

Justice through DNA Technology

Rakesh Kumar Singh *

Introduction:

Deoxyribonucleic Acid (DNA) is increasingly becoming vital to ensure accuracy and fairness in the Criminal Justice System. DNA can be used to solve crimes in several ways. DNA profile generated from exhibits from crime scene can be matched with DNA profile of suspects to either exclude the innocent or fox culpability of offender. Suspects can be traced by matching the DNA profiles of the crime exhibits with the profiles in the offenders DNA data bank . DNA testing is also used in resolving various civil disputes including parentage, immigration, and fraudulent sale of plant and animal products. During the last decades, many new and exciting innovations and technological advancements have taken place. Now, mt DNA, Y-STRs, and SNPs are also being added to forensic DNA testing. Nanotechnology - based DNA-chip is another development to improve speed and resolution of DNA evidence analysis.

DNA profiling (earlier called ‘DNA fingerprinting’) was introduced in 1984 by British geneticist Alec Jeffrey. It was first used in catching and convicting Coin Pitchfork who raped and murdered two girls, one in 1983 and another in 1987. Since then, the science of DNA profiling has undergone developments and it will continue to do so in the future. It has now become a routine test in any forensic setting, and is in great demand in the process of criminal investigation and administering justice in criminal cases and civil disputes. Due to the extensive validation studies and challenges in courts, DNA is now considered a gold standard in forensic science. ^[1]

Need of SCIENTIFIC EVIDENCE :

Criminal Judicial System in this country is at cross-roads, many a times, reliable, trustworthy, credible witnesses to the crime seldom come forward to depose before the court and even the hardened criminals get away from the clutches of law. Even the reliable witnesses for the prosecution turn hostile due to intimidation, fear and host of other reasons. Investigating agency has, therefore, to look for other ways and means to improve the quality of investigation, which can only be through the collection of scientific evidence. In this age of science, we have to build legal foundations that are

1 Author (C.J.M., bageshwar .This article is based on course of advance Justice in which I have participated.)

2 . Reading material of Course on Advance Justice through DNA technology(LNJNI National Institute of Criminology and forensic science.)

sound in science as well as in law. Practices and principles that served in the past, now people think, must give way to innovative and creative methods, if we want to save our criminal justice system. Emerging new types of crimes and their level of sophistication, the traditional methods and tools have become outdated, hence the necessity to strengthen the forensic science for crime detection. Oral evidence depends on several facts, like power of observation, humiliation, external influence, forgetfulness etc., whereas forensic evidence is free from those infirmities. Judiciary should also be equipped to understand and deal with such scientific materials. Constant interaction of Judges with scientists, engineers would promote and widen their knowledge to deal with such scientific evidence and to effectively deal with criminal cases based on scientific evidence. We are not advocating that, in all cases, the scientific evidence is the sure test, but only emphasizing the necessity of promoting scientific evidence also to detect and prove crimes over and above the other evidence. ^[2]

Scientific evidence encompasses the so-called hard science, such as physics, chemistry, mathematics, biology and soft science, such as economics, psychology and sociology. Opinions are gathered from persons with scientific, technical or other specialized knowledge, whose skill, experience, training or education may assist the Court to understand the evidence or determine the fact in issue. Many a times, the Court has to deal with circumstantial evidence and scientific and technical evidence often plays a pivotal role. ^[3]

Deoxyribonucleic acid, or DNA, is a molecule that encodes the genetic information in all living organisms. DNA genotype can be obtained from any biological material such as bone, blood, semen, saliva, hair, skin, etc. Now, for several years, DNA profile has also shown a tremendous impact on forensic investigation. Generally, when DNA profile of a sample found at the scene of crime matches with DNA profile of the suspect, it can generally be concluded that both samples have the same biological origin. DNA profile is valid and reliable, but variance in a particular result depends on the quality control and quality procedure in the laboratory. ^[4]

Use of DNA in Judicial proceeding :

The structure of DNA varies from individual to individual. Each individual, consequently, is unique-different from all others. Parents, brothers, sisters,

3 *Dharam Deo Yadav vs State Of U.P on 11 April, 2014 EXPERT.(2014 2 SCC (Cri)626.*

4 *Ibid.*

5 *Anil @ Anthony Arikswamy Joseph vs State Of Maharashtra on 20 February, 2014.*

sons, daughters, even uncles and aunts can be inter-linked. DNA profiling is of immense help in the following types of forensic problems:

1. Linkage of the criminal, the victim, the weapon of offence, vehicle used in the crime, scene of occurrence, routes etc., *inter se*, through body materials exchanged or deposited as clue materials.
2. Identification of the culprit or the victim, through body materials, including fallen or pulled-out hairs.
3. Identification of culprit from semen, semen stains or vaginal swabs in rape cases.
4. Identification of culprit through saliva left in cups, glasses, cigarette stubs, spittle and bitten skin, etc.
5. Identification of persons through urine or faecal matter.
6. Identification of mutilated dead bodies through known and available body materials.
7. Identification of body parts *inter se* in the cases of scattered or dismembered body.
8. Establishing correct parentage in disputed paternity cases.
9. Incest cases.
10. Parentage of abandoned child.
11. Parentage of murdered infant.
12. Establishing blood relationship among persons claiming the blood relationship to claim inheritance, property or entry to another country.
13. Alleged adultery cases.
14. Homo or *Hetero-logus* nature of twins.
15. False charges relating to rape, fatherhood etc.
16. Gang rape case for identification of all the involved culprits.
17. In family paedophilia cases, proof against the criminal family member being difficult, DNA of the body material with the victim child provides certain proof.
18. In robbery and burglary cases, the culprit is likely to leave body materials like blood, semen, hair and saliva, even faces. These materials can provide DNA profile of the culprit.
19. In crimes like rapes and murders, if they are the work of the 'serial rapist or murderer', the linkage provides date about the criminal and his *modus operandi* and ultimately leads to the culprit.
20. In immigration dispute sometimes illegal attempts are made to induct persons of non-permitted relationship by declaring falsely that they are the permitted relatives. DNA can identify the blood relation.
21. To identify poachers of protected wild life by bloodstain on the persons of the poachers which can link them with the remains of the animal.

22. To identify take encounters.

Fortunately DNA is fairly stable compound. Lower molecular weight DNA has been recovered even from 2400 years old mummies. Laboratory tests have shown that DNA can be extracted from even the smallest stain but clearly the larger the sample, the better is the chance of success. The important factor for successful DNA analysis is not necessarily the size or the stain, nor even its age, but the conditions under which it has been stored plays the crucial role.^[5]

Concept of Justice:

The Aristotelian categories of distributive and corrective justice designate the chief proving grounds in which the *suum cuique* principle is tested in political and social action.^[6] Distributive justice is primarily concerned with the allocation of rights, powers, duties, and burdens to the members of a society or group.^[7] In democratic countries, distributive justice is usually dispensed by a legislative body elected by the people. In nondemocratic nations, this power may be vested in an oligarchic council or autocratic ruler. In some societies, the judiciary partakes in the prerogative to dispense distributive justice to the extent that judges are granted discretion to lay down general rules^[8]. Corrective justice comes into play when a norm of distributive justice has been violated by a member of a community. It will then become necessary to make amends for a wrong or deprive a party of an unjustified gain. Corrective justice is usually administered by a court or other organ invested with judicial or quasi-judicial powers. Its chief fields of application are contracts, torts, and crimes. A breach of contract will be rectified by a judgment decreeing the payment of damages, unless some other remedy (such as specific performance) is provided. A proper award of compensation will also be the duty of a judge or jury in cases where intentional or negligent injuries have been inflicted by a tortfeasor. In the field of criminal law, issues of corrective justice are presented in determining the sentence to be imposed upon a convicted offender.^[9]

Though justice is a complex concept. All social thinkers from Plato to Rawls have been making supreme endless efforts in quality of justice. At every interval of human history we find completing formulation and enumeration of thesis of Justice. Philosophers have been measuring justice in terms of distribution according to merit.

6 *Chief Justice M. MONIR LAW OF EVIDENCE Universal Law Publishing Co. NEW DELHI – INDIA 2013.*

7 *Edgar Bodenheimer, Jurisprudence, The philosophy and method of Law Delhi Universal Law of Publication CO.PVT at p. 208,209.*

8 *Ibid at p.209.*

9 *Ibid p. 210.*

10 *Ibid P. 210,211.*

Capacity or need or in conformity to customs or equal opportunity for self development, utility or balancing interest or felt necessities of the people etc.^[10]

STEPS INVOLVED IN ANALYZING DNA EVIDENCE:

Several basic steps are performed during DNA testing regardless of the type of test being done. The general procedure includes: 1) the isolation of the DNA from an evidence sample containing DNA of unknown origin, and generally at a later time, the isolation of DNA from a sample (e.g., blood) from a known individual; 2) the processing of the DNA so that test results may be obtained; 3) the determination of the DNA test results (or types), from specific regions of the DNA; and 4) the comparison and interpretation of the test results from the unknown and know samples to determine whether the known individual is not the source of the DNA or is included as a possible source of the DNA.^[11]

Any probative biological sample that has been stored dry or frozen, regardless of age, may be considered for DNA analysis.

TYPES OF DNA EVIDENCE ANALYSIS :

Basically there are four types of DNA evidence analysis which are describing as under:

(1) Polymerase Chain Reaction (PCR) :

The evolution of DNA testing advanced significantly when Dr. Kary Mullis discovered that DNA could be copied in the laboratory much as it is in the natural world.

The copying process, known as polymerase chain reaction (PCR), uses an enzyme (polymerase) to replicate DNA regions in a test tube. By repeating the copying process, a small number of DNA molecules can be reliably increased up to billions within several hours.^[12]

(2) Short Tandem Repeat (STR) Analysis :

Short tandem repeat (STR) technology is a forensic analysis that evaluates specific regions (loci) that are found on nuclear DNA. The variable (polymorphic) nature of the STR regions that are analyzed for forensic testing intensifies the discrimination between one DNA profile and another. For example, the likelihood that any two

11 S.N. Dhyani:Law Morality and justice Indian development New Delhi:Metropolitan Book Co.(P) ltd. 1984 at 74.

12 DNA evidence :basis of identification,gathering and transporting.Reading material of course on advancing judtice through DNA techonology LNJN National Institute of Criminology and forensic science.

13 Ibid.

individuals (except identical twins) will have the same 13-loci DNA profile can be as high as 1 in 1 billion or greater. ^[13]

(3) Y-Chromosome Analysis :

Several genetic markers have been identified on the Y chromosome that can be used in forensic applications. Y-chromosome markers target only the male fraction of a biological sample. Therefore, this technique can be very valuable if the laboratory detects complex mixtures (multiple male contributors) within a biological evidence sample. Because the Y-chromosome is transmitted directly from a father to all of his sons, it can also be used to trace family relationships among males. Advancements in Y-chromosome testing may eventually eliminate the need for laboratories to extract and separate semen and vaginal cells (for example, from vaginal swab of a rape kit) prior to analysis. ^[14]

(4) Mitochondrial Analysis:

Mitochondrial DNA (mtDNA) analysis allows forensic laboratories to develop DNA profiles from evidence that may not be suitable for RFLP or STR analysis. While RFLP and PCR techniques analyze DNA extracted from the nucleus of a cell, mtDNA technology analyzes DNA found in a different part of the cell, the mitochondrion (see exhibit 1). Old remains and evidence lacking nucleated cells – such as hair shafts, bones, and teeth – that are unamenable to STR and RFLP testing may yield results if mtDNA analysis is performed. For this reason, mtDNA testing can be very valuable to the investigation of an unsolved case. For example, a cold case log may show that biological evidence in the form of blood, semen, and hair was collected in a particular case, but that all were improperly stored for a long period of time. ^[15]

Different Test of DNA:

The courts in the United States follows three major standards for evaluating the scientific DNA evidence which are :

- 1-The “general-acceptance” test
- 2-“Relevance” test and
- 3-The “Daubert” test ^[16]

14 *Ibid.*

15 *Ibid.*

16 *Ibid.*

17 *Ramakant Gupta, Gwati Gupta, Manju Gupta journey of DNA evidence in legal Arena: An insight on its legal perspective worldwide and highlight on admissibility in Indian Journal of forensic Science & medicane.*

These tests were adopted and applied by the courts in Canada. In England, courts are using the “helpfulness as a standard for evaluating DNA evidence. An additional standard adopted by the courts in Australia is known as the “prejudicial effect” test. Under this standard courts will weigh the prejudicial effect of the scientific evidence with its probative value.

The “general-acceptance” test/Frye test :

The “general-acceptance” test was formulated by the District Court of Columbia in *Frye v. The United States*, 293 F. 1013 (D.C. Cir. 1923). Frye standard mandates that a novel technique must pass through an experimental stage within the scientific community that scrutinizes it.

The technique receives judicial acceptance when it has been tested successfully.^[17]

The “relevance” test:

The “relevance” test was laid down by the United States Court of Appeal in [*Coppolino v. State*, 223 Scr. 2d 6E \(Fla. App. 1968\)](#). Court explained that the Court's discretion in admitting evidence is wide enough to admit scientific evidence lacking general acceptance of the scientific community.^[18]

The “Daubert” test:

The “Daubert” test was laid down by the [*United States Supreme Court in Daubert v. Merrell Dow Pharmaceuticals, Inc. \(1993\) 125 L.Ed. 26. 469*](#). Court formulated a four factor test to help the trial judge, in determining the relevance and reliability of scientific evidence.

- a- Whether the theory of techniques can be or has been tested
- b- Whether the theory or techniques has been subjected to any peer review and publication
- c- The known or potential error rate of a technique
- d- Whether the theory or techniques has received “general acceptance” in the scientific community.^[19]

Latest pronouncement regarding admissibility laid by the Canadian Supreme Court:

18 *Ibid.*

19 *Ibid.*

20 *Ibid.*

The latest pronouncement regarding the admissibility of scientific evidence was laid down by the Canadian Supreme Court in R v. Mohan case and formulated four criteria. They are:

- 1- Relevance
- 2- Necessity in assisting the trier of fact
- 3- The absence of any exclusionary rule and
- 4- A properly qualified expert. ^[20]

Admissibility and Relevancy of DNA evidences :

Now the question arise whether DNA profile report admissible? Now we should go through the provision of Indian Evidence Act.

Section 5 in The Indian Evidence Act, 1872:

Evidence may be given of facts in issue and relevant facts.—Evidence may be given in any suit or proceedings of the existence or non-existence of every fact in issue and of such other facts as are hereinafter declared to be relevant, and of no others. Explanation.—This section shall not enable any person to give evidence of a fact which he is disentitled to prove by any provision of the law for the time being in force relating to Civil Procedure1..—This section shall not enable any person to give evidence of a fact which he is disentitled to prove by any provision of the law for the time being in force relating to Civil Procedure1."

The expression fact in issue means matters which are in dispute or which form subject of investigation *M. Krishana Rao Vs R. Subramaniam* ^[21], the court held that ascertaining existence or non existence of facts and declaring right and liabilities of parties by applying relevant law to those ascertained facts are two basic function of judicial officers adjudicating any judicial proceeding.

Section 6 in The Indian Evidence Act, 1872 : Relevancy of facts forming part of same transaction.—Facts which, though not in issue, are so connected with a fact in issue as to form part of the same transaction, are relevant, whether they occurred at the same time and place or at different times and places. Illustrations.

This section deals with the relevancy of facts forming part of source transaction. Facts though not is issue, if they are so connected with a fact in issue as to form part of same transaction are relevant whether those facts occurred at same time and place or at different time and place.

²¹ *Ibid.*

²² *AIR 2010(NOC) 666(AP).*

Section 7 in The Indian Evidence Act, 1872 : Facts which are the occasion, cause or effect of facts in issue.—Facts which are the occasion, cause, or effect, immediate or otherwise, of relevant facts, or facts in issue, or which constitute the state of things under which they happened, or which afforded an opportunity for their occurrence or transaction, are relevant. Illustrations.

Evidence relating to collateral facts is admissible where such facts will, if established, establish reasonable probabilities as to the matter in dispute and which such evidence is reasonably conclusive.

Section 9 in The Indian Evidence Act, 1872 : Facts necessary to explain or introduce relevant facts. —Facts necessary to explain or introduce a fact in issue or relevant fact, or which support or rebut an inference suggested by a fact in issue or relevant fact, or which establish the identity of anything or person whose identity is relevant, or fix the time or place at which any fact in issue or relevant fact happened, or which show the relation of parties by whom any such fact was transacted, are relevant in so far as they are necessary for that purpose. This section makes admissible facts which are necessary to explain or introduce relevant such as place, name, date, identity of parties, circumstances and relations of parties.

All the above sections make clear that DNA evidence is admissible under Indian Evidence Act, But this evidence can be brought with the help of expert. In *Fakhruddin Vs State of M.P.* ^[22], Hon'ble Supreme Court has observed that It is a general rule that opinion of witness possessing peculiar skill is admissible where or the subject matter of inquiry is such that inexperienced persons are unlikely to prove capable of forming a correct judgment upon it without such instances. In other words this is so when it so far partakes of the character of a science or art as to require a course of previous habit or study to obtain a competent knowledge of its nature.

Phipson on evidence (15th ED 2000 P. 921 para 37-09) States as follows: "even at common law the opinion of skilled witness are admissible wherever the subject is one upon which competency to form an opinion can only be acquired by course of special study or experience"

Section 45 in The Indian Evidence Act, 1872 : Opinions of experts —When the Court has to form an opinion upon a point of foreign law or of 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 identity of handwriting [or finger impressions] are relevant facts. Such persons are called experts.

Opinion of expert are relevant upon a point of (a) foreign law (b) Science (c) art (d) identity of handwriting and (e) finger impression. The Indian Evidence Act was enacted in 1872 and that time DNA technology had not developed. But DNA technology is also science. So evidence regarding DNA is an expert opinion. In *Baso parsad VS state of Bihar (2006)*^[23], It has been observed by Hon'ble Supreme Court that the court may take expert opinion into consideration but appreciation of evidence is court's job. In *Chartered Financial Analysts of India Vs Council of Institute of chartered Accountants in India AIR*^[24] (30) has an opinion of an expert is not beyond the pale of judicial review. It would certainly not to be so when the statutory authority transgress its jurisdiction would render the same a nullity. Value of expert evidence state of *H.P. Vs Jailal*^[25] it has been observed, as, An expert is a witness of fact. This evidence is reality of an advisory character. The duty of an expert witness is to furnish the judge the necessary scientific criteria for the testing the accuracy of the conclusion so as to enable the judge to form his independent judgment by the application of this criteria to the facts proved by the evidence of the case. The scientific opinion evidence if intelligible, convincing and tested becomes a factor and often an important factor of consideration along with other evidence of case. The credibility of a such witness depends on the reason stated in support of his conclusion and the data and material furnished which from the basis of his conclusion.

In *santosh kumar singh vs state*^[26] Supreme Court observed, the two scientists gave very comprehensive statements supported by documents that the DNA of the semen stains on the swabs and slides and the underwear of the deceased and the blood samples of the appellant was from a single source and that source was the appellant. It is significant that not a single question was put to PW Dr. Lalji Singh as to the accuracy of the methodology or the procedure followed for the DNA profiling. The trial court has referred to a large number of text books and has given adverse findings on the accuracy of the tests carried out in the present case. We are unable to accept these conclusions as the court has substituted its own opinion ignoring the complexity of the issue on a highly technical subject, more particularly as the questions raised by the court. CrI. Appeal No.87 of had not been put to the expert witnesses. In *Bhagwan Das & Anr. vs. State of Rajasthan AIR 1957 SC 589* it has been held that it would be a dangerous doctrine to lay down that the report of an expert witness could be brushed aside by making reference to

24 *13 SCC 65,76(para 37).*

25 *2007 SC 2100*

26 *AIR 1999 SC 3318*

27 *(2010) 9 SCC 747*

some text on that subject without such text being put to the expertThis is precisely the error in which the trial court has fallen.

Modern scientific methods have brought radical changes in the field of expert evidence . DNA is the most important piece of evidence because it gives perfect identity of a person. R vs watters (2000) ALL ERD 1469 cited in AIR 2005 SC 2277 it was held DNA evidence may have a great significance where there is supportive evidence, dependent of course on the strength of that evidence.

In *Chandan Panalal Jaiswal VS State of Gujrat* ^[27] 18 the Gujarat High Court has issued certain direction to be followed in conducting DNA Test as follows:

(i) That the authorities should see that blood sample are collected by a responsible medical officer preferably in the jail ward itself and by obtaining a declaration with the photograph in the format shown to the court during the course of hearing of this petitioner.

(ii)if required the petitioner-accused should be taken to the civil hospital and the blood sample should be drawn by a responsible doctor under a police japat but the same shall not be treated as handing over the accused to investigating Officer and the accused shall remain in the custody of the jail authorities.

(iii) The FSL,Gujrat state Ahmedabad should see /ensure that spiting/division of crime exhibit remains possible of course, this would depend upon the size of sufficiency of crime exhibit so that in the event of challenge, duplicate test if required can be performed as independently.

It is clarified that merely because no specific act having been enacted by the Legislature in our country ,the investigation agency can resort to call upon suspect/accused to undergo DNA analysis/test .It may be virtually under the power conferred on the investigation by CrPC. Thus even if there is vacuum of legislation,the court is supposed to see that no authority suffers from any type of prejudice. Maximum case,if required should be taken and it would be wrong to presume any inaction or negligence on the part of the said authorities and especially the doctor who is to draw the sample or FSL experts who have to draw the analysis .Committing some laboratory error ,would result into wrong finding especially when the state has assured that latest technique i.e. STR is to be performed in the present case ^[28]. So it is clear from above discussion that DNA evidence is an expert opinion So court should take all precaution and like other expert opinion ..

28 *2004 CrLJ 2992.*

29 *Ratan lal & Dhirajlal The Law of Evidence 24 Edition (LexisNexis) , Gurgaon. Haryana India.*

Under criminal procedure Code: There is also some provision under criminal procedure code -

Section 53A of the Criminal Procedure Code: provision of sec 53(A) is mandatory in nature.^[29]

Examination of person accused of rape by medical practitioner.^[30] When a person is arrested on a charge of committing an offence of rape or an attempt to commit rape and there are reasonable grounds for believing that an examination of his person will afford evidence as to the commission of such offence, it shall be lawful for a registered medical practitioner employed in a hospital run by the Government or by a local authority and in the absence of such a practitioner within the radius of sixteen kilometers from the place where the offence has been committed by any other registered medical practitioner, acting at the request of a police officer not below the rank of a sub-inspector, and for any person acting in good faith in his aid and under his direction, to make such an examination of the arrested person and to use such force as is reasonably necessary for that purpose.

The registered medical practitioner conducting such examination shall, without delay, examine such person and prepare a report of his examination giving the following particulars, namely-the name and address of the accused and of the person by whom he was brought,

30 *Richpal kharra vs State Laws (RAJ) 2013-5-304*

31 *This new section has come into force w.e.f. 23-6-2006 wide notification No. S.O. 923(E) ,dt 21-06-2006*

1. the age of the accused,
 2. marks of injury, if any, on the person of the accused,
 3. the description of material taken from the person of the accused for DNA profiling, and”.
 4. other material particulars in reasonable detail.
2. The report shall state precisely the reasons for each conclusion arrived at.
 3. The exact time of commencement and completion of the examination shall also be noted in the report.
 4. The registered medical practitioner shall, without delay, forward the report of the investigating officer, who shall forward it to the Magistrate referred to in section 173 as part of the documents referred to in clause (a) of Sub-Section (5) of that section.

This section 53-A is new. added by the CrPC (Amendment Act),2005 (25 of 2005).it provides for a detailed medical examination of a person accused of an offence of rape or an attempt to commit rape by the registered medical practitioner employed in a hospital by run government or by a local authority and in the absence of such a practitioner with in the radius of sixteen kilometers from the place where the offence has been committed by any other registered medical practitioner.

In a case where the prosecution failed to follow the mandatory requirement of conducting the necessary DNA test,it was held by Supreme Court , that the conviction of the accused was liable to be set a side.

[Krishana Kumar Malik vs State of Haryana](#) ^[31]

After the incorporation of sec 53 (A) in Cr.P. Code,it has become necessary for the prosecution to go in the DNA test in such type if cases,facilitating the prosecution to prove its case against the accused.

Section-164 A of Cr.P.C.- Medical examination of the victim of rape:^[32]

Medical examination of the victim of rape.– (1) Where, during the stage when an offence of committing rape or attempt to commit rape is under investigation, it is proposed to get the person of the woman with whom rape is alleged or attempted to have been committed or attempted, examined by a medical expert, such examination shall be conducted by a registered medical practitioner employed in a hospital run by the Government or a local

³² (2011) 7 SCC 130 .

³³ This amendment has come into force w.e.f. 23-06-2006 vide notification No. S.O. 923(E),dt 21-06-2006.

authority and in the absence of a such a practitioner, by any other registered medical practitioner, with the consent of such woman or of a person competent to give such consent on her behalf and such woman shall be sent to such registered medical practitioner within twenty-four hours from the time of receiving the information relating to the commission of such offence.

(2) The registered medical practitioner, to whom such woman is sent shall, without delay, examine her and prepare a report of his examination giving the following particulars, namely:-

(I) the name and address of the woman and of the person by whom she was brought;

(II) the age of the woman;

(III) the description of material taken from the person of the woman for DNA profiling;

(IV) marks of injury, if any, on the person of the woman;

(V) general mental condition of the woman; and

(VI) other material particulars in reasonable detail.

(3) The report shall state precisely the reasons for each conclusion arrived at.

(4) The report shall specifically record that the consent of the woman or of the person competent to give such consent on her behalf to such examination had been obtained.

(5) The exact time of commencement and completion of the examination shall also be noted in the report.

(6) The registered medical practitioner shall, without delay forward the report to the investigation officer who shall forward it to the Magistrate referred to in section 173 as part of the documents referred to in clause (a) of sub-section (5) of that section.

(7) Nothing in this section shall be construed as rendering lawful any examination without the consent of the woman or of any person competent to give such consent on her behalf.

Explanation– For the purposes of this section, “examination” and “registered medical practitioner” shall have the same meanings as in section 53’

There sections specially provide for offense rape or attempt to rape. Legislature has authorized investigation officer to conduct DNA profile. This can be done government hospital. This section also authorize investigating officer to responsible use of force.

This section is new added by CrPC (Amendment) Act 2005 (25 of 2005).

This clause seeks to insert new section 164 A in the court to provide for a medical examination of the victim of rape by a registered by medical practitioner employed in a hospital run by the government or a local authority and in the absence of such a practitioner by any other registered medical practitioner.

New section 164A added by the CrPC (amendment) Act, 2005 (25 of 2005) envisages provision for medical examination of the victim of rape by a registered medical practitioner employed in a hospital run by the government or by a local authority and in the absence of such a practitioner by any other registered medical practitioner. In both section the term DNA profile has been used.

Selvi vs. State of Karnataka^[33]. Supreme court observed In the present case, written submissions made on behalf of the respondents have tried to liken the compulsory administration of the impugned techniques with the DNA profiling technique. In light of this attempted analogy, we must stress that the DNA profiling technique has been expressly included among the various forms of medical examination in the amended explanation to Sections 53, 53A and 54 of the CrPC. It must also be clarified that a 'DNA profile' is different from a DNA sample which can be obtained from bodily substances. A DNA profile is a record created on the basis of DNA samples made available to forensic experts. Creating and maintaining DNA profiles of offenders and suspects are useful practices since newly obtained DNA samples can be readily matched with existing profiles that are already in the possession of law-enforcement agencies. The matching of DNA samples is emerging as a vital tool for linking suspects to specific criminal acts. Again Court Observed-

Moreover, a distinction must be made between the character of restraints placed on the right to privacy. While the ordinary exercise of police powers contemplates restraints of a physical nature such as the extraction of bodily substances and the use of reasonable force for subjecting a person to a medical examination, it is not viable to extend these police powers to the forcible extraction of testimonial responses. In conceptualizing the 'right to privacy' we must highlight the distinction between privacy in a physical sense and the privacy of one's mental processes.^[34]

Some foregin Judgments:

Table 1. Summary of cases that highlight legal issues in the use of DNA evidence, 2003-14:

2007:The Queen V Hillier [2007] HCA 13^[35] Hillier was found guilty of the murder of his former partner (and mother of his two children) after DNA was located on the victim's pyjamas. It was argued by the prosecution that Hillier was motivated to murder

³⁴ (2010) 7 SCC 263.

³⁵ *Ibid*

³⁶ <http://www.hcourt.gov.au/publications/judgment-summaries/2007-judgment-summaries>

his wife because he lost custody of their children. He was alone on the night the murder occurred, but there was circumstantial evidence consistent with his innocence. The defence argued that the DNA found on the victim's pyjamas could have been transferred via their children. The conviction was quashed on the basis that the DNA evidence was considered in isolation from the other evidence. The weight accorded to DNA evidence must be considered in the context of all of the evidence presented by the prosecution.

2007: Murdoch V The Queen [2007] NTCCA 1^[36] In a remote area of the Northern Territory, the accused signaled for a car to pull over and proceeded to shoot one victim and abduct the other. The accused relocated the vehicle driven by the victims, leaving DNA on the steering wheel and gearstick. Biological samples were analysed using the low copy number (LCN) technique. Analysis showed that DNA taken from the gearstick was from two individuals- best explained by the DNA profiles of Murdoch and the deceased. LCN analysis was contested at trial due to uncertainty about the reliability of the technique. There were two legal issues. The first concerned the admissibility of LCN evidence. It was accepted that LCN has general acceptance within the scientific community and could be admitted as evidence. The second issue was contamination. It was decided that the possibility of contamination could be excluded beyond reasonable doubt.

2009: R.Vs. Jama^[37] A woman was found unconscious in a toilet cubicle, While she did not have any recollection of what had occurred, she believed she was sexually assaulted and underwent a medical examination. DNA was linked to an individual who was later convicted of raping the woman. The court later found that the DNA sample taken from the woman was contaminated, and it was likely that no rape had occurred. The same doctor who examined the woman had taken swabs from another woman 28 hours earlier, who had engaged in sexual activity with the accused; no charges were laid in relation the earlier event. Jama was incarcerated for 16 months before the miscarriage of justice was discovered (Vincent 2010). The sole evidence in the crime was contaminated DNA evidence. The case highlights the potential for miscarriages of justice to occur when too much reliance is placed on DNA evidence, or it is the sole evidence in a case.

37 <http://netk.net.au/Australia/Murdoch.asp#TopOfPage>
38 *Unreported, Supreme Court of Victoria, Court of Appeal, 2009.*

2014: Fitzgerald v The Queen [2014] HCA 28 ^[38] During a burglary, one victim was murdered and serious brain injuries were inflicted on another. Fitzgerald was convicted of murder after DNA evidence linked him to a didgeridoo at the crime scene. There was no other evidence linking him to the crime. The conviction was appealed on the basis that the verdict was unreasonable as there were other possible ways the DNA could have been transferred. The DNA evidence was not sufficient to prove guilt beyond reasonable doubt, because there was no information about the circumstances in which the DNA was transferred. The DNA could have been deposited as a result of secondary transfer such as shaking hands with someone who did participate in the burglary.

2008: S and Marper v United Kingdom [2008] ECHR 1581 ^[39] S was an 11 year old arrested for attempted robbery of a bike, but was later acquitted. Marper was charged with the harassment of his partner, but he was not subsequently convicted. Although Marper and S were not convicted of any crime, their biometric data were retained on the UK National DNA Database. Marper and S requested their DNA profiles be destroyed, which was refused. An appeal was heard by the European Court of Human Rights, which ruled that indefinite retention of samples violates the right to respect for private and family life. The UK Government subsequently implemented changes to its biometric data retention policies. Where a person is charged with but not convicted of a criminal offence, their biometric data can now be retained only for three years. When a person is arrested but not charged with an offence, their biometric data can be retained only with the consent of the Commissioner for the Retention and Use of Biometric Material. Further changes to biometric data retention policies were made in relation to people under 18 years, depending on the type of offence committed (Home office 2013). The permanent retention of biometric data of individuals who have been suspected or arrested but not convicted of a criminal offence is an interference with the right to respect for private life. Biometric data of suspects cannot be permanently kept on record in the European Union.

³⁹ , <http://www.austlii.edu.au/cgi-bin/sinodisp/au/cases/cth/HCA/2014/28.html?stem=0&synonyms=0&query=title%28%222014%20HCA%2028%22%29>

⁴⁰ <https://www.coe.int/t/dghl/standardsetting/dataprotection/Judgments/S.%20AND%20MARPER%20v.%20THE%20UNITED%20KINGDOM%20EN.pdf>

2012: Maryland Vs King [2012] Supreme Court of the United States ^[40] King was arrested in 2009 on assault charges and his DNA profile retained. King's DNA profile was linked to an unsolved rape committed in 2003, which resulted in a conviction. King argued that the DNA evidence should be suppressed because the Maryland DNA Collection legislation violates the Fourth Amendment to the US Constitution. This amendment prohibits unreasonable searches and seizures and requires warrants to be issued by a judge and supported by probable cause. The Maryland court of Appeals found the legislation was unconstitutional, and set aside king's rape conviction. This was challenged In the US Supreme Court, which held that taking DNA (like fingerprinting and photographing) is a legitimate procedure to identify arrestees, and overturned the decision of the Maryland Court of Appeals. Taking and analyzing arrestees' DNA are legitimate identification procedures, permissible under the Fourth Amendment to the US Constitution.

2012: R Vs Priestley ^[41] Priestley pleaded guilty to stabbing his former domestic partner but not guilty to an additional charge of rape. A mixed sample of DNA was recovered from the body of the victim. Y-STR DNA profiling was used to separate the accused's DNA profile from the victim's DNA profile. This evidence was admitted and included as circumstantial evidence used by the judge to find the accused guilty of rape. This case provides an example of the technique of Y-STR profiling being accepted at trial in Australian criminal proceedings. It was accepted that Y-STR profiling indicated that the DNA profile of the accused was present on the body of the victim.

Judicial interpretation in India:In India ,court has also given direction of DNA test.A lot of pronouncement was made by different Courts in India.

In Goutam Kundu v. State of West Bangal and Another ^[42] this Court held, inter alia, as follows:

- "(1) That courts in India cannot order blood test as a matter of course;
- (2)Wherever applications are made for such prayers in order to have roving inquiry, the prayer for blood test cannot be entertained.
- (3) 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.

41 <https://www.supremecourt.gov/opinions/11pdf/12A48c3d7.pdf>

42 [2012] SASC 119

43 (1993 (3) SCC 418)

(4) 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.

(5) No one can be compelled to give sample of blood for analysis. Supreme Court of India. *Sharda Vs Dharmpal*^[43]. A matrimonial court has the power to order a person to undergo medical test.

2. Passing of such an order by the court would not be in violation of the right to personal liberty under [Article 21](#) of the Indian Constitution

3. However, the Court should exercise such a power if the applicant has a strong prima facie case and 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.

Kamti Devi and another v. Poshi Ram^[44] Wherefrom, the following observations made by this Court, were sought to be highlighted: " But [Section 112](#) itself provides an outlet to the party who wants to escape from the rigour of that conclusiveness. The said outlet is, if it can be shown that the parties had no access to each other at the time when the child could have been begotten the presumption could be rebutted. In other words, the party who wants to dislodge the conclusiveness has the burden to show a negative, not merely that he did not have the opportunity to approach his wife but that she too did not have the opportunity of approaching him during the relevant time. Normally, the rule of evidence in other instances is that the burden is on the party who asserts the positive, but in this instance the burden is cast on the party who pleads the negative. The *raison d'etre* is the legislative concern against illegitimizing a child. It is a sublime public policy that children should not suffer social disability on account of the laches or lapses of parents.

Shri Banarsi Dass vs Mrs. Teeku Dutta And Anr^[45] The main object of a Succession Certificate is to facilitate collection of debts on succession and afford protection to parties paying debts to representatives of deceased persons. All that the Succession Certificate purports to do is to facilitate the collection of debts, to regulate the administration of succession and to protect persons who deal with the alleged representatives of the deceased persons. Such a certificate does not give any general

44 *Equivalent citations: AIR 2003 SC 3450, 2003 (3) ALT 41 SC, 2003 (2) AWC 1534 SC, 2003 (2) BLJR 1420, 2003 (2) CTC 760, I (2003) DMC 627 SC, 2004 (1) JCR 98 SC, JT 2003 (3) SC 399, 2003 (2) KLT 243 SC, RLW 2003 (3) SC 379, 2003 (3) SCALE 475, (2003) 4 SCC 493, 2003 3 SCR 106, 2003 (2) UJ 870 SC 1 28 March, 2003*

45 *AIR 2001 SC 2226*

46 *(2005) 4 SCC 449*

power of administration on the estate of the deceased. The grant of a certificate does not establish title of the grantee as the heir of the deceased. A Succession Certificate is intended as noted above to protect the debtors, which means that where a debtor of a deceased person either voluntarily pays his debt to a person holding a Certificate under the Act, or is compelled by the decree of a Court to pay it to the person, he is lawfully discharged. The grant of a certificate does not establish a title of the grantee as the heir of the deceased, but only furnishes him with authority to collect his debts and allows the debtors to make payments to him without incurring any risk. In order to succeed in the succession application the applicant has to adduce cogent and credible evidence in support of the application. The respondents, if they so chooses, can also adduce evidence to oppose grant of succession certificate. The trial court erroneously held that the documents produced by the respondents were not sufficient or relevant for the purpose of adjudication and DNA test was conclusive. This is not a correct view. It is for the parties to place evidence in support of their respective claims and establish their stands. DNA test is not to be directed as a matter of routine and only in deserving cases such a direction can be given, as was noted in Goutam Kundu's case (supra). Present case does not fall to that category. High Court's judgment does not suffer from any infirmity. We, therefore, uphold it. It is made clear that we have not expressed any opinion on the merits of the case relating to succession application.

Sham Lal @ Kuldeep vs. Sanjeev Kumar and others,^[46] wherein it was inter alia, held as under: “Once the validity of marriage is proved then there is strong presumption about the legitimacy of children born from that wedlock. The presumption can only be rebutted by a strong, clear, satisfying and conclusive evidence. The presumption cannot be displaced by mere balance of probabilities or any circumstance creating doubt. Even the evidence of adultery by wife which though amounts to very strong evidence, it, by itself, is not quite sufficient to repel this presumption and will not justify finding of illegitimacy if husband has had access.

Nandlal Wasudeo Badwaik vs Lata Nandlal Badwaik & Anr^[47] As stated earlier, the DNA test is an accurate test and on that basis it is clear that the appellant is not the biological father of the girl child. However, at the same time, the condition precedent for invocation of Section 112 of the Evidence Act has been established and no finding with regard to the plea of the husband that he had no access to his wife at the time when the child could have been begotten has been recorded. Admittedly, the child has been born during the continuance of a valid marriage. Therefore, the provisions of

47 (2009) 12 SCC 454

48 AIR 2014 SC 932

Section 112 of the Evidence Act conclusively prove that Respondent 2 is the daughter of the appellant. At the same time, the DNA test reports, based on scientific analysis, in no uncertain terms suggest that the appellant is not the biological father. In such circumstances, which would give way to the other is a complex question posed before us.

We may remember that [Section 112](#) of the Evidence Act was enacted at a time when the modern scientific advancement and DNA test were not even in contemplation of the legislature. The result of DNA test is said to be scientifically accurate. Although [Section 112](#) raises a presumption of conclusive proof on satisfaction of the conditions enumerated therein but the same is rebuttable. The presumption may afford legitimate means of arriving at an affirmative legal conclusion. While the truth or fact is known, in our opinion, there is no need or room for any presumption. Where there is evidence to the contrary, the presumption is rebuttable and must yield to proof. The interest of justice is best served by ascertaining the truth and the court should be furnished with the best available science and may not be left to bank upon presumptions, unless science has no answer to the facts in issue. In our opinion, when there is a conflict between a conclusive proof envisaged under law and a proof based on scientific advancement accepted by the world community to be correct, the latter must prevail over the former.

Dipanwita Roy vs Ronobroto Roy ^[48] We must understand the distinction between a legal fiction and the presumption of a fact. Legal fiction assumes existence of a fact which may not really exist. However, a presumption of a fact depends on satisfaction of certain circumstances. Those circumstances logically would lead to the fact sought to be presumed. [Section 112](#) of the Evidence Act does not create a legal fiction but provides for presumption.

The husband's plea that he had no access to the wife when the child was begotten stands proved by the DNA test report and in the face of it, we cannot compel the appellant to bear the fatherhood of a child, when the scientific reports prove to the contrary. We are conscious that an innocent child may not be bastardised as the marriage between her mother and father was subsisting at the time of her birth, but in view of the DNA test reports and what we have observed above, we cannot forestall the consequence. It is denying the truth. "Truth must triumph" is the hallmark of justice." (emphasis is ours) This Court has therefore clearly opined, that proof based on a DNA test would be sufficient to dislodge, a presumption under [Section 112](#) of the Indian Evidence Act.

It is also clear that DNA profile can be taken as criminal cases. Investigator has power to take blood sample. But civil cases remarkable, guidelines

given in Rohit Shekhar case *Rohit Shekhar vs Shri Narayan Dutt Tiwari & Anr.* ^[49] which are as follows-

- (i) A matrimonial court and the civil court have the implicit and inherent power to order a person to submit himself for medical examination (Re: Sharda)
- (ii) The court under section 75(e) of the CPC and order XXVI, rule 10A has the requisite power to issue a direction to hold a scientific, technical or expert investigation. (Re : Sharda; Selvi)
- (iii) Passing of an order for medical examination would not be in violation of the right to personal liberty under Article 21 of the Indian Constitution (Re : Goutam Kundu)
- (iv) The direction for the medical examination can be issued suo motto by the court or upon an application filed by a party (Re : Sharda) The principles of natural justice would require to be complied with.
- (v) The court would examine that the proportionality of the legitimate aims being pursued are not arbitrary, discriminatory or pointless or which may adversely impact the best interest of the child (for instance, bastradise a child) and that they justify the restrictions on privacy and personal autonomy concerns of the person directed to be subjected to medical examination
- (vi) The court should not exercise such power as matter of course or in order to have a roving inquiry (Re : Goutam Kundu) Such power would be exercised if the applicant has a strong prima facie case and there is sufficient material before the court (Re: Sharda) The court would consider the age; physical and mental health of the persons involved.
- (vii) No one can be compelled to give a sample of blood for analysis (Re: Goutam Kundu). If despite the order of the court, the respondent refuses to submit himself to medical examination, the court will be entitled take the refusal on record and to draw an adverse inference against him (Re: Sharda)
- (viii) A direction to a person to undergo a medical examination could be made to enable the court to leading the truth; in matrimonial cases also for removal of misunderstanding, bringing a party to terms; for judging competency of a person to be a witness; whether a person/party needs treatment or protection; the capacity of a person/party to protect his interest or defence in litigation; whether the person needs legal aid (Re; Sharda).
- (ix) In a case involving a paternity claim/denial issue, the conclusive proof standard mandated by Section 112 of the Evidence Act, read with Section 4, admits an extremely limited choice before the Court, to allow evidence of "non access" to a wife by the husband, who alleges that the child begotten by her is not his offspring; it is designed to

protect the best interests of the child, and his legitimacy (Re: Goutam Kundu ; Rohit Shekhar (Bhat, J - DOJ 23rd December, 2010) Rohit Shekhar vs Shri Narayan Dutt Tiwari & Anr. on 23 September, 2011 .

(x) A "paternity" action by the son or daughter of one, claiming the defendant to be his or her biological father, filed in a civil court by an adult plaintiff, or claims paternity, for other reasons, (such as non- consensual sexual relationship the basis of facts, and on the basis of the child's rights/either under Section 125 Cr.PC, or in a suit for declaration or for maintenance) cannot be jettisoned by shutting out evidence, particularly based on DNA test reports, on the threshold application of Section 112; the Court has to weigh all pros and cons, and, on being satisfied about existence of "eminent need" make appropriate orders; (Re: Goutam Kundu; Bhabhani Jena; Rohit Shekhar (Bhat, J- DOJ 23rd December, 2010)

(xi) In a case involving a parentage issue, the child's best interest shall dominate the consideration by the court. The court may refrain from ordering a test if it considers that this may not be in the child's best interest." The court would also consider the reasons for refusal of the examination of the child by the party having custody and make appropriate orders based on the best interest principle.

(xii) which could include an external and internal examination; a physical and psychological examination of the person. The medical examination may be directed to include an examination of blood, semen, sputum, sweat, hair samples, and finger nails by the use of modern scientific techniques in binding DNA profiling.

(xiii) The medical examination/expert investigation must be by a qualified doctor; qualified psychiatrist/expert in the field (Re: Sharda)

(xiv) The medical examination including the DNA profiling would be ordered by the court if relevant to the specific issue; necessary and relevant to ensure legitimacy of administration of justice ; where scientific tests are necessary for discovery, doing justice to all parties; and, where the relevant evidence cannot be obtained by any other non-intrusive methods.

(xv) The court has the jurisdiction to order DNA testing of blood relatives of a person alleged to be the parent, even though they are not parties to the litigation.

(xvi) The results of the scientific DNA testing shall be produced before the court in sealed cover and kept in a sealed cover. **(xvii)** The court would make appropriate direct preservation of the samples and also the confidentiality to be attached to the same. **(xviii)** The testing must be undertaken by an accredited laboratory with established and accepted credentials and expertise which meets the publicly sanctioned standards.

(xix) Appropriate directions covering the technical aspects with regard to drawing, preservation, transportation, and integrity of the sample specimen must be made so that integrity and identity of the sample/specimen is guaranteed.

ERROR IN FORENSIC DNA TESTING:

Promoters of forensic DNA testing have, from the beginning, claimed that DNA tests are virtually infallible. In advertising materials, publications and courtroom testimony, the claim has been made that DNA tests produce either the right result or no result. That rhetoric of infallibility took hold early in appellate court opinions, which often parroted promotional hyperbole. It was supported when the National Research Council, in the second of two reports on forensic DNA testing, declared “the reliability and validity of properly collected and analyzed DNA data should not be in doubt.” It was further reinforced in the public imagination by news accounts of post-conviction DNA exonerations. Wrongfully convicted people were shown being released from prison, while guilty people were brought to justice, by this marvelous new technology. With both prosecutors and advocates for the wrongfully convicted using it successfully in court, who could doubt that DNA evidence was in fact what its promoters claimed: the gold standard, a truth machine? ^[50]

In cases which have reviewed over the past few years, evidentiary samples from crime scenes often produce incomplete or partial DNA profiles. Limited quantities of DNA, degradation of the sample, or the presence of inhibitors (contaminants) can make it impossible to determine the genotype at every locus. In some instances the test yields no information about the genotype at a particular locus; in some instances one of the two alleles at a locus will “drop out” (become undetectable). Because partial profiles contain fewer genetic markers (alleles) than complete profiles, they are more likely to match someone by chance (see endnote 1). The probability of a coincidental match is higher for a partial profile than for a full profile.^[51]

A further complication is that evidentiary samples are often mixtures. Because it can be difficult to tell which alleles are associated with which contributor in a mixed sample, there often are many different profiles (not just one) that could be consistent with a mixed sample. Because so many different profiles may be consistent with a mixture,

51 *THE POTENTIAL FOR ERROR IN FORENSIC DNA TESTING* By William C. Thompson, This paper was produced for the council for Responsible genetics (CRG) and its national conference, Forensic DNA Database and Race: Issues, Abuse and Actions held June 19-20, 2008 at New York university. To link this paper, Visit www.gene-watch.org.

the probability that a non-contributor might, by coincidence, be “included” as a possible contributor to the mixture is far higher in a mixture case than a case with a single- source evidentiary sample.^[52]

One cause of false DNA matches is cross- contamination of samples. Accidental transfer of cellular material or DNA from one sample to another is a common problem in laboratories and it can lead to false reports of a DNA match between samples that originated from different people. In addition, accidental cross-contamination of DNA samples has caused a number of false “cold hits.”^[53]

A second potential cause of false DNA matches is mislabeling of samples. The best way to detect labeling errors is to obtain new samples from the original sources and retest them, but this safeguard is not always available. Evidence at crime scenes is typically cleaned up (and thereby destroyed) once samples are taken, and the original samples are sometimes exhausted during the initial round of testing. Retesting is rarely done, even when samples are available. Routine duplicate testing by forensic laboratories is another possible safeguard, but it too is rarely done.^[54]

A third potential cause of false DNA matches is misinterpretation of test results. Laboratories sometimes mistype (i.e., assign an incorrect STR profile to) evidentiary samples. If the incorrect evidentiary profile happens to match the profile of an innocent person, then a false incrimination may result. Mistyping is unlikely to produce a false match in cases where the evidentiary profile is compared with a single suspect, but the chance of finding a matching person is magnified (or, more accurately, multiplied) when the evidentiary profile is searched against a database.^[55]

Conclusion

Now it is DNA an important piece of evidence and this evidence is admissible under Indian Evidence Act. Our legislature also recognize importance of DNA in our criminal justice system and it has been given statutory recognition under Criminal procedure code. Also our apex court and Hon'ble High Courts has given judicial recognition on DNA technology. In criminal cases court has to take it as expert

53 *Ibid*

54 *Ibid*

55 *Ibid*

56 *Ibid*

evidence and it is not conclusive in nature. Contaminant error in packaging may be possible. Another problem is that in knowledge of DNA expert. There is a difference between qualified person and experienced person. A person may be experienced but he may not be qualified. In our country ever forensic science laboratory has certain capacity. Most of laboratory is handled by lab assistant though they are experienced person but they are not qualified. It is duty of court to first check veracity of knowledge of scientific expert then decide the admissibility and relevancy of DNA evidence. There is also shortage of qualified person in all laboratory of India result of DNA testing takes time. It is expected that the future availability of past accurate and sensitive presumptive DNA test at crime scene respectively police forensic department process to obtain higher DNA success rate. DNA evidence must always be considered in the context of evidence of the case. DNA evidence is admissible in criminal trial subject to evidentiary requirement that it may be relevant to the fact is presented in appropriate manner by qualified witnesses and that it does not cause unfair prejudice to the accused. Scientific opinion on the interpretation of the DNA evidence may be admissible provided that it is given by the persons with specialized knowledge based on training, study and experience. Statistical evidence of the probability of any other than accused having the same DNA profile as a given profile may be presented but care must be taken to explain the basis on which calculation including .

The traditional evidence against accused have been eye witness but the statement of eye witness can be changed any time due to some known reason. Crime has become a major challenge before the society, In the era of scientific development modes operandi of criminals have become very sophisticated due to traditional evidence are rarely available against the criminal. DNA profile has now emerged as very important means of identifying criminal. The major problem in India is that police officer are unwilling to use scientific method of investigation .In western countries post conviction acquittal has given a thought that DNA evidence is not supreme. So first thing is evidence must be preserved. In India DNA are procedural barred from screening post conviction relief. DNA profiling evidence is not a panacea to the level of crime in society. It must be interpreted in the context of other evidence and not alone. In sexual offenses, DNA evidence can only show that sexual intercourse has made but ultimately court has to decide whether this act was with consent or without consent.

Additionally, it should be recognized that all evidence has a margin of error. A witness has such, but so do fingerprints and DNA evidence also have, a margin of error. If all the evidence in a criminal case is added together, there always remain some margin of error. A fact-finder, a jury or a judge, wants to be certain before a person

in convicted. So with every decision in a criminal court, there is a risk of convicting the innocent. The risk may be small, the risk may be large, but there is always a risk. And the difference between a good criminal justice system and a bad criminal justice system is not that in a good criminal justice system there are no miscarriages of justice. A good criminal justice system can only take care of the risk, minimizing it as much as possible. But the risk can never be completely avoided.^[56]

