The first time DNA was used to arrest a killer

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On November 21, 1983, at about 7pm, a 15-year-old girl left home to visit a friend. She never returned home. The following morning, her body was discovered near a footpath, and it was established that she had been raped and then strangled. A medical examination carried out indicated that the assailant had a very high sperm count and could possibly be a male between the ages of 13 and 35.

Police swung into action, and to the investigators, every male was a potential suspect, including the stepfather of the girl, who was only excluded when a blood sample taken from him failed to match a trace of semen taken from the victim. By April 1984, police failed to find the culprit, and by August that year, the investigation was curtailed completely, after blood tests from 150 suspects failed to unveil the killer.

A similar case occurred on July 31, 1986, when another 15-year-old girl was last seen alive at about 5pm. On August 2, 1986, police discovered her body under a heavy bush at the side of a path. She had been beaten, raped and then strangled. On August 8, 1986, police arrested a 17-year-old male, and after interrogation, the simple-minded youth confessed to the crime.

Upcoming scientist

However, at the suggestion of the boy's father, samples found on the boy and the girl were sent to the laboratory of an upcoming scientist, Dr Jeffrey. Police were shocked when the doctor stated that the young man could not have been the murderer. On November 21, on the day the murder trial was to begin, the young man became the first suspect in history to be released because of evidence refuted by genetic fingerprinting.

On January 17, 1987, police announced that all males between 17 and 34 years within that locality where the 15-year-old was murdered would be required to provide blood and saliva samples in respect to the case. This became a hard task as men were not required by law to provide the samples, and those who did could easily circumvent the identity process by providing false identification cards. Even though 90 percent of the men readily responded, the laboratory was overwhelmed with the samples. By May, more than 3,500 samples had been submitted for testing, but only half of the samples were analysed.

On August 1, 1987, while drinking in a pub, a bakery worker casually mentioned to a co-worker that he had submitted blood samples in the names of a fellow worker. The following day, the bakery worker was arrested for conspiracy to pervert the course of justice. The bakery worker explained to police that his colleague had begged him to take the test, as he himself (colleague) had done the same for another colleague who had a history of sexual perversion.

That afternoon, the bakery worker with a history of sexual perversion was arrested. He was married, a father of two and was a professional cake decorator. He was a compulsive "flasher" and was known as a molester of female employees at the bakery. Before arriving at the police station, he confessed to the two murders.

The murder trial began on January 22, 1988, and ended that same afternoon. The bakery worker who was arrested for conspiracy to pervert the course of justice was given a suspended 18-month sentence for his unwitting cooperation in the cover-up. The worker who confessed to the murders was pinned by the novel evidence of DNA fingerprinting; his genetic fingerprint matched the grisly evidence that he had left at the scene of the two murders.

He was sentenced to life imprisonment for the two murders, 10 years for both rapes, three years for both sexual assaults and three years for conspiracy. The sentences were to run concurrently. The judge, however, refused to state a minimum term, which meant that the murderer would be eligible for parole after serving a mere 10 years.

DNA stands for Deoxyribonucleic Acid. It is the genetic material of and inside a cell. A cell is the smallest, basic structural and functional unit of all living organisms, capable of independent existence and replication and is often referred to as the building block of life. The key components of a cell are the cell membrane, the cytoplasm and the nucleus. The cell membrane is what gives each cell its identity and individuality and separates each cell from its environment. It also controls what enters the cell and what comes out of it.

The cytoplasm is a jelly-like substance that contains specialised sub-cellular structures known as organelles that perform specific functions necessary for cell life, such as energy production and protein synthesis. Among these organelles are the mitochondria and Golgi apparatus.

Inside the cytoplasm is the cell nucleus, which is bound by its own membrane and is known as the control centre of the cell. It contains thread-like structures known as chromosomes. The word chromosome actually means a coloured body and refers to its staining ability by certain dyes. The number of chromosomes in any species is constant for all the cells. However, the number of chromosomes in the gametes, that is, sperms and eggs, is half of that in other cells. In human beings, these chromosomes occur in pairs, and one of each pair is derived from either parent; there are a total of 46 chromosomes in an ordinary human cell.

Genetic material

The chromosomes contain the genetic material known as DNA. Genes are the basic physical and functional units of heredity, each made up of a sequence of three organic compounds known as nitrogenous bases. A sequence of three bases acts as a code for an amino acid, the building block of proteins such as enzymes. This is conventional DNA. Each person has a unique DNA structure, save for twins.

Another type of DNA is known as Mitochondrial DNA and is a small circular chromosome found inside mitochondria, the energy-producing organelles in cells. It is inherited exclusively from the mother and is present in hundreds to thousands of copies per cell. Mitochondrial DNA is a powerful forensic tool used to identify individuals from highly degraded, low-quality samples like old hair, bones, and teeth, where conventional nuclear DNA fails. It is more stable than conventional DNA.

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