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Criticality & Creditability of Next Gen Sequencing Technology on Capillary Electrophoresis Technology in Human Identification †

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Abstract: DNA sequencing is a way to get the precise sequence of incidence of the nucleotides in DNA. Through the assistance of DNA order, investigators can light up genetic data and facts from a genetic system. Decoding DNA order is essential for all branches of existing sciences, along with its recognition, which has developed exponentially in the precedent decade. Because of inherent boundaries in speed, throughput, scalability, and a declaration of first-generation, second-generation sequencing, or Next Generation Sequencing (NGS) method has been implemented to provide high insist for cheaper along with quicker sequencing technology. NGS expertise has brought a recent revolution in the welfare of human society as it is involved in Genetic testing and further Forensic Genetics. Mainly, the primary thought behind the NGS is close to capillary electrophoresis or (CE) supported Sanger sequencing; however, NGS expands the view to carrying out similar massive sequencing, where millions of remains of DNA from a sample are precisely sequenced. Still, NGS has not grown as much following its capabilities; however, there are certain issues or concerns a laboratory can have before adopting the future technique, NGS. It can be related to the storage space involved as a lab need to store the data generally related to criminals and the criminal justice system. The paper analyses the proficient use of NGS & CE in human recognition. NGS systems can run millions of DNA threads in a single run. The NGS technology determines the order of nucleotides in entire genomes or targeted regions of DNA or RNA. Capillary electrophoresis or CE is a unique method wherein genetic variation detection happens through the separation of DNA fragments. This DNA separation is carried out using a different length of capillary array, viz. 36-50cm, depending upon the length of DNA fragment. Forensically this technique is getting recognized because of its efficiency, low cost, and accurate sequencing capabilities. Furthermore, for NGS data, different software now available for analysis using forensic parameters. The NGS is also recognized as Massive Parallel sequencing, enabling the whole genome to be sequenced in less than a day.

Keywords: Forensic biology; next-generation sequencing; criminal cases; capillary electrophoresis.

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Conflicts of Interest

The authors declare no conflict of interest.