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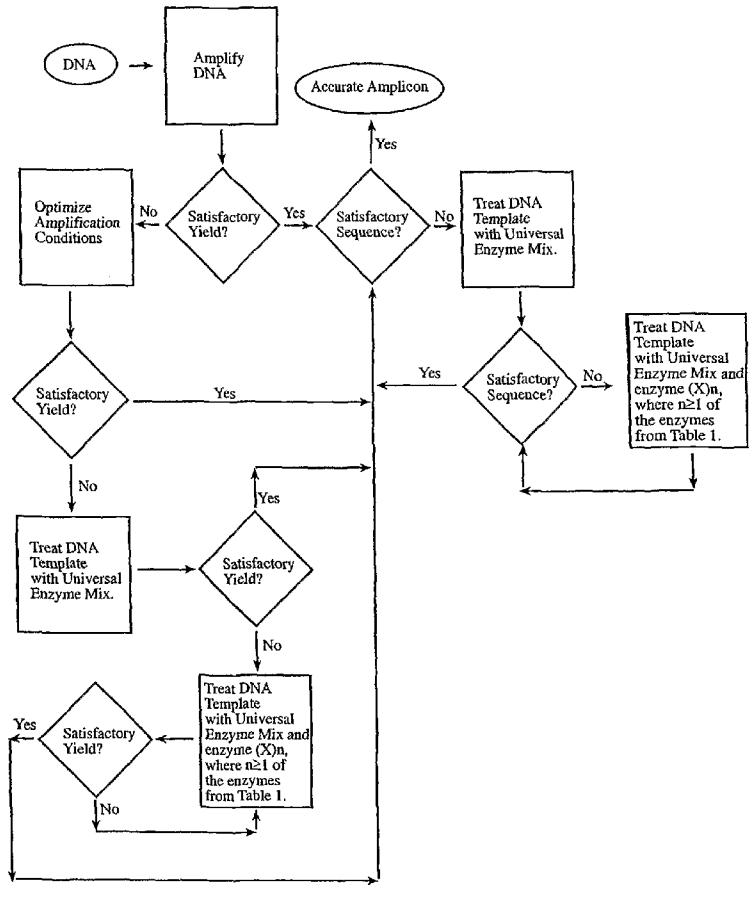
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(54) Title: REPAIR OF NUCLEIC ACIDS FOR IMPROVED AMPLIFICATION



(57) Abstract: Methods and compositions are provided for repairing apolynucleotide so that it can be synthesized efficiently with improved fidelity and yield in, for example, an amplification reaction. This involves the use of a reaction mixture that includes a ligase and a cofactor selected from NAD+ or ATP and incubating the polynucleotide with the reaction mixture in the absence of Endonuclease VI. The reaction mixture may further contain an AP endonuclease and a polymerase. These enzymes are optionally selected according to their ability to withstand high temperatures so they can be included in an amplification mixture. The reaction mixture may be used prior to a polynucleotide synthesis reaction in which case enzymes that are not thermophilic may be used. The repair reaction is not time sensitive with respect to seconds, minutes or hours of incubation in the enzyme mixture.

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