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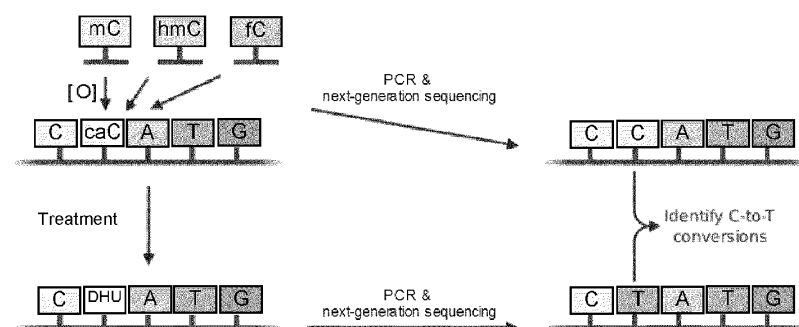
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(54) **Title:** METHODS FOR DETECTION OF NUCLEOTIDE MODIFICATION

Fig. 1



(57) **Abstract:** The invention provides a method of identifying a modified cytosine residue in a polynucleotide. The method includes the steps of reducing and deaminating a 5-methylcytosine residue within the polynucleotide and sequencing the polynucleotide, such that the location of the modified cytosine residue can be identified. The invention also provides a method of identifying a 5-methylcytosine residue, a 5-carboxylcytosine residue or a nucleotide in a polynucleotide. The method involves treating the polynucleotide with a radical initiator. The presence of the 5-methylcytosine residue, 5-carboxylcytosine residue or nucleotide can be identified as a residue such as thymine detected by sequencing the treated polynucleotide. Also provided is a method of converting a 5-methylcytosine residue in a polynucleotide to a dihydrothymine residue, and use of a radical initiator to convert a 5-methylcytosine residue in a polynucleotide to a dihydrothymine residue, or to convert a 5-carboxylcytosine residue to a dihydrouracil residue.

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