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DNA Profiling in Forensic Investigation

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Description

In criminal investigations, DNA profiling is a forensic technique that compares criminal suspects' profiles to DNA evidence to determine the likelihood of their involvement in the crime. Paternity testing, determining immigration eligibility, and genealogical and medical research are just a few of the applications [1]. In the domains of zoology, botany, and agriculture, DNA profiling has been used to investigate animal and plant populations. Sir Alec Jeffreys developed DNA profiling in 1984 after discovering that individuals may be distinguished based on easily identifiable differences in their DNA. In the investigation of the rapes and murders of Lynda Mann and Dawn Ashworth in 1983 and 1986, DNA profiling was utilised for the first time in a criminal case in the United Kingdom. Subsequently [2]. Richard Buckland was exonerated in this case in 1987 through DNA testing, and Colin Pitchfork was subsequently convicted. The development and enhancement of DNA analysis technology has received a lot of scientific attention and resources since 1987. The UK National DNA Database was founded in 1995 with the goal of maximising the investigative use of DNA profiles and identifying repeat offenders. Most countries currently use forensic DNA analysis in some form or another on a global scale. The following are the primary questions that a forensic DNA scientist is requested to answer:

1. Whose DNA is it?
2. From what body fluid has it originated?
3. How did it get there?
4. Have the results been reported in a fair and balanced way?

The analysis of a DNA profile from a single individual's sample is simple if there is enough DNA, and it can provide powerful scientific evidence to either reject or include that individual as a probable source of that DNA. This is accomplished by computing and providing the match probability, which is a statistical calculation of the rarity of any matching DNA profile in a population [3]. Technological improvements in DNA analysis resulting in the ability to analyse ever smaller quantities of DNA have led to the main developments in this area. This capability has raised important questions relating to:

1. understanding and controlling contamination
2. the interpretation of complex DNA samples.

DNA extraction

When DNA is extracted from a sample such as blood or saliva, it is only a small portion of what is there in the sample. Before the DNA can be studied, it must first be extracted and purified from the cells. This can be done in a variety of ways, but they all follow the same basic steps [4]. To allow the DNA to be free in solution, the cell and nuclear membranes must be disrupted. After the DNA has been liberated, it can be isolated from the rest of the biological components. The remaining cellular debris can be removed from the solution and discarded once the DNA has been separated in Only DNA remains once the solvent has been removed. One of the most common methods for extracting DNA is organic extraction (also known as chromatography).

Chelex extraction, phenol chloroform extraction, and solid phase extraction are all examples of extraction methods. Differential extraction is a method of extraction in which DNA from two different types of cells can be isolated before being purified from the solvent. In the laboratory, each method of extraction works well, but analysts often choose their preferred approach based on considerations such as cost, time, quantity of DNA yielded, and quality of DNA yielded [5].

Reference

1. Mnookin, Jennifer L., Simon A. Cole, Itiel E. Dror, and Barry AJ Fisher. "The need for a research culture in the forensic sciences." *UCLA L Rev* 58 (2010): 725.
2. Petersen, Julie K., and Pamela Taylor. Handbook of surveillance technologies. CRC press 2012.
3. Elizabeth, I. I., David Hurley, and Scott Morrison. "Anthem: Advance Australia Fair." *Religion* 3 (2016): 52-53.
4. Chambers, Geoffrey K., Caitlin Curtis, Craig D. Millar, Leon Huynen, and David M. Lambert. "DNA fingerprinting in zoology: past, present, future."*Investig Genet* 1 (2014): 1-11.
5. Tautz, D., and M. Renz. "Nucleic Acid Research." *Genetics* 6 (1989): 463-466.

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