HOW DNA DATABASES CAN HELP IN SOLVING CRIMES

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The DNA (Deoxyribonucleic acid) database plays a major role in Forensic science and the legal judicial system. From not more than a decade ago forensic scientists have been working tirelessly on making advances in DNA databases which is a dominant weapon used to solve crimes.

Fig.1: Deoxyribonucleic Acid

DNA is the hereditary material in the human being which is individual for every human being. DNA evidence being the most popular evidence to be found on the crime scene, it has become a major concern to developing a DNA database that assists the investigating team to solve the crime. Forensic DNA databases have become increasingly common since DNA evidence helped solve a double homicide in England in the middle of the 1960s. There have been triumphant narratives where DNA evidence did help solve crimes. For example, according to the

'Advancing Justice Through DNA Technology' research article by National Criminal Justice Reference Services (NCJRS) in 1999, in New York, authorities linked a man through DNA evidence to at least 22 sexual assaults and robberies that had terrorised the city.
In 2002, authorities in Philadelphia Pennsylvania, and fort, Collins, Colorado, used DNA evidence to link and solve a series of crimes (rapes and murders) perpetrated by the same individual.

HOW PRECISELY DOES A DNA DATABASE WORK?

Once DNA is recovered from the scene of the crime it can be compared to the data available in the database or a sample of the suspect's DNA can be compared to the evidence found at the crime scene. When a suspect has been identified, The comparison finding and then could be used to determine if the suspect committed the crime. Biological evidence from the crime scene can be studied and compared to the offender's profiles in the DNA database to identify the culprit in situations where a suspect has not been identified.

HOW EXACTLY IS THE DNA DATABASE CREATED?

For illustration let us assume a man is found guilty of sexual assault, at the time of investigation and criminal proceedings he is asked to submit his DNA samples and the resulting DNA profile was added to the DNA database created. Similarly, another attack occurred a few years later and the sexual assault nurse examiner working with the victim managed to collect biological evidence. This data is then evaluated against the existing data in the database. If in case the offender had committed crimes before this one, he will be captured, put on trial, and given a term for all the offences he has committed. In such situations, the DNA database helps in capturing the culprit in a very short amount of time and restrains his ability to engage in other illegal activities.
DNA databases are typically used to correlate DNA evidence to the DNA of an offender's profile. A system of national, state, and municipal

DNA databases for the storing and interchange of DNA profiles was established by the federal government in the late 1980s. "The Combined DNA Index System" (CODIS) is the system that stores DNA profiles collected through federal, state, and municipal systems in several databases that are accessible to law enforcement organisations all over the nation for use in conducting an investigation. The crime scene evidence can be compared to a database of DNA profiles collected from convicted offenders by CODIS. To identify serial criminals, CODIS may also convert DNA evidence gathered from several crime scenes.

Hence, it is observed that DNA databases will continue to be very beneficial for law enforcement agencies in the long run. It is recommended that a database should contain the most samples possible and be able to retain the biological sample for future DNA testing to get the most out of it.

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- Fig 1: images.app.goo.gl/XB54hodLtskQYvwR7