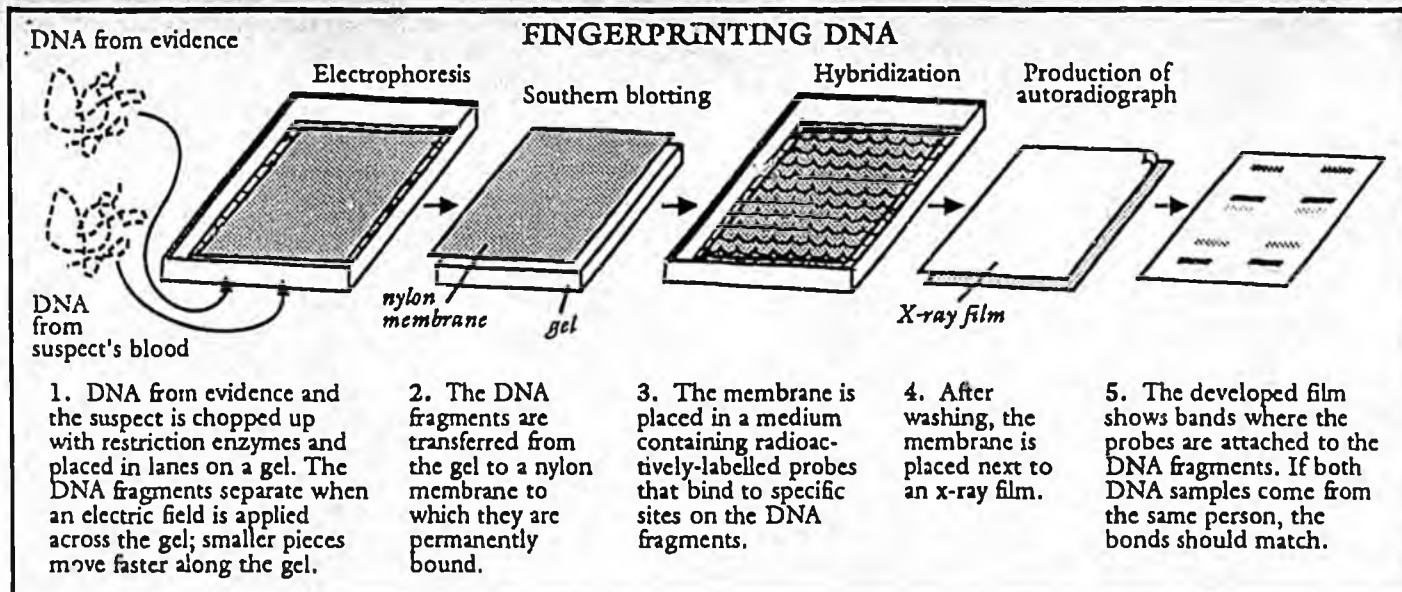
CIBA-Geigy and Chiron made an offer of \$30 (Canadian) per share for Connaught. Their bid also included a provision to make Connaught the headquarters of a new worldwide vaccine company—a provision aimed at reducing Canadian anxiety that, if Connaught were sold to a foreign concern, the once proud research facility would be turned into little more than the local marketing arm of an international giant.

Such considerations are not merely theoretical, because in Canada a federal agency called Investment Canada must approve any takeover by a foreign institution. That agency's standard for approval is whether the takeover provides "net benefit" to Canada. In the Connaught case the maintenance of an integral company, including research and development facilities, was apparently part of the overall "net benefit" package.

Investment Canada found the first Merieux cash offer unacceptable on "net benefits" grounds and the presence of a competing offer from CIBA-Geigy and Chiron made it possible to negotiate better terms. The negotiations were fruitful: Merieux came back with a bid of \$37 per share that included an increased commitment to keeping research and development in Canada. That was where the story stood early this month, as Investment Canada pondered the two competing bids.

Chiron's bid—\$30 a share—was lower than Merieux's, but intangible factors were part of the decision, and certain intangibles seemed worth emphasizing. One of them was the American company's research competence. A week before Investment Canada made its decision, Chiron contacted Geoffrey Rowan, a technology reporter for the *Globe and Mail*. Rowan was given some results of a phase I trial of an experimental AIDS vaccine, a trial that has not yet been described in a peer-reviewed context.

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place. If they are displaced, bandshifting has occurred.

Lifecodes demonstrated this in the McLeod case with a probe that attaches to a constant fragment on the X chromosome. Then it went one step further. From the displacement, it calculated that the size of the fragments in the semen sample should all be corrected by 3.15% to account for the bandshifting. Once this was done, the differences between the bands from the semen and those from McLeod's DNA all fell within the threshold required to declare a match. The conclusion: The two DNA samples came from the same person.

Armed with that evidence, the prosecution went into a hearing before Judge Kermit Lipez on 5 December to determine whether the DNA data could be used in McLeod's trial. It was the first such procedure in Maine involving DNA typing.

The most devastating cross examination came on Friday, 8 December. The issue: Is a single monomorphic probe sufficient to calculate the degree of bandshifting, and can one correction factor be applied to all the fragments from one sample?

Baird, of Lifecodes, testified that the 3.15% correction for bandshifting could have been determined from any monomorphic probe, and he stated that all the bands should be adjusted by the same percentage. Libby, the defense attorney, then presented a sheet from Lifecodes' own documents that cast doubt on these assertions. Lifecodes had in fact used a second monomorphic probe, one that attaches to a constant fragment on the Y chromosome, along with the monomorphic X probe. The sheet Libby produced contained a calculation that Baird himself had made showing that this Y probe gave a bandshift of 1.72% not the 3.15% derived from the X probe. If the smaller percentage were used as a constant correction, two out of nine bands would differ by more than the threshold required to declare a match. Lifecodes had not included this document in the evidence it presented.

Confronted with his own calculations, Baird reversed his earlier testimony. He said that there may not be a constant correction factor because the bandshifting appeared to vary throughout the gel. In that case, different correction factors may be required for different sized particles.

"In actuality," said Baird, "if you want to apply the monomorphic probe with more exactness, you would apply the number you generate for the size range you are looking at." Asked why he used just the correction derived from the X probe, Baird said he considered it gave the appropriate correction for the range he was looking at.

Baird was unavailable for an interview

with *Science*, but Lifecodes spokesperson Karen Wexler says the company "does not use the Y probe to document bandshifts, but to give a yes or no answer on whether the DNA is from a male." (Females do not have a Y chromosome, so the probe would not bind to female DNA.) The position of the Y band in the McLeod case was determined in "a routine sizing, but it was difficult to see where the bands were," Wexler said.

Gardner, the prosecutor, met the next day with his independent scientific expert, Calvin Vary, and got another bit of bad news. Vary said he could not testify in support of the bandshift correction claimed by Lifecodes. Well before the hearing began, Vary had been shown the autoradiograph with the monomorphic X and Y probes on the semen sample and he told Lifecodes it was "uninterpretable." Vary told *Science* that there was too much background interference to measure the bands precisely. He asked Lifecodes to repeat the test using just the monomorphic X probe, and Lifecodes had done this, producing what Vary de-

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—Eric Lander

scribes as a clean autoradiograph that "quantifiably shows the shift" at about 3%. It emerged during the hearing, however, that Lifecodes had not conducted an independent sizing of the bands on that autoradiograph, so it was useless as evidence.

Gardner, who said in an interview that he was never told by Lifecodes that there may be different bandshifts in different regions of the gel, had no alternative but to pull the evidence. "They should have alerted me that there was a different way of looking at it," he says. Gardner also says it is inexplicable that Lifecodes failed to measure the bandshift when it repeated the experiment Vary called for. Had this been done, "it would have made the case," Gardner claimed. Libby shoots back: "That still doesn't do anything to the bottom line here. Lifecodes selected one [correction factor] that supported their data and discarded the other one."

Because there was no ruling on the admissibility of the evidence, the case will have no legal precedent, but it could make it hard for prosecutors to argue future cases in which bandshifting occurs. Baird testified that bandshifting is sometimes seen when DNA

is been degraded, which happened in the McLeod case. Daniel Garner, the head of forensic testing at Cellmark—Lifecodes' chief commercial competitor—says contaminants and even the amount of DNA being tested have also been found to alter the rate at which DNA runs in a gel.

There seems to be general agreement that when bandshifting does occur, the displacement may indeed vary throughout the gel. George Sensabaugh, a forensics expert at the University of California at Berkeley, says that based on limited experience in his lab, "there is a rubber band effect—[bandshifting] that occurs to different degrees for high molecular weight fragments compared to low molecular weight fragments."

The implication is that several different correction factors may be required for the same gel when bandshifting occurs. Indeed, Lifecodes, Cellmark, and the Federal Bureau of Investigation (FBI) are all working on systems involving several monomorphic probes that would pick up fragments that range in size and would therefore provide a check on bandshifting throughout the gel. In the meantime, Bruce Budowle, an expert on DNA typing at the FBI, says that if bandshifting pushes the bands outside the limit required to declare a match, there are really only two alternatives: Declare that the samples don't match or that the evidence is inconclusive.

To some observers, Lifecodes' attempt to correct bandshifting in the McLeod case represents the premature introduction of the technique into a forensic case. "There's little scientific literature on the nature of bandshifting—even on such fundamental points as whether the shifts are constant or non-constant," says Eric Lander, an expert on DNA typing at the Whitehead Institute. "The right place to address these questions is in scientific journals rather than in courtrooms. This is an extremely powerful technology, but there has got to be a better way to ensure that it is used properly."

That's where the National Academy of Sciences comes in. Responding to questions raised by the Castro case in New York, the academy this week appointed a committee to draw up guidelines for DNA fingerprinting. Chaired by Johns Hopkins University geneticist Victor McKusick, it is expected to report by the end of 1990.

In the McLeod case, the technology worked perfectly in excluding the first suspect, David G. All three expert witnesses who reviewed the data told *Science* that the evidence excluding David G. was conclusive. But the case also suggests that basic scientific research is still required on some aspects of DNA fingerprinting technology.

■ COLIN NORMAN

ALASKA STATE LEGISLATURE

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352 Front Street
Ketchikan, AK 99901
907-225-9675



While in Juneau
P.O. Box V
Juneau, AK 99811
907-465-3743

Senator Lloyd Jones

January 17, 1990

MEMORANDUM

To: Rep. Peter Goll, Co-chair
Rep. Max Gruenberg, Co-chair
House Judiciary Committee

From: Senator Lloyd Jones *LJ*

Subj: SB 275 - Admissibility of DNA genetic fingerprint tests as evidence

HAYDEN

I understand SB 275 was assigned to your committee and I would like to request a hearing on the bill as soon as the your calendar permits.

Genetic fingerprinting is a relatively new technique of identification which was developed in 1985. Since then the technique has been used extensively in determining paternal disputes and has been gaining wide acceptance in both civil and criminal proceedings.

In 1988, nine states used DNA test evidence in 12 cases involving sexual assault or violent crimes. In all 12 cases, the defendant was found guilty. As of April of 1989 eight states used DNA evidence in 8 cases involving sexual assault or violent crimes. The defendant was found guilty in 7 cases. One case is still pending.

Genetic print tests have not been used as evidence in any criminal cases in Alaska, however, DNA test results will be used for the first time in a Wrangell case beginning January 29. Lawyers in the case have agreed to allow the scientific data as evidence but they stress that it does not set legal precedence for all Alaskan courts. SB 275 would establish the presumption of admissibility of test results as evidence for all civil and criminal cases in Alaska.

Normally, court rules apply to determine the admissibility of evidence. The proposed legislation would cut off extended court consideration as to the question of admissibility. Admissibility of the evidence is the threshold legal question here.

I have enclosed the following background information for your perusal:

- a copy of CSSB 275 (Judiciary)
- sectional analysis for CSSB 275 (Judiciary), dated January 9, 1990
- a memo from Legislative Counsel, Jack Chenoweth dated March 17, 1989 which gives some background on the legal implications of this bill
- a memo from legislative analyst, Dr. Sheila Helgath dated March 17 outlining the research Dr. Helgath did for us in preparing this bill
- fiscal notes

Rep. Peter Goll
Rep. Max Gruenberg
Page 2
January 17, 1990

In addition, I have more written backup on DNA pint testing if you should need it. Please call Glenda Carino in my office and she will be happy to distribute it to you.

Thank you for your consideration. If you have any questions, please do not hesitate to call.

LJ:gmc
enclosures (7)

Lloyd Jones Testimony
SB 275 - Admissibility of Genetic Fingerprint Tests
House Judiciary Committee

Senate Bill 275, by statute, admits the use of DNA fingerprint tests as evidence in a criminal or civil proceeding. The statute eliminates a special hearing which tests the admissibility of this new forensic method of establishing positive identification of an individual.

DNA identification examines deoxyribonucleic acid, the genetic code, found within nearly all body cells and fluids, to determine the source of forensic evidence. No two people (with the exception of identical twins) share the same genetic pattern. This method may provide irrefutable identification of a criminal where no other evidence exists. It is a powerful tool that can save court time and money in prosecutions for violent crime and paternity suits.

Several states including California, Colorado, Virginia and Washington have enacted legislation mandating blood samples be taken from sex offenders to keep their genetic fingerprints on file for future use. SB 275 doesn't go that far. It only allows DNA prints to be used as evidence. In drafting the bill, we found that Alaska doesn't have the capability to set up a DNA crime bank. However, in the future, should the state want to participate in such a program, I feel it would be a good thing to do.

DNA print tests have been gaining wide acceptability in the scientific community since the technique was first introduced in 1985. The practice has been used frequently for paternity and criminal cases and has had

very little difficulty passing the Frye Test--the standard admissibility test for new scientific procedures as evidence. In Alaska, we have used DNA print tests as evidence in three separate criminal cases. In one case the DNA prints were stipulated as evidence. In the other two cases, the technique was put to the Frye Test and allowed as evidence.

What legal challenges there have been, dealt with the quality of the samples and the potential flaws in laboratory testing procedures. In particular, private, for-profit labs, such as Lifecodes of New York, have produced substandard laboratory analyses. The state is aware of the problem and has opted to use the FBI laboratory, which has a good reputation for proceeding cautiously and implementing high standards and regulations. Laurie Otto from the Department of Law is here to testify on the state's history with DNA testing and she may be able to comment on the state's decision to use the FBI laboratory.

It was she who brought to my attention a possible amendment which would strengthen the bill by stipulating the tests be performed according to methods approved by the U.S. Department of Justice, Federal Bureau of Investigation. A copy of a memo explaining the change and a copy of the amendment are in your packets.

I urge you to vote for the amendment and for Senate Bill 275. If you have any questions, I'd be happy to answer them.

ALASKA STATE LEGISLATURE

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Senator Lloyd Jones

April 20, 1990

RECEIVED APR 20 1990

MEMORANDUM

To: Representative Peter Goll, Co-chair
Max Gruenberg, Co-chair
House Judiciary Committee

From: Senator Lloyd Jones 

Subj: SB 275 - Genetic Fingerprinting

Thank you for scheduling Senate Bill 275 - Admissibility of Genetic Fingerprint Tests as Evidence on Wednesday, April 25. Since I first introduced this bill, there have been several criminal cases using DNA print tests as evidence. In Alaska, we have used genetic prints as evidence in three cases.

Because the only problem with genetic print tests is the reliability of the technique used by laboratories (in particular Lifecodes), the state is relying on the Federal Bureau of Investigations to do its genetic print test work. The FBI lab has been on the cutting edge of this technology. Since we only use the FBI lab, I would like to offer an amendment to the bill which would eliminate one layer of bureaucracy. Currently, in the bill the Department of Public Safety is in charge of approving the methods for performing DNA tests. My proposed amendment would take them out of the process completely, leaving the methods to be approved by the U.S. Department of Justice, Federal Bureau of Investigation. I have attached the proposed amendment for your perusal.

If you need more background on the bill, please call Glenda Carino of my office. However, you should have the latest information on the bill in your files.

Alaska State Legislature

Senate Advisory Council



P.O. Box V
State Capitol
Juneau, Alaska 99811
Phone: (907) 465-3114

MEMORANDUM

TO: Senator Lloyd Jones
Alaska State Senate

FROM: Sheila F. Helgath, PhD *SFH*
Legislative Analyst

DATE: March 17, 1989

SUBJECT: DNA Fingerprinting Model Laws and Cost to Implement;
Research Request #89-10032

You have requested that Senate Advisory Council obtain model laws and information regarding the implementation of DNA fingerprinting in other states including cost.

A) DNA Fingerprinting

Deoxyribonucleic acid (DNA) fingerprinting is a technique that was developed by a British scientist and first used to convict a criminal in 1985 in England. Since then, this rapidly changing technology has been used in 30 states to substantiate or dismiss charges against criminal suspects (Hickey, pers. com., 1989). DNA fingerprinting, sometimes called genetic fingerprinting, relies on the unique sequence of genetic building blocks that make up chromosomes. There is a greater ability to precisely identify a person than when using traditional fingerprinting and serological tests such as blood typing. There is essentially 100% certainty as opposed to 90% to 95% with the other techniques. This precision is possible because there is only a one in thirty billion possibility that another person would have the same genetic fingerprint when four probes are used¹. Except for identical twins it would be very unlikely that anyone else in the world would have a similar genetic fingerprint. A DNA fingerprint can be made from hair roots, blood, skin cells, urine, semen, or saliva. Combined with another technique, polymerase chain reaction, which amplifies small quantities or degraded samples, it becomes a very effective tool in criminal investigations, prosecutions, and paternity cases.

¹The magnitude of the precision varies depending upon the number of probes used and upon the specific test used.

Senator Lloyd Jones
March 17, 1989
Page 2

B) State Approaches and Policy Issues

Many states, approximately 30, have now used this method in prosecuting criminals (Hicks, pers. com. 1989). However, to date only the Federal Bureau of Investigation (FBI) laboratory and private laboratories have the capacity to do DNA profiling. New York, Florida, and Virginia are on the verge of operational laboratories and Washington will have one in the next year. Some of the states, for example, California, Washington, and Florida are also setting up data banks which profile criminals convicted of sex or violent crimes. Minnesota and Colorado have introduced legislation to set up data bases. We have requested that Washington, Iowa, Maryland, New Jersey, and Minnesota send copies of their legislation to SAC. What has been received to date is attached, the others will be forwarded to you as soon as they arrive.

Infringement on civil liberties and constitutional rights seems to be the major policy concern in developing legislation related to DNA profiling. Most states are addressing this issue by suggesting that it is just a refined version of serological tests already being conducted. However, when states enact a requirement that all persons convicted of sex, homicide, and violent crimes submit materials for profiling then the issue becomes more sensitive. Some of these issues have been addressed for you in the memorandum prepared by Legal Services.

Another issue is the newness and rapidly changing standards of this technique. The technique is less than 6 years old so training is an important component. Most of the forensic specialists with whom I spoke indicated at least a year was necessary to phase this technique into laboratory procedures in their states. The FBI has two series of training sessions, a 4 week and a 4 month session at Quantico, Virginia. Experienced personnel seems to be a very important factor in insuring the accuracy of these readings. However, at present there are no certification or training standards for these techniques. Standardization of tests and techniques is something that is still in the process of being worked out between states, substate regions, and the national crime laboratories. For example, depending upon the type of test the probability of a false positive is either one in 200,000 or one in thirty billion (Burk, 1988). The overwhelming consensus of the literature suggests that none of these are insurmountable problems.

The validity of these tests may still be questioned in the courts since they are so new and most of the technical information is still in the hands of private companies. The technique is still undergoing the "Frye" test which is the standard by which the courts admit scientific data. The Frye test requires that a technique be generally accepted in the field before it is admissible in court. The results in courts have been positive. George Taft, Director of Alaska's Crime Laboratory, suggests that proceeding slowly in implementing Alaska's program would allow other courts and states to establish the credibility of the technique under the Frye test.

C) Costs

Costs to states vary depending upon the extent to which DNA profiling is to be used; the options being profiling random criminal cases, creating an offenders data bank, and use in paternity cases. The following states provide examples of the costs to set up laboratories and procedures for DNA fingerprinting. Attached is a list of materials and costs for setting up a procedure from the Crime Laboratory Digest. A minimum cost to set up this procedure in Alaska would require a staff of two people at a range 20 level, approximately \$150,000 for equipment, and \$15,000 to \$30,000 for supplies (it costs between \$12 and \$30 per sample in expendable chemical reagents). The probable minimum cost per year to operate a laboratory would be \$150,000 per year. There would also be a need to analyze population characteristics in Alaska to provide baseline information for comparison. This study is necessary to make valid comparisons that would stand up in court (Taft, pers. com. 1989). These additional start up costs would probably be equivalent to a years operational budget. To start a fingerprinting program in Alaska will take several years because staff will have to be found and trained, the laboratory will have to obtain a nuclear regulatory license, and the need to conduct the standardization study.

It appears that Alaska has sufficient caseloads to justify doing the procedure in the state criminal laboratory as opposed to contracting out the procedure. Two people can process 25 to 30 samples in a week if they are not in court rooms testifying. It takes about two and a half weeks to complete a sample. Each case requires a minimum of three to five samples. Private laboratories charge an initial \$75 screening charge to determine if the sample is adequate and \$300 to analyze a sample plus whatever extra cost for the expert witness testimony. A rape case, for example, usually requires from three to five samples be analyzed. Mr. Hicks of the FBI thought that it would cost at least \$1,500 per case to have a private laboratory run the samples plus the additional cost of having the laboratories expert witness testify. The other state experts contacted suggested a case would cost between \$900 and a \$1,000. If a state has 150 cases a year or more then setting up the procedure in state laboratories appears to be justified. Alaska has sent 6 or 7 cases out for genetic profiling to date. The FBI performed 250 serological analysis in 1987 for the State of Alaska on rape and homicide cases (Taft, pers. com. 1989). Rape and homicide cases are the most likely candidates for DNA fingerprinting.

1) California

California is setting up a data bank system in which everyone convicted of sex offenses, felony assaults, and homicides will be profiled. The program will be phased into existence. First California will staff a laboratory in Berkeley with 21 people at a cost of \$1.8 to \$1.9 million annually. The second phase is to create the computerized data bank at a cost of \$625,000 to

\$630,000. The third phase is to provide training in standardized techniques to sub-regional laboratories operated by cities and counties which will cost \$2.1 million. The Bureau of Forensic Sciences will send us their 101 page program and budget justification document at the end of April.

2) Washington

Washington is setting up a laboratory and a DNA data base of convicted criminals. Washington has a three phase program to establish DNA profiling. Their budget for the biennium is \$900,000 of which \$285,000 is start up equipment. The staff will be 6 people: 2 forensic scientists, 2 technicians, 1 molecular chemist, and 1 clerk typist. The personnel budget for the biennium is \$500,000 and the remainder of \$115,000 is for supplies. The schedule for the DNA profiling program is to have completed the population study by November 1, 1988, to have collected all blood samples from convicted sex and violent prisoners by December 1, 1989, and by June 1990 to open the laboratory for regular DNA casework.

3) Florida

Florida is setting up five laboratories to do DNA fingerprinting, on criminal and paternity cases. The state already has 20 people doing conventional serology work and are anticipating a large caseload. Mr. Stevens anticipates 2,500 criminal cases in the first year and 7,500 paternity cases. There is currently legislation with a fiscal note of \$250,000 pending to develop a DNA data bank. The State of Florida will spend, overall, \$1,000,000 for DNA fingerprinting. Training will be a large part of the budget for the first few years. To date 13 cases have been taken to court in Florida on the basis of DNA profiling.

4) New York

New York is staffing a laboratory with 4 people and \$50,000 of additional equipment to conduct DNA profiling. They anticipate a years lead time and training for their staff before the program will be operational.

5) Federal Bureau of Investigation

The Federal Bureau of Investigation is sending an informational packet to Senate Advisory Council which has details on costs and issues. Their laboratory will do DNA profiling for states and other jurisdictions. However, it is on a first come first serve basis and only for homicides which are recent cases and in which there is a suspect. It takes about eight weeks for a sample to be analyzed.

Senator Lloyd Jones
March 17, 1989
Page 5

D) Summary

To summarize, DNA profiling is a new technique with great potential for reducing costs by making police investigations more accurate and court cases more quickly resolved. It will take two to three years to have a fully operational program. Policy makers need to decide whether they want to have DNA fingerprinting used only in criminal investigations, or for paternity cases, or to develop a data bank because the costs will vary depending upon the program. It appears that Alaska has a large enough caseload to justify developing the capability to do DNA fingerprinting within the state crime laboratory.

Attachments

Senator Lloyd Jones
March 17, 1989
Page 6

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Anderson, John. Washington State Patrol Crime Laboratory. Telephone Conversation March 14, 1989.

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Hartstrom, Linda. California Bureau of Forensic Services. Telephone Conversation March 16, 1989.

Hicks, John. Deputy Assistant Director Laboratory Division Federal Bureau of Investigation. Telephone Conversation March 16, 1989.

Stevens, Richard. Director Florida Crime Laboratories. Telephone Conversation March 15, 1989.

Taft, George. Director Alaska State Crime Laboratory. Telephone Conversation March 16, 1989.

REQUEST:

FISCAL NOTE

Revision Date: 11/03/89 Agency Affected: Public Safety
Title: Admissibility of DNA Print Tests BRU: DPS Statewide Support
Sponsor: Senator Jones Component: Laboratory Services
Requestor: Senate Rules

EXPENDITURES/REVENUES: (Thousands of Dollars) (Inflation not included)

OPERATING	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	-0-	-0-	-0-	-0-	-0-	-0-

CAPITAL	-0-	-0-	-0-	-0-	-0-	-0-
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REVENUE	-0-	-0-	-0-	-0-	-0-	-0-
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FUNDING: (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER/PROG RCPT						
TOTAL	-0-	-0-	-0-	-0-	-0-	-0-

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS: (Attach a separate page if necessary)

This bill establishes the standards under which DNA print tests may be admitted in Alaskan courts. The Department of Public Safety (DPS) must approve testing methods, techniques, and training standards. The DPS Crime Lab anticipates that it will adopt the standards and techniques developed by the FBI Crime Lab in Washington, D.C., so no significant impact on DPS is expected.

Prepared by: Gayle A. Horetski, Deputy Commissioner Phone: 465-4322
Division: Office of the Commissioner Date: 11/03/89

Approved by Commissioner: A. A. English Date: 11-9-89
Agency: Department of Public Safety Page 1 of 1

JAL
11/3/89

FISCAL NOTE

REQUEST:

Revision Date: _____ Agency Affected: Department of Revenue
 Title: Admissibility into evidence of BRU: Child Support Enforcement Division
DNA print tests
 Sponsor: Jones/Rodey/Faiks/Fischer/Frank Components: _____
 Requestor: Senate Judiciary

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
OPERATING						
PERSONAL SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LANDS & STRUCTURES	0	0	0	0	0	0
GRANTS, CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

FUNDING: (Thousands of Dollars)

GENERAL FUND	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS: Attach a separate page for analysis.

Prepared By: Linda Langston Phone: 263-6270
 Division: Child support Enforcement Division Date: May 4, 1989

Approved by Commissioner: Hugh Malone Date: 5/4/89
 Agency: Department of Revenue

Distribution (by preparer):
 Legislative Finance
 Legislative Sponsor
 Requestor
 Office of Management and Budget
 Impacted Agency(ies)

FISCAL NOTE

REQUEST:

Revision Date	<u>05-04-89</u>	Agency Affected:	<u>Alaska Court System</u>
Title:	<u>An Act concerning the admissibility into evidence DNA print tests...</u>	BRU:	<u>Trial Courts</u>
Sponsor:	<u>Senate Judiciary</u>	Components:	
Requestor:	<u>Judiciary</u>		

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL						
----------------	--	--	--	--	--	--

REVENUE						
----------------	--	--	--	--	--	--

FUNDING: (Thousands of Dollars)

General Funds	0.0	0.0	0.0	0.0	0.0	0.0
Federal Funds						
Other						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

POSITIONS:

Full-time						
Part-time						
Temporary						

ANALYSIS: (Attach a separate page if necessary)

No fiscal impact.

Prepared by: Jan Strandberg, General Counsel
 Division: Alaska Court System
 Approved by: Arthur H. Snowden, II, Administrative Director
 Agency: Alaska Court System

Phone: 284-8228
 Date: 05/04/89
 Date: 05/04/89

Distribution (by preparer):
 Legislative Finance
 Legislative Sponsor
 Requestor
 Office of Management & Budget
 Impacted Agency(ies)

Original sponsors: Jones, Rodey,
Faiks, et al.

1 IN THE SENATE BY THE JUDICIARY COMMITTEE
2 CS FOR SENATE BILL NO. 275 (Judiciary)
3 IN THE LEGISLATURE OF THE STATE OF ALASKA
4 SIXTEENTH LEGISLATURE - FIRST SESSION

5 A BILL
6 For an Act entitled: "An Act concerning the admissibility into evidence of
7 deoxyribonucleic acid (DNA) print tests in civil and
8 criminal proceedings; and providing for an effective
9 date."

10 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

11 * Section 1. FACTUAL BASIS AND FINDINGS. (a) Recent developments in
12 molecular biology and genetics have established scientific principles that,
13 when applied forensically, can determine the identity of any person.
14 Deoxyribonucleic acid (DNA) is an organic substance found primarily in the
15 chromosomes that are structures within the nuclei of cells. DNA finger-
16 printing, often called genetic fingerprinting, is a forensic technique that
17 relies on the unique sequence of genetic building blocks that make up human
18 chromosomes. DNA fingerprinting permits the personal identification of an
19 individual by comparing, in extracted samples, the repetitive patterns of
20 the DNA in the chromosomes. The sample taken produces a print that an
21 expert can read to identify sequential patterns of the four basic compo-
22 nents of DNA. The sequential pattern of the DNA, unique to each indi-
23 vidual, permits identification with a high degree of certainty. Depending
24 on the number of probes and the specific test that is used, DNA finger-
25 printing permits exceptionally precise personal identification.

26 (b) Personal identification has always been of vital concern to
27 enforcement of criminal law and completion of some civil proceedings.
28 Developed only in the past six years, DNA fingerprinting has already come
29 to play a significant role in civil actions, chiefly to confirm or refute

1 paternity, and in criminal prosecutions. The technique provides investiga-
2 tors and litigators with powerful evidentiary tools to help resolve diffi-
3 cult cases. Research recently conducted for the Alaska State Legislature
4 affirms that approximately 30 states have used the DNA fingerprinting
5 process in conjunction with criminal prosecutions. In many of the states,
6 trial courts have initiated action on a case-by-case basis to admit DNA
7 fingerprint evidence. In most cases, the trial court judge has determined
8 that the evidence is admissible, finding that the procedure has gained
9 acceptance within the scientific community and that proper testing proce-
10 dures had been followed.

11 (c) The legislature, believing that it is necessary to resolve the
12 policy question relating to the admissibility of evidence developed by the
13 DNA fingerprinting technique without unnecessary litigation, finds that

14 (1) the scientific methods of identifying unique DNA patterns or
15 structures in human chromosomes have been refined to a level of accuracy
16 that approaches an imperceptible margin of error;

17 (2) when conducted by trained personnel in a manner that is
18 consistent with standard methods and techniques, the results of DNA finger-
19 printing tests are recognized in the scientific community as accurate and
20 reliable;

21 (3) because of the high degree of accuracy that attends DNA
22 print testing, DNA fingerprint evidence has probative value that outweighs
23 the danger of unfair prejudice of that evidence;

24 (4) DNA fingerprint evidence should be admitted into evidence in
25 civil actions and criminal proceedings in the courts of the state.

26 * Sec. 2. AS 09.25 is amended by adding a new section to read:

27 Sec. 09.25.300. ADMISSIBILITY OF DNA PRINT TESTS. (a) The
28 results of a deoxyribonucleic acid (DNA) print test are admissible
29 into evidence in a trial or hearing in a civil action. There is a

1 presumption that the DNA print test results are valid and further
2 foundation for their introduction as evidence is unnecessary if it is
3 established at the trial or hearing that the DNA print test ^{must be - Peter} was per-
4 formed according to methods ^{and procedures (Levin)} approved by the Department of Public
5 Safety by a person who has been trained according to techniques,
6 methods, and standards of training approved by the Department of
7 Public Safety.

8 (b) Statistical population frequency evidence based on a DNA
9 print test result is admissible into evidence in a trial or hearing in
10 a civil action to demonstrate that an individual is the source of a
11 specific human sample of blood, semen, urine, tissue, or other DNA-
12 bearing cells.

13 (c) In this section,

14 (1) "deoxyribonucleic acid" or "DNA" means molecules con-
15 taining genetic information that are found in chromosomes;

16 (2) "deoxyribonucleic acid print test" or "DNA print test"
17 means the genetic identification process through which DNA material in
18 a human sample of blood, semen, tissue, or other DNA-bearing cells is
19 analyzed and compared with another human sample of DNA-bearing cells
20 for identification purposes.

21 [* Sec. 3. AS 12.45 is amended by adding a new section to read:

22 Sec. 12.45.035. ADMISSIBILITY OF DNA PRINT TESTS. The provi-
23 sions of AS 09.25.300 apply in a criminal action or proceeding.]

24 * Sec. 4. This Act takes effect immediately under AS 01.10.070(c).

6-1032G -
Chenoweth
4/28/90

Original sponsors(s): SEN. JONES, Rodey, Faiks, Fischer, Frank

1 IN THE SENATE BY THE JUDICIARY COMMITTEE
 2 HOUSE CS FOR CS FOR SENATE BILL NO. 275 (Judiciary)
 3 IN THE LEGISLATURE OF THE STATE OF ALASKA
 4 SIXTEENTH LEGISLATURE - SECOND SESSION
 5 A BILL

6 For an Act entitled: "An Act concerning the admissibility into evidence of
 7 deoxyribonucleic acid (DNA) print tests in civil and
 8 criminal proceedings; and amending Rules 401, 703,
 9 and 705 of the Alaska Rules of Evidence."

10 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

11 * Section 1. FINDINGS. The legislature finds that

12 (1) the scientific methods of identifying deoxyribonucleic acid,
 13 (DNA) patterns or structures in human chromosomes have been refined to a high
 14 level of accuracy ~~that approaches an imperceptible margin of error in most~~
 15 cases; and *accepted*

16 (2) there is general consensus in the relevant scientific commu-
 17 nity that, when conducted by trained personnel using standard methods and
 18 techniques, ~~DNA print tests~~ *are accurate and reliable.* ~~for identification~~

19 * Sec. 2. AS 09.25 is amended by adding a new section to read:

20 Sec. 09.25.300. ADMISSIBILITY OF DNA PRINT TESTS. (a) If it is
 21 established in a civil action or proceeding that a deoxyribonucleic
 22 acid (DNA) print test was performed according to methods approved by
 23 the Federal Bureau of Investigation, United States Department of
 24 Justice, by a person who had been trained according to techniques,
 25 methods, and standards of training approved by the Federal Bureau of
 26 Investigation, United States Department of Justice, there is a pre-
 27 sumption that

28 (1) the test results are valid and further foundation for
 29 their introduction as evidence is unnecessary; and

1 (2) statistical population frequency evidence based on the
2 test result is valid and further foundation for its introduction as
3 evidence to demonstrate that an individual is or is not the source of
4 a specific human sample of blood, semen, urine, tissue, or other DNA-
5 bearing cells is unnecessary.

6 (b) In this section,

7 (1) "DNA" or "deoxyribonucleic acid" means molecules con-
8 taining genetic information that are found in chromosomes;

9 (2) "DNA print test" or "deoxyribonucleic acid print test"
10 means the genetic identification process through which DNA material in
11 a human sample of blood, semen, tissue, or other DNA-bearing cells is
12 analyzed and compared with another human sample of DNA-bearing cells
13 for identification purposes.

14 * Sec. 3. AS 12.45 is amended by adding a new section to read:

15 Sec. 12.45.035. ADMISSIBILITY OF DNA PRINT TESTS. The provi-
16 sions of AS 09.25.300 apply in a criminal action or proceeding.

17 * Sec. 4. AS 25.20.050(d) is amended to read:

18 (d) The results of a blood test, tissue-type test, protein
19 comparison, or other scientifically accepted procedure, such as a DNA
20 print test authorized by AS 09.25.300, shall be admitted and weighed
21 in conjunction with other evidence in determining the statistical
22 probability that the putative parent is a legal parent of the child in
23 question. However, a scientifically accepted procedure that estab-
24 lishes a probability of parentage at 95 percent or higher creates a
25 presumption of parentage that may be rebutted only by clear and con-
26 vincing evidence.

27 * Sec. 5. This Act has the effect of amending

28 (1) Rule 401 of the Alaska Rules of Evidence by determining
29 that, when offered in civil and criminal actions under certain conditions,

1 DNA print test evidence has probative value and may be relevant; and
2 (2) Rules 703 and 705 of the Alaska Rules of Evidence by elim-
3 inating a requirement that the court require or allow antecedent expert
4 testimony concerning the reliability of the DNA print test as a method of
5 identification before its receipt into evidence under certain conditions.
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Original sponsors(s): SEN. JONES, Rodey, Faiks, Fischer, Frank

1 IN THE SENATE

BY THE JUDICIARY COMMITTEE

2 HOUSE CS FOR CS FOR SENATE BILL NO. 275 (Judiciary)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 SIXTEENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act concerning the admissibility into evidence of
7 deoxyribonucleic acid (DNA) print tests in civil and
8 criminal proceedings; and amending Rules 401, 703,
9 and 705 of the Alaska Rules of Evidence."

10 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

11 * Section 1. FINDINGS. The legislature finds that

12 (1) the scientific methods of identifying deoxyribonucleic acid
13 (DNA) patterns or structures in human chromosomes have been refined to a
14 high level of accuracy; and

15 (2) there is general consensus in the relevant scientific commu-
16 nity that, when conducted by trained personnel using standard methods and
17 techniques, DNA print tests are accurate and reliable.

18 * Sec. 2. AS 09.25 is amended by adding a new section to read:

19 Sec. 09.25.300. ADMISSIBILITY OF DNA PRINT TESTS. (a) If it is
20 established in a civil action or proceeding that a deoxyribonucleic
21 acid (DNA) print test was performed according to methods approved by
22 the Federal Bureau of Investigation, United States Department of
23 Justice, by a person who had been trained according to techniques,
24 methods, and standards of training approved by the Federal Bureau of
25 Investigation, United States Department of Justice, there is a pre-
26 sumption that

27 (1) the test results are valid and further foundation for
28 their introduction as evidence is unnecessary; and

29 (2) statistical population frequency evidence based on the

1 test result is valid and further foundation for its introduction as
2 evidence to demonstrate that an individual is or is not the source of
3 a specific human sample of blood, semen, urine, tissue, or other DNA-
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5 (b) In this section,

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