



INDIAN DNA TESTS ADMISSIBILITY IN RELATION TO VIOLATION OF HUMAN RIGHTS *

Introduction

The discovery of scientific structure of DNA (deoxyribonucleic acid) in the 1950's, and its recognition as universal genetic material made it imperative for man to apply this knowledge towards unexpected ends. The development of DNA profiling has provided new dimensions and accuracy to identification of individual even greater than the methods of fingerprinting. This is because the DNA profiling allows examination of human biological material at its most fundamental level *i.e.* the DNA molecule. The molecules which is found in every living cell within the body, carries the genetic information that makes one individual separate and distinct from every other individual. The general process of DNA profiling allows DNA extraction from blood or tissues of human body and then chemically dividing the DNA into fragments. The sequence of fragments form a pattern similar to a bar code since there is variation in the DNA from one person to another. As long as developed laboratory procedures adhered to the DNA profiling evidence is as reliable as any form of scientific evidence brought before the courts. DNA profiling is extensively used for criminal investigation as well as paternity testing. This profiling is very useful especially in the field of criminal law because it has the possibility to determine whether the blood or semen deposits at the scene of the crime come from the person suspected of crime or not. Thus, it is very useful in investigations of murder, sexual offences and paternity disputes whenever any blood, hair etc are left by the culprit at the crime scene DNA profiling can identify the person from his own biological deposits. The profiling of DNA is very useful for paternity testing due to its capacity to determine a high degree of certainty as regards to claim for a child's parents. As such this method is of extensive use in family disputes, determination of fatherhood of a child of a rape victim or an illegitimate child, right to social security benefits as well as issues of inheritance.

Origin

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In the 17th century, English Botanist Dr. Nehemiah Grew, Fellow of College of Physicians and the Royal Society were the first person who documented his findings in his paper about the ridge on the hands published in 1684. This remained the primary source for identification of individuals for around 150 years. But later on it was found that even fingerprints can be altered by surgery. DNA profiling was developed by two independent breakthroughs in molecular biology that occurred at the same time on different sides of the Atlantic¹.

In the U.S.A. the polymers chain reaction (PCR) was invented by Karl Mullis while in U.K, DNA fingerprinting was being discovered by Sir. Allic Jeffrey's at the University of Lancaster. Though in 1984 it were Sir Allic Jeffrey's and his colleagues who developed genetic fingerprinting using DNA to identify individuals. In 1986 the polymers chain reaction was first described in scientific literature. PCR enabled scientists to rapidly multiply small areas of DNA. In 1987 the U.K. Forensic Investigators used DNA testing to help in solving the "Black pad Murder" and to identify the killer, Collin Pitchfork who later confessed to the crime. This marks the first case in which DNA evidence was introduced to determine the identity of the murderer and it is also involved in man's skin. In addition to this it also marks the first case in which a prime suspect was exonerated due to DNA evidence.

DNA Profiling Methods

A variety of methods can be adopted to examine DNA. The steps in preparing and analyzing the DNA can vary depending on the method Generally the test examine a non-coding portions of DNA strands and Genes, which serve as templates for making proteins in the cells which make five percent of DNA strand.

RFLP Method

It is known as Restriction Fragment Length Polymorphism Analysis. DNA is collected from cells, such as blood samples and cut into pieces using a restriction enzyme. This generates thousands of DNA fragments of different sizes as a consequence of variations between DNA sequences of different individuals. The fragments are then separated on the basis of size using gel electrophoresis. The separated fragments are then transferred to a nitro cellulose or nylon filter or membrane. This procedure is called a 'Sothern Blot²'.

¹ Dr. A.K. Srivastava "DNA Testing and Human Rights Implication in Civil and Criminal Investigation" 4CrLJ81 (April, 2007).

² Genetic Science, "Human Health and Gene Patent", A.L.R.C Issue Paper 27 Intellectual Property Rights Over Genetic Material.

PCR Method

It is known as the **Polymerize Chain Reaction**. This technique was discovered in 1983 by **Kary Mullis**. It amplifies a specific DNA fragment without the need of bacterial cells known as PCR. PCR is able to generate large amount of DNA from minute starting samples. In PCR process, the DNA sample is denatured into the separate individual poly nucleotide strands through heating.

STR Method

The system of DNA profiling used today is based on PCR and uses Short Tandem Repeats (STR). This method uses highly polymorphic regions that have short repeated sequences of DNA. Unrelated people almost certainly have different number of repeated units so STR can be used to discriminate between unrelated individuals.

AMPFLP Method

The **Amplified Fragment Length Polymorphization** was put into practice in 1990 and due to its relatively low cost and ease of setup and operation, this method is popular in lower income countries. This technique is faster than RFLP analysis. It relies on Variable Number Tandem Repeat (VNTR) polymorphisms to distinguish variable alleles which are separated on a ployacrylemide gel using an allelic ladder.

Y-Chromosome Method

Recent innovations include the creation of primers targeting polymorphic regions on the Y-Chromosome, which allows for resolution of a mixed DNA sample from a male and a female or cases in which differential extraction is not possible. Since the Y-Chromosome is paternally inherited, so they can help in solving paternity related cases of males. Though, this technique has some demerits as this analysis produces weaker results and leads to a less precise analysis.

Mitochondrial Method

This analysis is used for highly degraded samples. There are many copies of mitochondrial DNA in a cell. This method uses amplification of HV 1 and HV 2 regions of mitochondrial DNA and then sequences each region and compares single nucleotide **"differences to a reference."** The mitochondrial DNA is maternally inherited and is useful in determining clear identities, such as those of missing people when a maternally linked relative can be found. The Mitochondrial DNA can be obtained from hair shafts and old bones or teeth.

Crime Laboratory for Criminal Investigation

Criminal laboratories are mainly developed by agencies which have prospective purpose to criminal investigation or pushed by rising order of casework. This independent agencies increased number of staff one employee to more than hundred and improved their facility in particular direction³. New technology lead forensic scientist with various skills and application to face active participation in criminal justice system. There are two main basic and optional services provided by forensic laboratories. In basic services, firstly physical science unit analyses principle of geology, physic and chemistry to find out criminal with the help of crime-scene proof (drugs, paint, soil, glass and explosive). Second is biology unit which is now a day's mainly responsible for DNA Profiling. They took DNA from various sources (like hair, blood, skin, saliva and more) and lead to arrest correct criminal. Thirdly firearms unit, they look for target of angle, which arms have been used. Then documents examine unit, analyze handwriting, relation between paper and ink. Finally photography unit, new technique like x-ray, ultraviolet and digital photography brings invisible things to in evidence. Other operational services are Toxicology unit, Latent fingerprinting unit, polygraph unit, voiceprint analysis unit and crime scene investigation. We will discuss in detail in the next few paragraphs that how it has changed with time.

DNA Testing and Human Rights

DNA is the abbreviation for deoxyribonucleic acid, which is the genetic material present in the nucleus of cells in all live life,” since it contains the entire informant. Because each individual inherited half of his or her DNA from each parent, DNA testing can be used to determine if individuals are genetically related to each other. DNA is found in all cells with a nucleus and is the same throughout the body, so virtually every fluid or tissue from a human contains some DNA and can be analyzed by DNA identification testing. DNA also is stable and does not change over time, so samples collected years ago may be compared to samples collected recently⁴.

The use of DNA has raised a number of concerns about increased police powers and the unquestioning adoption of a conservative crime control agenda in the administration of criminal justice system. International human rights law provides that everyone has a right to a fair and public

³ E. Lander, 'Genomic Information: Driving a Revolution in Bio-Medicine', Paper Presented at 7th International Conference of the Human Genome Organization, Shanghai, and 14th April 2002.

⁴R.Hawley and C. Mori, *The Human Genome: A User's Guide* 6 (Harcourt Academic Press, Burlington 1999).

⁴Dr. B.R. Sharma, *Forensic Science in Criminal Investigation & Trial* 1123 (Universal Law Publication, IVth edn. 2011).

hearing by the independent and impartial tribunal. It is essential to a fair trial that the suspects have the opportunity to challenge the reliability of the scientific testing.

In order to use DNA profiling, it is necessary to obtain certain types of body material. The sample may be obtained by chance. In a case where the sample is obtained without coercion (for example, by taking a hair follicle from the defendant's clothing) the sample is lawfully obtained both in India and many other countries. According to this view, DNA testing as such is an interference with the right to integrity of the body, resulting from prior interference, caused by the taking of body materials against the suspect's will. **According to the Supreme Court**, the taking of body tissue from the suspect for the purpose of DNA testing is not permitted under the existing law.

Judicial Approach towards DNA Tests

Civil Matters

Initially, the Judges took very conservative view regarding the application of DNA Technology in resolving cases. Though, with the passage of time the courts have adopted a positive view of DNA evidence. The right to privacy, social aspects and constitutional provisions has been proved to be a barrier in taking the DNA evidence in the fields of maintenance, inheritance and succession etc. The DNA evidence has been sparingly used.

DNA Evidence in Paternity Cases: Conflicting Views: Indian judges often face a debatable question in deciding matters of paternal responsibility that whether the law should give priority to biological parentage over social parentage. Section 112 Of Indian Evidence Act 1872, provides presumptions regarding legitimacy of a child unless it can be shown that the parties had no access to each other at the time when child could have been begotten. DNA parentage testing may be used to rebut a presumption arising under the Evidence Act or in cases where no presumption arises⁵.

The first case in which DNA fingerprinting was used in India was

Laxmi's case, two names for the same five-year-old girl. One couple claimed the daughter Laxmi as theirs while another couple who had long ago lost their child Mary claimed her to be their daughter lost earlier. With the help of DNA fingerprinting, it was found that the child was in fact Mary.

Gautam Kundu v State of West Bengal where a woman and a child filed case for maintenance under section 125 Cr.P.C. The father claimed himself not to be father of child and

⁵ Deepak Ratan and Mohd. Hasan Zaidi, Forensic Science in India and the World 108(Allia Publication, edn. (2008).

prayed for blood test. In this case, the plea of father was rejected by Magistrate as well as by the High Court on the grounds that during the continuance of marriage if a child is born, then it is a conclusive proof of legitimacy. The Supreme Court also held that the application for blood test cannot be accepted. It was also said that no person could be compelled to give a sample of blood for DNA testing against his or her will and on or refusal to give sample, no adverse inference can be drawn.

In *Sajeera v P.K. Salim* the paternity of a child was challenged in the maintenance case. The father contended that there was no need of DNA test but agreed to conduct of the test on the expense of the petitioner. In this case the Honorable Kerala High Court observed that, “though by blood test it cannot be positively established the paternity of child, it can certainly exclude individual as the father of child.... It is true that without the consent of the person, blood test cannot be conducted and there is no law in India enabling the court to compel any person to undergo for blood test...”

Also in the case of *Syed Mohd. Ghouse v Noorunnisa Begum* the Andhra Pradesh High Court relied on the judgments in the GautamKundu case and held that court cannot compel a person to undergo a DNA test it is however relevant in the case of *Swati Lodha v State of Rajasthan*, much earlier the Rajasthan High Court observed that taking of blood test is not violative of Article 20(3) of the Constitution of India and when the accused refuses to give sample blood for determining paternity, refusal amounts to corroboration.

In *Kanti Devi v Poshi Ram* the court gave priority to social parentage over biological parentage and rejected DNA evidence by observing that though the result of DNA test is said to be scientifically accurate; It is not enough to escape from conclusiveness of Section 112 of Indian Evidence Act of 1872.

Again in case of *Sharda v Dharam Pal* the Supreme Court took a very positive view regarding the importance as well as admissibility of DNA evidence in matrimonial cases. In this case, the Supreme Court held that a Matrimonial court has the power to order a person to undergo medical test and this would not amount to violation of Article 21 of the Constitution. In case of refusal to undergo test, the court would be entitled to draw an adverse inference against him. The Delhi High Court has also adopted the same view in *Mrs. Kanchan Bedi v Gurpreet Singh* where the parentage of infant was in question and the application filed by the mother was opposed by the father for conducting DNA test. The court held that, “It appears for me to be difficult to resist that the law as it presently stands, does not contemplate any impediment or violation of rights in directing persons to submit themselves for DNA test, especially where the parentage of a child is in controversy for the grant of

maintenance⁶.”

Criminal Matters

Though no specific legislation has been laid down in India in regard to DNA test, Section 53 and 54 of Cr.P.C impliedly provide for DNA test and are being used extensively in investigation of criminal cases. Section 54 of Cr.P.C provides for Medical Examination of the accused in case of Injuries. By the Amendment Act of 2005, the explanation to this Section includes in its ambit the examination of blood, blood stains, semen, swabs etc., sec 53 & 54 Cr.P.C. and the DNA test is being extensively used in case of Sexual Offences. It was judicially recognized in the cases of **Née raj Verma v State of U.P.** the High Court observed that the police power to take sample of blood, etc. could be exercised by Magistrate and is not violative of Article 20(3) of the Constitution of India.

In many cases, the Trial Courts of our country either suo moto or on basis of prayer of lawyers are taking help of DNA testing. In this regard the a Division Bench of Allahabad High Court in **Jamshed v State of U.P.** was of the view that though there is no specific provision in Indian Law permitting taking of blood yet in a criminal case an examination of a person can be made under section 53(1) of Cr.P.C. which shall include the taking of blood samples. The court drew the above conclusions as per the provision of section 367(1) and 482 of Cr.P.C.

The first case which brought the DNA technology to the face was the **Priyadarshani Mattoo Rape and Murder case in 1996**. In this case, **Santosh Kumar Singh**, the son of a senior **IPS officer** was the main accused. The prosecution relied on DNA test of ‘vaginal swab’ which was positive whereas the defence challenged the validity of the test and also pleaded that test was not conducted as per prescribed rules. It was also submitted that laboratory procedure was an in house technique of CCMB, Hyderabad and not in conformity with standard protocol. The judge concluded that despite the match of DNA profiles, the guilt of the accused could not be proved beyond reasonable doubt. The judge in fact actually pronounced, “Though I know Santosh Singh is the man who committed the crime I acquit him giving the benefit of doubt. The courts are continuously facing the problem while dealing with DNA evidence. Whether the evidence meets the standard of proof required to convict the accused beyond reasonable doubt still now the Indian Court are fast realizing the value of DNA evidence and in many cases these have been admitted as reliable⁷.

⁶ The Indian Police Journal, 16(2001).

⁷ Yaspal Singh, Mohd. Hasan Zaidi, *DNA Test in Criminal Investigation, Trial and Criminal Trial and Paternity Dispute (Justice through Science)* 88, (Alia Publication, edn...2006).

The DNA technology was also applied in the Rajiv Gandhi Assassination case. Where the Prime Minister of India was killed by a suicide bomber, the prime culprit was herself killed and most material evidences were destroyed in these massive explosions.

The Present Indian Scenario

Several convictions have occurred in India where the scientific evidence (DNA) has been accepted under Section 45 of the Indian Evidence Act . It is the section dealing with the opinion of the expert. It states, that when the court has to form an opinion upon a point of foreign law, or science or art, or as to identity of handwriting or finger impressions, the opinions upon that point of persons specially skilled in such foreign law, science or art, or in questions as to the identity of handwriting or finger impressions are relevant facts. The Courts have opined that medical evidence is only an evidence of opinion and is hardly decisive. It is not substantive evidence. But they say that that the opinion of the doctor who has held the postmortem examination and of the forensic science laboratory is reliable. The Supreme Court of India has further stated that unless there is something inherently defective in the medical report, the Court cannot substitute its own opinion for that of the doctor.

Section 293 of the Code of Criminal Procedure deals with reports of certain Government scientific experts. Section 293(2) says that the Court may, if it thinks fit, summon and examine any such expert as to the subject-matter of his report. The underlying principles of the technique (DNA typing for example) cannot be questioned; legal scrutiny can only revolve around questions related to the collection, forwarding and authentication of samples⁸ . On the other hand, there are no proper international as well as national guidelines and that each laboratory has its own control and standardization methods. But the fact remains that the court is unlikely to understand in any detail the principles of the process. The expert's opinion is taken by the Courts on trust and faith. Some Courts may still be reluctant to admit some type of scientific evidence (like DNA typing) as they may feel that it does not follow the Frye Rule. However of late, it is generally held that unless there is some special circumstance, all relevant evidence is admissible.

The Supreme Court of India has held that, "A medical witness called in as an expert and

⁷Abhijeet Sharma, Guide to DNA Test in Determination & Criminal Investigation 88 (edn.. 2007, Forwarded by Hon'ble Justice Arijit Pasayat, Judge, SC of India).

⁸ Tanya chauhan, "Application of DNA Technologies in Forensic Analysis- A Review "

Indian Journal of Criminology and Criminalistic 114(2009).

⁸R. Usharani,"DNA evidence and the court" 1, Karnataka law Journal 2 (2008(1)).

the evidence given by the medical officer is really of an advisory character based on the symptoms found on examination. The expert witness is expected to put before the court all materials inclusive of the date which induced him to come to the conclusion and enlighten the Court on the technical aspects of the case by explaining the terms of science so that the Court although not an expert, may form its own judgment on these materials after giving due regard to the expert's opinion because once the expert's opinion is accepted it is not the opinion of the medical officer but that of the Court". Thus, it can be said that the laws and Courts in India are still not clear on the matter on the criteria of admissibility of scientific matters and confusion still prevails.

Conclusion

The aim of this study was to evaluate the effect of technology in criminal sciences to prove perfect result to identify criminal. It was unable to predict correct criminal with the help of series of body measurements but evaluation of fingerprinting become most accurate and cheap method. Then recently addition of DNA profiling and computer forensic start to predict most passable criminal identification, this new technology including internet may have big contribution to further development of criminal investigation because their aspects are endless. DNA, fingerprinting and computer forensic are very big area but it described briefly due to worlds limits. Though there is general acceptance of admissibility of scientific evidence and expert's opinion in Indian Courts, there is no special law with respect to this and enable democratic institutions to function lawfully. Section 45 of the Indian Evidence Act is insufficient in this regard. In case of doubt, the Daubert Guidelines can be adhered to. Proper National protocol should be formulated and extensive studies carried out with respect to quality control, interpretation of results and understanding the potential error rates of scientific evidence matter.

At present the DNA test are being admitted by the court as evidence on larger scale. However it is not to be forgotten that each DNA case is unique and the results depend vastly on circumstances and situations. It is noteworthy that DNA testing in the Indian Criminal Justice System does not have any set standards, guidelines etc. which are very relevant with the rapid spread of the routine use of DNA testing in our country.