

## Solving Crimes through DNA Methylation Analysis

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**Abstract :** Predicting human behaviour, discerning monozygotic twins or left over remnant tissues/fluids of a single human source remains a big challenge in forensic science. Recent advances in the field of DNA methylations which are broadly chemical hallmarks in response to environmental factors can certainly help to identify and discriminate various single-source DNA samples collected from the crime scenes. In this review, cytosine methylation of DNA has been methodologically discussed with its broad applications in many challenging forensic issues like body fluid identification, race/ethnicity identification, monozygotic twins dilemma, addiction or behavioural prediction, age prediction, or even authenticity of the human DNA. With the advent of next-generation sequencing techniques, blooming of DNA methylation datasets and together with standard molecular protocols, the prospect of investigating and solving the above issues and extracting the exact nature of the truth for reconstructing the crime scene events would be undoubtedly helpful in defending and solving the critical crime cases.

**Keywords :** DNA methylation, differentially methylated regions, human identification, forensics

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