

USE OF DNA (DEOXYRIBONUCLEIC ACID) AS EVIDENCE

1. BACKGROUND¹

DNA is the acronym for a molecule called Deoxyribonucleic Acid. It has been described as the basic building block of life, the blue print of the body. Human bodies, as well as those of animals and vegetables, consist of millions upon millions of cells. Each cell contains a nucleus, a compartment within which are 46 chromosomes, divided into 23 pairs, inherited maternally and paternally. The DNA molecule is arranged in these chromosomes and is the same in each cell, no matter what part of the body it comes from.

Each person inherits DNA on conception. The fertilized egg contains DNA inherited from the father's single fertilized sperm and the mother's single egg. The original cell thereafter continue to divide so that each cell in the body replicates the DNA from the original union, and basically the DNA stays the same from conception to death.

2. DEFINITION OF TERM

- 2.1 DNA is any various nucleic acid that yield deoxyribose as one product of hydrolysis, are found in cell nuclei and special genes, and are associated with the transmission of genetic information.²
- 2.2 DNA is a nucleic acid that constitutes the genetic material of all cellular organisms and the DNA viruses; DNA replicates and controls through messenger RNA the inheritable characteristics of all organisms. A molecule DNA is made up of two parallel twisted chains of alternating units of phosphoric acid and deoxyribose, linked by crosspieces of the purine bases and the pyrimidine bases, resulting in a right-handed helical structure, that carries genetic information encoded in the sequence of the bases.³

¹ www.canada.justice.gc.ca.

² Webster's Third New International Dictionary.

³ www.darwin.apnet.com

3. DNA TYPING⁴

DNA typing involves extracting the DNA from a specimen such as blood, semen or saliva, then amplifying specific regions of the DNA. Eventually those amplified regions are typed to determine a DNA profile. All of these sources provide the same DNA from any particular individual, so scientists are able to compare sperm DNA collected in a sexual assault case to blood DNA from potential suspects.

Police forces have embraced DNA typing for the following reasons:⁵

- a) Except for red blood cells, all cellular material in the human body can theoretically be typed: e.g. semen, blood (i.e. white blood cells), hair roots, saliva (i.e. the epithelial cells), skin, bone marrow, and bone, including mixed samples (such as different bloods).
- b) Since DNA is essentially the same from cell to cell any part of the body can be compared to another of the same body (e.g. blood to semen to hair to skin).
- c) Only minute amounts of these kinds of bodily substances are needed for the purpose of typing.
- d) The techniques can exclude suspects and, as a corollary, have the power to identify. The power to exclude is absolute. The power to include depends on the inference to be drawn from matching profiles.

4. DNA PROFILING⁶

DNA profiling is a process which begins when a minute sample of genetic material - DNA (deoxyribonucleic acid) - is taken from human tissue and ends when the sample is given a computerized numeric value in the form of a "bar code". Comparing a person's DNA profile with a DNA sample retrieved from the scene of a crime can eliminate innocent people, but can also provide a strong indication of guilt.

4.1 Benefits of DNA Profiling

- a) Rapid and absolute elimination of innocent suspects;
- b) Rapid identification of offenders with a very high degree of certainty;
- c) Reliability of evidence produced in court;
- d) Better administration of justice;
- e) Increased public confidence in the criminal justice system;

⁴ file://A-\FORENSIC BIOLOGY.htm.

⁵ See note 1.

⁶ www.interpol.int.

- f) A deterrent effect on offenders with a concomitant decrease in crime;
- g) Cost-effectiveness in terms of investigation time saved.

5. SUPREME COURT DECISIONS

- 5.1 The People of the Philippines vs Gerrico Vallejo y Samartino
G.R. No. 144656, May 9, 2002 (ANNEX "A")

The Supreme Court upholds the admissibility of DNA evidence as it affirmed the death sentence of Gerrico Vallejo on the strength of DNA analysis of body fluids found in the victim's vagina conducted by the NBI Forensic Chemistry Division.

- 5.2 Edgardo A. Tijing and Bienvenida R. Tijing vs. Court of Appeals (South Division) and Angelita Diamante
G.R. No. 125901, March 8, 2001 (ANNEX "B")

The Supreme Court in a final note stated that "parentage will still be resolved using conventional methods unless we adopt the modern and scientific ways available. Fortunately, we have now the facility and expertise in using DNA test for identification and parentage testing. The University of the Philippines Natural Science Research Institute (UP-NSRI) DNA Analysis Laboratory has now the capability to conduct DNA typing using short tandem repeat (STR) analysis. The analysis is based on the fact that the DNA of a child/person has two (2) copies, one copy from the mother and the other from the father. The DNA from the mother, the alleged father and child are analyzed to establish parentage. Of course, being an novel scientific technique, the use of DNA test as evidence is still open to challenge. Eventually, as the appropriate case comes, courts should not hesitate to rule on the admissibility of DNA evidence. For it was said, that courts should apply the results of science when competently obtained in aid of situations presented, since to reject said result is to deny progress. Though it is not necessary in this case to resort to DNA testing, in future it would be useful to all concerned in the prompt resolution of parentage and identity issues."

6. OTHER RELEVANT MATERIALS ON DNA

- 6.1 A Primer on DNA-Based Paternity Testing (ANNEX "C")
- 6.2 Integrating DNA Technology in the Judicial System (ANNEX "D")
- 6.3 Application of Forensic DNA Analysis in the Philippines (ANNEX "E")

7. SENATE BILL

SB No. 1765 entitled, "An Act Authorizing Certain Law Enforcement Agencies of the Government and the DNA Laboratory of the University of the Philippines in Diliman, to Collect Biological Samples/Specimen for Forensic DNA Analysis, Providing Guidelines Therefor and for Other Purposes" (ANNEX "F")

SUPREME COURT:DNA
RRB/LRS

RHAB/CLB/mti
4.29.03