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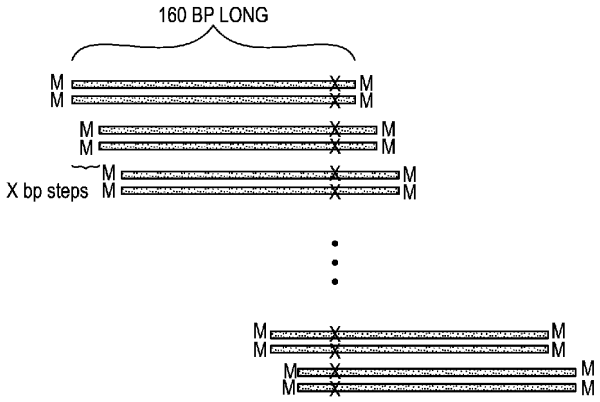

FIGURE 1

(57) Abstract: The disclosure provides a synthetic standard which includes polynucleotides (e.g., DNA or RNA) containing multiple clinically important germline and somatic variants. These materials are utilized to calibrate, evaluate, and/or validate the performance of polynucleotide-based genetic analysis assays, such as NGS assays. In one aspect the disclosure provides a method for validating assay performance including generating synthetic variant DNA fragments comprising variants with known allele frequencies, wherein the fragments comprise a molecular tag; combining the synthetic variant DNA with wild-type DNA to create test samples; preparing one or more dilutions of the test samples; performing an assay of interest on the one or more dilutions of test samples; and comparing the outcome of the assay with the test samples with known allele frequencies of interest, thereby validating the performance of the assay.

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