METHYLDETECT
DNA METHYLATION ASSAYS

Technical Guide: What is Bisulfite Modification?

Introduction

Sodium bisulfite modification is the gold-standard chemical process used to discriminate between methylated and unmethylated cytosine bases in genomic DNA. Because standard DNA polymerases cannot naturally distinguish 5-methylcytosine from unmethylated cytosine during PCR amplification, bisulfite treatment converts epigenetic differences into permanent sequence alterations.

Mechanism of Bisulfite Conversion

During single-stranded DNA denaturation and sodium bisulfite treatment, cytosine bases undergo selective chemical modification based on their methylation status:

- **Unmethylated Cytosines:** Deaminated by sodium bisulfite and converted to uracil. During subsequent PCR amplification, these uracil residues are read as thymine (T).

- **Methylated Cytosines (5-mC):** Protected from deamination by the presence of the methyl group at the 5th carbon position. They remain unchanged as cytosine (C) during PCR amplification.

Downstream Assay Compatibility

By converting epigenetic marks into distinct sequence variations (C-to-T conversion in unmethylated regions), bisulfite treatment enables precise quantitative evaluation using Methylation-Sensitive High-Resolution Melting (MS-HRM) assays.

Assay Support & Applications

MethylDetect provides standardized **EpiMelt Bisulfite Modification Kits** engineered for high conversion efficiency and minimal DNA degradation.

For technical questions or to request an official quote for your laboratory, contact our team at **info@methyldetect.com** or visit **www.methyldetect.com**.

Methyl Detect ApS
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