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Lesser Known Facts about DNA Extraction by James Blee

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DNA or deoxyribonucleic acid forms the base of human life. In shape of a double helix, DNA constitute of two long polymers of simple units called nucleotides with their back bones made of sugar and phosphate compounds joined by ester bonds. dna extraction or isolation is a process to collect DNA for scientific analysis from living blood cells. These cells are broken using a method known as sonication during the process of extraction.

The lipids present on disruption of human cells are then removed using detergents. Afterwards, the proteins present in the cells are removed from the extracted DNA. Later on, the DNA is segregated using alcoholic solution like isopropanol or ice-cold ethanol by the process of precipitation.

The first method involves the use of chromatography technique wherein a positively charged substrate is used to bind the phosphates present in the DNA that carry negative charge. Cellular proteins, RNA and metabolites are removed using this method with the help of medium salt buffers. The merit of using silica gel for extraction is preferred because it is quick, reliable and at the same time cost-effective. This process of extraction makes use of silica gel membrane to absorb the nucleic acids of DNA.

Chaotropic salts used in the extraction process act as a catalyst and helps in the adsorption of DNA on the silica gel membrane while washing away the metabolites and proteins at the same time. The DNA extracted from both these process are further centrifuged by using a centrifuge machine. The DNA extract formed after performing these processes gets deposited in the form of pellets which can be used for forensic science and research. The field of study about dna extraction is exhaustive as it can be used for crime identification as well as identifying certain origins of wine by tracing the lineage of different grape vines.

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