

Unlocking Justice: Exploring the Power and Challenges of DNA Analysis in the Criminal Justice System

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Abstract : This article examines the relevance, difficulties, and potential applications of DNA analysis in the criminal justice system. A potent tool for connecting suspects to crime sites, clearing the innocent of wrongdoing, and resolving cold cases, DNA analysis has transformed forensic investigations. The scientific foundations of DNA analysis, including DNA extraction, sequencing, and statistical analysis, are covered in the article. To guarantee accurate and trustworthy findings, it also discusses the significance of quality assurance procedures, chain of custody, and DNA sample storage. DNA analysis has significantly advanced science, but it also brings up substantial moral and legal issues. To safeguard individual rights and uphold public confidence, privacy concerns, possible discrimination, and abuse of DNA information must be properly addressed. The paper also emphasises the effects of the criminal justice system on people and communities while highlighting the necessity of equity, openness, and fair access to DNA testing. The essay describes the obstacles and future directions for DNA analysis. It looks at cutting-edge technology like next-generation sequencing, which promises to make DNA analysis quicker and more affordable. To secure the appropriate and informed use of DNA evidence, it also emphasises the significance of multidisciplinary collaboration among scientists, law enforcement organisations, legal experts, and policymakers. In conclusion, DNA analysis has enormous potential for improving the course of criminal justice. We can exploit the potential of DNA technology while respecting the ideals of justice, fairness, and individual rights by navigating the ethical, legal, and societal issues and encouraging discussion and collaboration.

Keywords : DNA analysis, DNA evidence, reliability, validity, legal frame, admissibility, ethical considerations, impact, future direction, challenges

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