

Evidential Value of DNA: A Judicial Approach

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Introduction

What is DNA?¹

DNA is deoxyribonucleic acid, which is a double stranded long molecule and appears like a twisted rope ladder or double helix. Alternating phosphate and deoxyribose sugar units comprise the sides of the ladder, while the connectors of the ladder are composed of bases known as adenine (A), thymine (T), Guanine (G) and Cytosine (C). DNA is essentially made up of amino acids and it is matched with the so-called bases which provide the key to determining the genetic blueprint. Each and every cell in the human body has a sample of the DNA. Each human nucleus contains almost 5 pictograms of DNA and an average human being contains about 250 grams of DNA. For DNA fingerprinting the desired quantity is in micrograms. DNA can be extracted from a wide range of sources, including samples of hair, cigarette butts, blood, razor clippings or saliva. Thus it is relatively easy to obtain samples, which can then be tested in a laboratory to determine any genetic relationships that may be present.

Where does DNA come from?

DNA is made up of one half of our biological mother's DNA and one half of our biological father's DNA. 50% of our DNA is passed down to our biological children. It is this that ensures DNA is unique, and allows for accurate testing of parentage and direct descendants through a DNA paternity test.

Types of DNA testing procedures

Although, there are numerous types of procedures adopted for forensic matching and identification of an individual, there are two main types of such testing systems. They are called Restriction Fragment Length Polymorphism, (RFLP) and Polymerase Chain Reaction (PCR) testing.

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¹ Extract from DNA and parental issues.

Generally RFLP testing process requires larger amounts of DNA and for proper results the DNA must be uncontaminated. Small amounts of DNA sample is not suited for RFLP testing whereas PCR testing require smaller amount of DNA sample. However this test is highly sensitive test and the slightest contaminants at the scene of crime can alter or influence the results.

With the development of newer and more efficient DNA analysis techniques, RFLP is not used as much as it was once used because it requires relatively larger amount of DNA. In addition samples degraded by environmental factors, such as dirt or mold, do not work well with RFLP². Now the RFLP has been replaced by the PCR based testing. It is basically an amplification technique since a tiny amount of sample may be increased to the required quantity by amplification. It involves replication of the target region³ in multiples.

What is DNA evidence?

DNA evidence is playing a larger role than ever before in criminal cases throughout the country, both to convict the guilty and to exonerate those wrongly accused or convicted. This increased role places greater importance on the ability of victim service providers to understand the potential significance of DNA evidence in their clients' cases. In forensic DNA analysis continue to have a tremendous impact on the criminal justice system. The positive side of this revolution is that it offers enhanced opportunities to convict the guilty and exonerate the innocent. For example, new DNA technologies permit the analysis of smaller and different kinds of biological samples than was possible just a few years ago.

DNA, sometimes called the building block or genetic blueprint of life, was first described by the scientists Francis H. C. Crick and James D. Watson in 1953. Crick and Watson identified the double-helix structure of DNA, which resembles a twisted ladder, and established the role of DNA as the material that makes up the genetic code of living organisms. The pattern of the compounds that constitute the DNA of an individual life-form determines the development of that life-form. DNA is the same in every cell throughout an individual's body, whether it is a skin cell, sperm cell, or blood cell. With the exception of identical twins, no two individuals have the same DNA blueprint.

² Yawer Qazalbash, *DNA Evidence and its Admissibility*, Modern Law House, edn. 2006, p 30.

³ Segment of the DNA which has to amplified or replicated.

DNA analysis was first proposed in 1985 by the English scientist Alec J. Jeffreys. By the late 1980s, it was being performed by law enforcement agencies, including the Federal Bureau of Investigation (FBI), and by commercial laboratories. It consists of comparing selected segments of DNA molecules from different individuals. Because a DNA molecule is made up of billions of segments, only a small proportion of an individual's entire genetic code is analyzed.

In DNA analysis for a criminal investigation, using highly sophisticated scientific equipment, first a DNA molecule from the suspect is disassembled, and selected segments are isolated and measured. Then the suspect's DNA profile is compared with one derived from a sample of physical evidence to see whether the two match. If a conclusive non-match occurs, the suspect may be eliminated from consideration. If a match occurs, a statistical analysis is performed to determine the probability that the sample of physical evidence came from another person with the same DNA profile as the suspect's. Juries use this statistical result in determining whether a suspect is guilty or innocent.

DNA technology makes possible the study of human variability at the most basic level—the level of genetic material, DNA. Previous methods using blood groups and proteins have analyzed gene products, rather than DNA itself. In addition to providing more direct genetic information, DNA can withstand environmental conditions that destroy proteins, so old, badly degraded samples of bodily fluids still can provide abundant information. If the array of DNA segments (markers) used for comparison is large enough, the probability that two unrelated persons (or even close relatives, except identical twins) will share all of them is vanishingly small. The techniques for analyzing DNA are already very powerful; they will become more so. If the array of DNA markers used for comparison is large enough, the chance that two different persons will share all of them becomes vanishingly small. With appropriate DNA test systems, the uniqueness of any individual on the planet (except an identical twin) is likely to be demonstrable in the near future. In the meantime, the justification for an inference that two identical DNA profiles come from the same person rests on probability calculations that employ principles of population genetics. Such calculations are, of course, subject to uncertainty. When in doubt, we err on the side of conservatism (that is, in favor of the defendant). We also discuss ways of keeping laboratory and other errors to a minimum. We emphasize that

DNA analysis, when properly carried out and interpreted, is a very powerful forensic tool.⁴

DNA analysis is only one of a group of techniques that make use of new and increasingly sophisticated advances in science and technology. Some of the subjects involved are epidemiology, survey research, economics, and toxicology. Increasingly, the methods are technical and statistical, as with forensic DNA analysis. The issues are at the interface of science and law, and involve the difficult problem of accommodating the different traditions in the two areas.

The value of DNA evidence

DNA is a powerful investigative tool because, with the exception of identical twins, no two people have the same DNA. Therefore, DNA evidence collected from a crime scene can be linked to a suspect or can eliminate a suspect from suspicion. During a sexual assault, for example, biological evidence such as hair, skin cells, semen, or blood can be left on the victim's body or other parts of the crime scene. Properly collected DNA can be compared with known samples to place a suspect at the scene of the crime. In addition, if no suspect exists, a DNA profile from crime scene evidence can be entered into the FBI's Combined DNA Index System (CODIS) to identify a suspect anywhere in the United States or to link serial crimes to each other. The effective use of DNA as evidence may also require the collection and analysis of elimination samples to determine the exact source of the DNA. Elimination samples may be taken from anyone who had lawful access to the crime scene and may have left biological material. When investigating a rape case, for example, it may be necessary to obtain an elimination sample from everyone who had consensual intercourse with the victim within 72 hours of the alleged assault to account for the entire DNA found on the victim or at the crime scene. Comparing DNA profiles from the evidence with elimination samples may help clarify the results.

Uses of DNA testing

In criminal context such test can be required following sexual assaults, for example, to identify the father of a child conceived as a result of an alleged assault. Similarly, this test can be used to confirm that the two individuals are genetically related in cases involving concealed births, abandoned children, child swapping or infanticide. DNA Test is very useful in civil litigation involving

⁴ *Id.*

claims by an estranged partner for financial support and maintenance of a child.⁵

First DNA evidence admissible in India

There are lots of cases, mainly of paternity disputes, which are solved by the DNA analysis and in maximum of these solved cases DNA analysis was performed at CCMB, Hyderabad (A.P.) India. The first paternity dispute case related to DNA analysis, which was also performed at CCMB (A.P.), hit the whole Indian Judicial System and media was presented before the C.J.M. Telicherry (Thalassery), Kerala. The summary of the cases is that a village girl Vilasini filed a case against his lover Kunhiraman for the maintenance of her child/son Manoj. She alleged that her son was born to her on account of illicit relation between them. The husband disowned her and he denied taking the paternity of her son. The C.J.M. ordered both of them to undergo DNA test with their son at CCMB, Hyderabad (A.P.) India. Dr. Lalji Singh, Forensic Scientist and his colleagues performed the DNA test, and by the analysis result, it was proved that disputed was fathered by none other than Kunhiraman. In this case BKm 2 (8) probe was used by FSL while accepting the DNA evidence in case no. M.C. 17 of 1988 (the case of Vilasini). The C.J.M. said that according to Section 45 of Indian Evidence Act, in which expert opinion is admissible, the DNA evidence is also a scientific examination and opinion of the expert in the matter of Cellular and Molecular Biology is admissible just like opinion of a chemical analyst or fingerprint expert. This verdict was also upheld by Kerala High Court stating that the result of DNA test by itself could be deciding paternity.⁶

DNA legislation in context of India

The latest position in India is that there is no specific law on one subject of DNA evidence but DNA testing has got legal validity in 1989. In India, *Kunhiraman v. Manoj*, was the first paternity dispute which required the DNA evidence. The courts are taking DNA evidence as an expert's opinion like forensic experts, ballistic expert, biological expert, chemical expert; document writing expert, lie detector, and expert serological expert toxicological expert etc.⁷. The Government of India and Law Commission have also woken up and Indian Parliamentary Affairs Board has set up

⁵ *Id.*

⁶ Dr. M.W. Pandit and Dr. Lalji Singh, *DNA Testing, Evidence Act and Expert Witness*, Indian Police Journal. Oct.-Dec. 2000, p. 99.

⁷ Mohd. Hasan Zaidi & Yashpal Singh, *DNA Tests in Criminal Investigation, Trial and Paternity Disputes*, p. 36.

an Advisory committee to give a comprehensive report on all aspects of DNA testing. The Law Commission in its 185th report has also recommended the inclusion on DNA testing in the Indian Evidence Act by amending its section 112.

In majority of cases involving disputed paternity the petitioner faces financial difficulties or sometimes he is not capable of spending money for the required or desired DNA test in order to prove his claim. The Kerala Woman Commission assists such persons as it gets DNA test conducted at Rajiv Gandhi Centre of Biotechnology, Thiruvanthapur at the cost of Commission⁸.

The 185th Report of the Law Commission of India states that law of evidence is likely to undergo radical changes with standardization of new technologies. The judge would find himself (or herself) in a difficult situation if he/she is unable to appreciate the probative value of new standards and concepts of evidence. In modern world the technology of DNA fingerprinting has been accepted method of proving the paternity and other disputes of similar nature. The modern technologies of genetics and reproduction are solving many complicated questions of fact. With the invention of new technologies and due to new researches in the field of science, radical changes are taking place in 21st century in understanding human behavior. These changes are not due to social sciences but due to advancement of biological science. The DNA fingerprinting is such a revolutionary step in the related field. Law is primarily concerned with the human behavior and its study.⁹

Parliament of India had passed the Code of Criminal Procedure (Amendment) Act, 2005, which is assented by President of India on 23rd June, 2005 as Act No. 25 of 2005. It seems that Government of India is fast thinking on the accuracy of DNA profiling and its authenticity and reliability.

Some provisions have been added by Explanation to section 53(2). It is related to examination of accused by medical practitioner at the request of Police Officer. The blood, semen, saliva, etc., of accused person(s) can be examined by medical practitioner.

Right to privacy

In Indian Context, it is important to note that India is a signatory to International Covenant on Civil and Political Rights, 1966, and right to privacy is derived from Article 21 of the Constitution and

⁸ Source: Govt. of Kerala official website (www.Kerala.govt.)

⁹ Law Commission of India, 185th Report, 2004 Cr. L.J. 143, Journal Section.

from Directive Principles of State Policy and it was held in *People's Union for Civil Liberties v. Union of India*,¹⁰ that right to privacy enshrined in Article 21 cannot be curtailed except according to procedure established by law.

No one shall be subject to arbitrary or unlawful interference with his privacy, family and home, or correspondence, nor to unlawful attacks on his honor and reputation; does everyone have the right to the protection of the law against such interference or attacks.¹¹

In the famous case in relation to DNA investigation *Sharda v. Dharmpal*, the Hon'ble Supreme Court discussed the right to privacy in a systematic chronological order.

The right to privacy has been developed by the Supreme Court over a period of time. In *M.P. Sharma v. Satish Chandra*¹² in the context of search and seizure, the Court observed that:

"When the Constitution makers have thought fit not to subject such regulation to constitutional limitation by recognition of a fundamental right to privacy, analogous to the American Fourth Amendment, we have no justification to import it, into a totally different fundamental right, by some process of strained construction."

Similarly in *Kharak Singh v. State of Uttar Pradesh*¹³, the majority judgment observed thus: "The right of privacy is not a guaranteed right under our Constitution and, therefore, the attempt to ascertain the movements of an individual which is merely a manner in which privacy is invaded is not an infringement of fundamental right guaranteed under Part III."

In *Govind v. State of Madhya Pradesh*¹⁴, it was held: "Assuming that the fundamental rights explicitly guaranteed to a citizen have penumbral zones and that the right to privacy is itself a fundamental right that fundamental right must be subject to restriction on the basis of compelling public interest."

The right to privacy will necessarily have to go through a process of a case by case development. Therefore, even assuming that the right to personal liberty, the right to move freely throughout the territory of India and the freedom of speech create an independent

¹⁰ A.I.R. 1997 SC 568 (575); MANU/SC/0149/1997: (1997) 1 SCC 301; Article 12 of Universal Declaration of Human Right, 1948.

¹¹ Article 17, International Covenant on Civil and Political Rights, 1966.

¹² A.I.R. 1954 S.C. 297 (306); 1954 Cr. L.J. 865 (¶118).

¹³ A.I.R. 1963 S.C. 1295; 1963 (2) Cr. L.J. 329 (¶ 20).

¹⁴ A.I.R. 1975 S.C. 1378; 1975 Cr. L.J. 1111.

right of privacy as an emanation from them which one can characterize as a fundamental right, we do not think the right is absolute.

Having outlined the law relating to right to privacy in India, it is relevant in this context to notice that certain laws have been enacted by the Indian Parliament where the accused may be subjected to certain medical or other tests.

By way of example, we may refer to sections 185, 202, 203, 204 of the Motor Vehicle Act; sections 53 and 54 of the Code of Criminal Procedure and section 3 of the Identification of Prisoners Act, 1920. Reference in this connection may also be made to sections 269 and 270 of the Indian Penal Code. Constitutionality of these laws, if challenge is thrown, may be upheld.

In *M. Vijaya v. The Chairman, Singareni Collieries*,¹⁵ the Court, upon a detailed discussion of the competing rights of a private party and public right with reference to right to privacy of a person suspected of suffering from AIDS, held: "There is an apparent conflict between the right to privacy of a person suspected of HIV not to submit himself forcibly for medical examination and the power and duty of the State to identify HIV infected persons for the purpose of stopping further transmission of the virus. In the interests of the general public, it is necessary for the State to identify HIV positive cases and any action taken in that regard cannot be termed as unconstitutional as under Article 47 of the Constitution, the State was under an obligation to take all steps for the improvement of the public health. A law designed to achieve this object, if fair and reasonable, in our opinion will not be in breach of Article 21 of the Constitution of India. It is well-settled that right to life guaranteed under Article 21 is not mere animal existence. It is a right to enjoy all faculties of life. As a necessary corollary, right to life includes right to healthy life."

Investigation

The Identification of Prisoners Act, 1920 enables the Investigation Officers to collect finger print impressions, foot-print impressions from the suspect. Sec. 5 of the Act empowers for magistrate to order a person to be measured or photographed. Here measurement means and includes finger impressions and foot-print impressions. But this Act does not empower a Magistrate to order a person for collection of his X-ray photography or ultra-

¹⁵ A.I.R. 2001 A.P. 502; 2002 AIHC 475.

sonography in case the suspect swallows an important material which may be a property of theft or other material which is necessary for the purpose of investigation. This Act also remains silent for collecting other body fluids from the body of the suspect such as blood, semen, urine etc. for DNA analysis.

In this respect sections 53, 53A, 311A and 313 of the Code of Criminal Procedure, 1973, are relevant:

1. Examination of arrested person by medical practitioner at the request of police officer - (Section 53)

(1) When a person is arrested on a charge of committing an offence of such a nature and alleged to have been committed under such circumstances that there are reasonable grounds for believing that an examination of his person will afford evidence as to the commission of an offence, it shall be lawful for a registered medical practitioner, acting at the request of a Police Officer not below the rank of Sub-Inspector, and for any person acting in good faith in his aid and under his direction, to make such an examination of the person arrested as is reasonably necessary in order to ascertain the facts which may afford such force as is reasonably necessary for that purpose.

(2) Whenever the person of a female is to be examined under this section, the examination shall be made only by, or under the supervision of, a female registered medical practitioner.

Explanation¹⁶ - In this section and in section 53A and 54:

(a) "Examination" shall include the examination of blood, blood stains, semen, swabs in case of sexual offences, sputum and sweat, hair samples and finger nail clippings by the use of modern and scientific techniques including DNA profiling and such other tests which the registered medical practitioner thinks necessary in a particular case.

(b) "registered medical practitioner" means a medical practitioner who possesses any medical qualification as defined in clause (h) of section 2 of the Indian Medical Council Act, 1956 (Act No. 102 of 1956) and whose name has been entered in a State Medical Register.

DNA testing is so advance that if the blood is disintegrated the DNA remains stable unless it is burnt by fire.¹⁷

¹⁶ Subs. by Cr. P.C. (Amendment) Act, 2005 (Act No. 25 of 2005), dated 23-6-2005.

Courts' powers- Ordinarily the Court have quite enough power to direct the parties to undergo medical test, or give sample of blood for DNA test. But, in a case Honb'le Supreme Court has held that-

- The Courts in India cannot order blood test as a matter of course;
- Wherever applications are made for such prayers in order to have roving inquiry, the prayer for blood test cannot be entertained;
- There must be a strong prima facie case in that the husband must establish non-access in order to dispel the presumption arising under section 112 of the Evidence Act;
- The Court must carefully examine as to what would be the consequence of ordering the blood test; whether it will have the effect of branding a child as a bastard and the mother as an unchaste woman;
- No one can be compelled to give sample of blood for analysis. In *Sharda v. Dharam Pal*, the question for consideration was whether a party to the divorce proceeding can be compelled to a medical examination in this regard. The Apex Court held that:
 - A matrimonial court has the power to order a person to undergo medical test.
 - Passing of such an order by the Court would not be in violation of the right to personal Liberty under Article 21 of the Constitution of India.
 - However, the Court should exercise such a power if the appellant has a strong prima facie case and if there is sufficient material before the Court. If despite the order of the Court, the respondent refuses to submit himself to medical examination the Court will be entitled to draw an adverse inference against him.¹⁸

In *Amarjit Kaur v. Har Bhajan Singh*,¹⁹ - the court observed that section 112 of the Evidence Act was enacted at a time when the modern scientific advancements with deoxyribonucleic acid (DNA) as well and ribonucleic acid (RNA) tests were not performed. A genuine DNA test is said to be scientifically accurate. But even that is not enough to escape from the conclusiveness of presumption of law about the legitimacy of the child. Under section 112 of the Act for example if a husband and wife were living together during the time of conception but the DNA test

¹⁷ Dharam Deo Yadav v. State of Uttar Pradesh, 2005 DNR (HC) 675.

¹⁸ Sharda v. Dharampal, A.I.R. 2003 S.C. 3450.

¹⁹ (2003) 10 S.C.C. 228; 2003 (2) A.I.C. 427 (S.C.).

revealed that the child was not born to the husband, the conclusiveness in law would remain irrefutable.

In *Kanti Devi v. Poshi Ram*,²⁰ the Supreme Court held that although DNA evidence is scientifically accurate, it cannot be accepted in determining the paternity dispute on the ground of public policy. The Supreme Court, by this decision, encouraged the law makers to strictly adhere to the conventional, unscientific, ineffective and biased system of justice.

In *State of Uttar Pradesh v. Amaramani Tripathi*²¹ DNA fingerprinting also ensured that former Uttar Pradesh Minister Amarmani Tripathi was sentenced to life for the murder of Madhumita Shukla. "The poetess was six months pregnant when she was found dead in Lucknow. The CBI preserved the foetus and sent a sample for DNA testing." The investigation agency has relied upon DNA test reports as evidence to adduce paternity.

The courts have also dealt with two related issues:

- i. Whether it would amount to violation of right to privacy under Article 21?
- ii. Whether it would amount to violation of Article 20(3) and would lead to self-incrimination?

*K. Venkataraman, J. Veeran v. Veeravarmalle*²² is a suit by child for declaration that she is legitimate child born to her parents i.e., Petitioner and second respondent her mother. The Court directed father to undergo DNA test. It cannot be said to be affecting his fundamental right and is not violative of his right to personal liberty enshrined under Art.21 of Constitution. Mother having remained ex parte. There is no question of compelling her to undergo DNA test arises. DNA Test performed on petitioner father alone will prove that petitioner is father without any test conducted on mother.

According to media report in September 2009, *Aarushi Murder* case was sabotaged by DNA tempering. The Centre for DNA Finger Printing and Diagnostics (CDFD) in Hyderabad has told the CBI that Aarushi's vaginal swabs were substituted with samples of an unidentified woman and the investigating agency now believes that there was a conspiracy to destroy evidence in the double murder case. The apex court asks CBI about the case.

²⁰ A.I.R. 2001 S.C. 2226.

²¹ A.I.R. 2005 S.C. 3490

²² A.I.R. 2009 Mad. 64.

The DNA Profiling Bill of 2007, which is pending in Parliament, is expected to be considered and become a law sometime in the near future, perhaps even in legislative session 2009-10. If this were to happen, all convicted criminals across the country will have to undergo mandatory DNA tests. The bill also aims to achieve standards for laboratories, staff qualifications, training, collection of body substances, custody trail from collection to reporting and a data bank. The Bill also makes provisions for a DNA profiling board, which will comprise scientists, administrators and law enforcement officers. At present in India, there are around 90,000 cases which need a DNA study, and the irony is that there are just 16 forensic labs across the country with DNA profiling ability. The bill has also kept in mind the growing threat of terrorism across the world. A provision to share data with other countries also finds a mention in the bill. Once the bill is passed by Parliament, the first thing that would be set up is a DNA data bank. This will comprise the index of suspects, convicts, missing persons and unidentified dead persons. All the labs across the country will have to contribute to the bank.

DNA evidence and the privilege against self-incrimination

The discovery of genetic fingerprinting with its high specificity and extraordinary probative properties highlights the question of the scope of the privilege against self-incrimination. The fact that the public would probably see DNA fingerprinting as harder to fabricate, as more objective than a verbal statement, it may also mean it is more difficult for the individual to refuse and for his refusal to be seen as legitimate. Fear, anxiety, embarrassment, and anger, rather than guilt, may account for non-cooperation in supplying a bodily sample just as they may account for silence. The suspect may be apprehensive regarding how the test is conducted and more importantly, how accurate it is, especially if he does not understand what the test involves or lacks confidence in the testing procedures and controls.

The question that now comes to mind is whether or not it is legal for the courts to ask the accused to supply a sample of his DNA for the analysis. What is of concern here is that does forcing the accused to provide a sample of his DNA amount to a violation of the protection against self-incrimination? Also, if the accused refuses to give the sample then does that mean that an adverse inference will be drawn against him?

In the case of *Goutam Kundu v. State of W.B*²³, there was a question of disputed paternity. The Court held that no person can be compelled to give sample of blood for analysis against his/her will and no adverse inference can be drawn against him/her for this refusal.

The constitutionality in taking a fingerprint was challenged in the case of *State of Bombay v. Kathi Kalu Oghad*.²⁴ The Supreme Court held that Article 20(3) of the Constitution gives protection to a person not to be a witness against himself. However, "to be a witness" is not equivalent to "furnishing evidence" in its widest term and significance. Giving thumb or finger impression or exhibiting parts of the body by way of identification are not included in the expression "to be a witness". Being a witness has been interpreted to mean imparting some sort of knowledge in testimony. From this it appears that there will be no constitutional restriction on the collection of samples for DNA analysis.²⁵

The dilemma of DNA databases

The creation and use of the DNA database raise a number of criminal justice issues. The development of DNA data banking poses an invasion of civil liberties, particularly "fundamental justice" rights (the taking of samples without laying a foundation of reasonable and probable grounds). Since DNA can reveal more than identity alone "privacy" will also become an issue.

Today, there are many instances where you have to release personal and medical information about yourself. This happens when you apply for a job, for life or health insurance, for credit, for financial aid, or for benefits from the Government. If the results of any DNA tests become part of your records, you may have to release the information in order to obtain needed services. Right now, there are no laws concerning DNA databanks.

Databanks take one of three possible forms. The least comprehensive databank would comprise samples of convicted persons. At the opposite end, a much broader databank would consist of DNA profiles obtained by routine testing of inhabitants of an area where a crime has been committed. It is also claimed that area or national testing would benefit innocent persons by

²³ (1993) 3 S.C.C. 418.

²⁴ A.I.R. 1961 S.C. 1808.

²⁵ *Id.*

providing a means by which they could be eliminated from police inquiries.

An objection to databanks of all descriptions is that the information contained in the samples obtained is more compendious than is required for the purposes of criminal investigation. Unlike a fingerprint the sample obtained for the purposes of a DNA profile may reveal not only whether X was at the scene of the crime, but also whether X has any genetic defects or diseases, such as AIDS. The uses to which this superfluous information might be put raises important civil rights questions. Aside from the principled objections above, national testing appears to lack cost-effectiveness.

It has been suggested that DNA profiles contain data of such a personal nature that they should not be stored on databases²⁶. At first, this claim seems credible. DNA contains personal information, and when people have access to personal information about us, which we have not chosen to reveal to them, our privacy is infringed. Owing to such concerns, samples must be destroyed once profiles have been obtained from them. This would certainly be an appropriate solution to the problem of multiple uses.

International Covenants and developments in other jurisdictions

The right of the child to know of her (or his) biological antecedents is now recognized internationally as being of critical importance. Major international instruments such as the UN Declaration on Human Rights have recognized the rights of a child irrespective of her (or his) legitimacy and the Convention on the Rights of Child, 1990 has expressly specified a right to knowledge of parenthood. Parts of the Convention on the Rights of Child dealing with this aspect are produced as follows:

Article 7

1. The child shall be registered immediately after birth and shall have the right from birth to a name, the right to acquire a nationality and, as far as possible, the right to know and be cared for by his or her parents.”

- A child’s right to know of her or his biological parentage has had a critical influence also many developments in Europe that have led to lifting the anonymity of a donor in

²⁶ Mike Redmayne, *The DNA Database: Civil Liberty and Evidentiary Issues*, 1998 Cri. L.R. 437.

assisted pregnancies and in case of sperm donors. Such donors remained anonymous in Europe till the 1980s. However, later developments mark a shift from the anonymity based approach, and the Courts, tend to lean in support of the child's right to know her or his biological antecedents. Similar laws have been passed in many countries all over the world (such as Sweden in 1985, following which almost all of Europe with the latest addition of the United Kingdom has followed suit). In the Human Fertilization and Embryology Authority Regulations 2004, the children in United Kingdom have the right to obtain information about their donors after they reach the age of 18. The age prescriptions, in such regulations, are seen as a check towards protecting the child's interests in legitimacy. These developments all over the world indicate that there is a very tenable argument in the child's interests that support its right to know the truth of its origin.²⁷

- A distinction has to be drawn here between legitimacy and paternity of the child. Section 112 of the Act was a provision enacted by the British directed at safeguarding the interests of the child by securing its legitimacy. This provision was modeled around a rigid English law system, which may be aptly summarized in the majority opinion in the case of *Rusell v. Rusell*, (1924) AC 687 where it was held that neither the declarations of the wife, nor her testimony that the child was the child of a man other than her husband were admissible as evidence to prove or disprove paternity. Similarly, the evidence of the husband that he was not the father of the child was also inadmissible in that regard. However, it was the dissenting opinion of Lord Summers that gained more importance over the years. He held that: "In the administration of justice nothing is of higher importance than that all relevant evidence should be admissible and should be heard by the tribunal that is charged with deciding according to the truth."
- The law in England is now guided by the Family Reforms Act, 1969 (later replaced by the 1987 Act); it enables the Court to draw a distinction between parentage and paternity thus allows conduct of tests to determine who is the biological father of the child. In highlighting the importance of the right of the child to know the truth of its

²⁷ *Id.*

paternity the court, in *W v. W*, 1973 (1) WLR 1115 explained: "The interests of justice in the abstract are best served by the ascertainment of the truth and there must be few cases where the interests of children can be shown to be best served by the suppression of the truth."

- English law on this point has no doubt undergone a major change. No such distinction has been statutorily created in Indian law and it is not in this Courts domain to do so. However, this Court is of the opinion that the object of Section 112 of the Act was to determine legitimacy and not paternity. Such an interpretation to this provision would be in accordance with both the UN Declaration on Human Rights and the Conventions on the Rights of Child. India is a ratifying party to both these international instruments and as such, they constitute an obligation on the State under Article 51(c) of the Constitution. Where the provisions of law may be interpreted in different ways, the law is to be interpreted in a manner that would ensure compliance with the States international obligations, if it is consistent with provisions of Part III of the Constitution of India. Such a construction assumes special importance in cases where human rights of the individuals are concerned. The Supreme Court has sought to use this rule of construction to harmonize India's domestic laws with its international obligations in matters dealing with valuable human rights on many instances. This rule assumes relevance in instances where there has either been legislative inactivity leading to a lacuna in the law, or a law has become so archaic that it is not in conformity with the existing system of rights.

In the Case of *Vishakha v. State of Rajasthan*,²⁸ for instance, the Court sought to take steps towards providing valuable human rights to women where the legislature had refrained from doing so in order to harmonize India's international obligations with treaty law.

In the case of *P.U.C.L v. Union of India*,²⁹ then, the Apex Court held: "It is accepted that a statute is to be interpreted and applied, as far as its language permits, so that it is in conformity and not in conflict with the established rules of international law. Apart from influencing the construction of a statute or subordinate legislation, an international

²⁸ (1997) 6 S.C.C. 241.

²⁹ (1997) 1 S.C.C. 301.

convention may play a part in the development by the courts of the common law."

- Legitimacy and paternity are two distinct concepts in law. Section 112 of the Indian Evidence Act deals only with legitimacy, and not paternity. The idea behind this provision was to establish a conclusive presumption in favor of the legitimacy of a child to not subject him or her to the stigma of being a bastard. The said presumption, however, is conclusive only as regards the legitimacy of the child and not its paternity. Unless the Court feels in certain circumstances that it is against the interests of the child to know of its paternity, the Court is justified in ascertaining the paternity of the child through reliable scientific tests such as DNA tests. This is of course, subject to the caveat (on account of the existing structure of Section 112) that such tests can be directed, after the Court is prima facie satisfied on the basis of evidence on the record that there was no access (to the mother) at the relevant time. A finding as regards the paternity of the child through such means will not prejudice the conclusiveness of the presumption established by Section 112 of the Evidence Act. Such a child, who has sought a declaration by the Court towards ascertaining his or her paternity, may continue to be a legitimate child in law under the presumption of Section 112. Such a construction is in line with international instruments to which India is a ratifying party and the widely cherished right to know of the child. A finding of paternity would, in certain circumstances, also enable the child to avail of maintenance under S.125 of the Cr.P.C. 1973, and other provisions of law.

Novelty of DNA evidence: need for expert testimony

Forensic science is experiencing a period of rapid change, in the wake of the dramatic evolution of DNA profiling. The air of triumphalism here is extraordinary: it is the triumph of reaction against progress and is also the exemplification of the chasm between law and science.³⁰ DNA has entered the vocabulary of the man on the street.³¹ Perhaps not so much because of the beautiful

³⁰ Ian W. Evett, et.al, *DNA Profiling: A Discussion of Issues Relating to the Reporting of Very Small Match Probabilities*, 2000 Cri. L.R. 341.

³¹ O.J. Simpson's trial was one in which the court utilized the testimony of an expert to verify the DNA evidence adduced by the prosecution.

work of those such as Watson and Crick³² as more because of the dramatic impact DNA profiling has had on crime detection.

Many will share the view that DNA profiling is the greatest advance in forensic science since the acceptance of fingerprint identifications by the courts at the turn of the century. The question often asked of a DNA profile is "Is it as good as a fingerprint?" Like many apparently simple questions, it does not have as simple an answer, and gives us an opportunity to reflect on a fascinating paradox.

The important difference between fingerprint identification and DNA profiling is that the former has not been derived from a coherent body of data and statistical reasoning, while the latter has. This has led to a fundamental difference between the ways that the two kinds of evidence are presented at court.³³ When fingerprint identification is presented the expert will state that he or she is certain that a particular crime mark was made by the originator of a given exemplar print. The weight of a DNA profiling match, however, will be presented by means of a numerical statement—typically a "match probability".³⁴

Convicted by juries, exonerated by science: post-conviction exculpation

Through the use of DNA evidence, prosecutors are often able to conclusively establish the guilt of a defendant. At the same time, DNA aids the search for truth by exonerating the innocent. The advent of DNA testing raises the question of whether a different balance should be struck regarding the right to post-conviction relief.

A convicted individual's continued assertion of innocence is not new to the criminal justice system and in fact is familiar to appeal courts. The use of DNA technology may bring to courtroom proceedings a degree of certitude to which neither the defence nor the prosecution is accustomed. Typically, in an appeal, the possibility that the original verdict will be overturned is merely

³² The structure of the DNA was first described by Watson and Crick in *Molecular Structure of Nucleic Acid: A Structure for Deoxyribose Nucleic Acid*: (1953) 171 Nature 737.

³³ Moreover, if there are two contradictory opinions of fingerprint experts, then the value of the opinions will be diminished. Corroboration always adds weight to the value whereas contradiction decreases evidential significance of the opinion. See Dr. S.S. Sharma, "Fingerprint Science and its Evidential Significance", 1995 Cri LJ 91

³⁴ K.F. Kelly, et.al., *Methods and Applications of DNA Fingerprinting: A Guide for the Non-Scientist*, 1987 Cri. L.R. 105.

suggested. By contrast, the introduction of DNA evidence after conviction may definitively prove innocence.

The typical inmate making a post-conviction DNA request, would want: (1) discovery of the evidence so that it can be tested, (2) the right to present favorable test results in a judicial proceeding or in an executive proceeding for clemency, and (3) the State to pay for the testing. At this point, the law in many jurisdictions is not clear as to the legal theory that entitles the petitioner to have any of these requests granted, or what the appropriate procedural mechanisms are for making these demands. Frequently, these issues are intertwined, and petitioners make omnibus motions in which they raise all potentially relevant grounds for relief together.

Because of this present state of legal uncertainty, litigating post-conviction DNA applications often will be unnecessarily complex, expensive and time-consuming. Also, exploring the effect that DNA technology may have on the statutes of limitation for filing appeals and charges. The latter issue arises because DNA samples last indefinitely, beyond the periods of time permitted for such filings.³⁵

Moreover, this process has little validity in India, where conviction on the basis of DNA evidence itself is difficult to obtain. The current justice administration does not provide for any post-conviction relief, considering the facts that it is an extra expense on the State machinery requiring a retrial over the same issues, lack of manpower and lack of legal and medical expertise dealing with DNA.

The Universal Declaration on the Human Genome and Human Rights

The Universal Declaration on the Human Genome and Human Rights was adopted unanimously and by acclamation at the 29th session of UNESCO's General conference on 11th November, 1997. The following year, the United Nations General Assembly endorsed the Declaration.

Genetic Testing (G.T.) can be used to check whether the patient is suffering from any of Genetic disorder, which may lead that they

³⁵ This restrictive approach rests on: 1. the strong presumption that the verdict is correct because the accused was found guilty by a jury of peers after a trial conducted with full constitutional protections. 2. The need for finality. 3. The recognition that the likelihood of more accurate determinations of guilt or innocence diminishes over time as memories fade, witnesses disappear and the opportunity for perjury increases. 4. The need to conserve judicial resources by not opening the floodgates to meritless and costly claims.

are susceptible to any particular disease. GT is beneficial not only for that particular couple who has taken the test but also for their complete family (because once the disease is cured with the gene therapy then even their coming generations will be saved from that particular disease). The first doubt of this technique is the reliability of Genetic Test, particularly for late onset disorders and the disease which are not caused by the single gene because so far reliability of Genetic Testing has not been tested. Secondly, Genetic Testing poses a big psychological problem to the patient. Suppose a certain disease has been detected by the GT and in medical science there is no cure of that disease, then what about the psychological implications for that detection. What about that poor patient who knows that he is suffering from a particular Genetic Disorder, but he cannot do anything about it, now what is the duty of legal community in this regard. Should the lawmakers make a law which prohibits testing those diseases for which there is no cure? Third problem with the GT is confidentiality of the patient position. Suppose the patient took the GT for a particular purpose, and after diagnosis the doctors find that he has some genetic problem other than that for which the test has been taken. Now what is the duty of the doctor? Suppose he tells the patient that he is suffering from a deadly genetic disorder and the patient dies after hearing this. Then should the doctor be made liable for his death, because he told the patient that thing for which the test was taken. How the legal community is going to cope up with this problem. Another problem with the GT is disorder of information to the third party, which has an intimate relationship with the patient. Whether the third party has a right to be told about the disease of the patient or is it the legal responsibility of the doctor to tell third party about the true condition of the patient.³⁶

Patent of human genetic material

The race of patenting life has continued and reached a stage where patents were being claimed on human genetic material. For the first time in the history of patent law in 1984 a patent was granted on a human cell line.³⁷ The cell lines found to be useful in producing cancer-fighting protein were isolated and purified from the body of a patient named Moore.

In the light of vehement opposition centered on the ethics involved in, the claimants contended that the claimed human cell line is

³⁶ Gurminder Singh, *Human genome project: the other side of the coin*.

³⁷ Shreenivasulu N.S. & Dr. C. Basavaraju. *Biotechnology and Patent Law*, THE WORLD JOURNAL OF INTELLECTUAL PROPERTY RIGHTS, Serious Publication, New Delhi, Jan., 2005, 1, 1-2.

not available in the nature in its isolated and purified form. It involves laborious efforts to isolate and purify any genetic material. It was also contended that the claim is not for cell in its natural form that exists in the human body, but for the cells line in the isolated and purified form. Patent was granted on the claimed cell lines as a reward to the endeavors in isolating and purifying the cell line useful in producing proteins to fight against cancer. It seems ultimately the benefit to the society was considered in patenting human cell lines. With this decision now human genetic material such as cells, genes and DNA have become patentable. Following the decision of the patent office in granting patent on human cell line, patents were granted on methods to isolate human genetic material and also on proteins produced by the human genetic material.³⁸

Stem cells

- Stem cells are mother cells from which all other cells evolve and can be developed into any cell or organ.
- They have the potential to cure a localized lesion as in case of heart attack, diabetes, and renal failure and so on.

Stem cells are manipulated through growth factors to get desired results. They would be injected in pancreas in case of diabetes where cells would take the shape of a normal and healthy pancreatic cell to produce insulin.

Congress leader Shri. Ajit Jogi addressed a press conference in 2005 stating that shots of embryonic stem cells given by Dr. Geeta shroff, who runs an IVF clinic in South Delhi, had helped him recover from the ravages of a crippling road accident. World Scientists cried foul as embryonic stem cells are still in the realm of research. Their potential to develop into cancerous cells has made them ethical dynamite. The Indian Council for Medical Research (ICMR) has since formulated stringent guideline for steam cell therapies, but the Shroff clinic claims to have 'cured' 100 patients so far. Are stem cells best forgotten? No, say scientists, but it could take 10-30 years to crack the mechanism.

India is finally ready with the guidelines to regulate and govern stem cell research and use in the country. After almost five years of consultation, experts from the Indian Council of Medical Research and the department of Biotechnology submitted the final 24-page guidelines to the Union Health Ministry.

³⁸ Brian C. Cannon, *Toward a clear standard of obviousness for biotechnology patents*, CORNELL LAW REVIEW (Cornell University, March 1994).

Over the next 10 months, scientists and organizations working to clinically examine stem cell's tremendous potential to cure life threatening diseases like Alzheimer's, cancer, Parkinson's, blindness and spinal cord injuries will be sensitized about the guidelines, before it is formally made into an Act.³⁹

Drug Controller General of India M. Venkateshwarlu added that because stem cell therapy and research was fast becoming a sizable activity in India, there was an immediate need to come up with ethical and technical guidelines regarding its use on humans.⁴⁰

"Regulation, control and monitoring are essential when lives of patients are at stake if the therapy is wrongly administered."

According to the regulations, human cloning will not be allowed. Embryonic stem cell research can be carried out but donor consent will be compulsory. For using umbilical cord blood stem cell, all cord blood banks would have to be registered with the DCGI. Research or therapy using foetal stem cells/placenta will be allowed.

Pregnancy termination can't be sought for donating foetal tissue for possible financial or therapeutic benefits. The medical person responsible for the care of the pregnant woman planning to undergo termination of pregnancy and the person who will use the foetal material can't be the same. The identity of the donor and the recipient will have to be kept confidential. Experts have called for two committees to be set up: National Apex Committee for Stem Cell Research and Therapy (NAC-SCRT) and an Institutional Committee for Stem Cell Research and Therapy (IC-SCRT) to examine the Scientific, technical, ethical, legal and social issues in embryonic stem cell research. All institutions and investigators carrying out research on human stem cells will have to be registered with NAC-SCRT through IC-SCRT. All research studies and clinical trials will have to prior approval of IC-SCRT for permissive research and of NAC - SCRT for restricted research. Stem cells are master cells that have the capacity to multiply and regenerate diseased organs. Stem cells are obtained from foetus, embryos, umbilical cord of a newborn and the bone marrow.⁴¹ In the medical field, genetics focuses on genetic disease. It strives to understand the molecular basis of diseases and their cure.

³⁹ *Id.*

⁴⁰ *Id.*

⁴¹ Kounteya Sinha, *Stem cell norms say no to human cloning*, TIMES OF INDIA, (Nov. 10, 2007).

Genetic tests help in identifying culprits in criminal cases. DNA investigation is a concrete step for criminal investigation. In hi-tech societies, criminals become so expert in achieving their aim. Inspiring from delayed investigation from the *Arushi-Hemraj murder*⁴² case, it can be concluded that the need of the hour is that forensic network is highly recommended and it is also necessary as soon as the police team starts investigations. The police must be accompanied with forensic staff so that material related to criminal identification cannot be destroyed due to failure of being collected accurately. Law should be broad in line with the latest scientific developments.

Conclusion

DNA test is a strong boon in criminal administration of justice, but in civil cases the socio economic condition and the peculiarity in our country declare this test against of human dignity especially of child and woman. But the inherent power of courts in civil matters Sec.151 C.P.C. 1908 should prevail for the sake of justice, truth, and dignity of innocent person and transparency of judicial administration. So DNA technology can be used in the matters of human dignity, human right & human relationship, it should be an essential part of Indian judiciary and for that purpose we are eagerly waiting for an appropriate legislation in the name of The DNA Profiling Bill 2007 which is stating the infrastructure, standards, quality-control with assurance obligation of DNA laboratory, information, composition, qualification of DNA profiling board & it's members, function and most important establishment of DNA data Bank. This bill comprehensively covers the wide field of DNA regarding criminal case, that why the name of Bill is DNA profiling Bill 2007, but it would be more fruitful if it contains certain provisions for the dignity and privacy of all the citizens. Thus this bill should be *DNA and Dignity Bill*.

The justice administration system needs to assimilate the scientific advancements of genetic profiling and develop procedural techniques for harnessing the emerging juridical challenges. The significant paradigms of DNA fingerprints cannot be left alone to the courts to adjudicate with temporary tailor made solutions. Therefore in matters of disputed paternity, the legitimacy or illegitimacy of the child cannot be determined solely by Section 112 of the Indian Evidence Act, 1872. DNA technology can conclusively establish the truth in such disputes and

⁴² THE TIMES OF INDIA (May 16, 2008).

therefore should be resorted to without any hesitation. It is to be borne in mind that when Section 112 was being drafted even the discovery of DNA was not contemplated and therefore this section should be amended. An ideal solution could be to provide another outlet apart from the proof of non-access (as discussed earlier) to be provided in the form of evidence of DNA test to rebut the conclusive proof provision in Section 112.⁴³



⁴³ In *Sadashiv Mallikarjun Kheradkar v. Nandini Sadashiv Khedarkar*, 1995 Cri. L.J. 4090 at 4093 (Bom.), the Court lamented the absurdity of having only proof of non-access when DNA evidence decide the matter in a more scientific manner.