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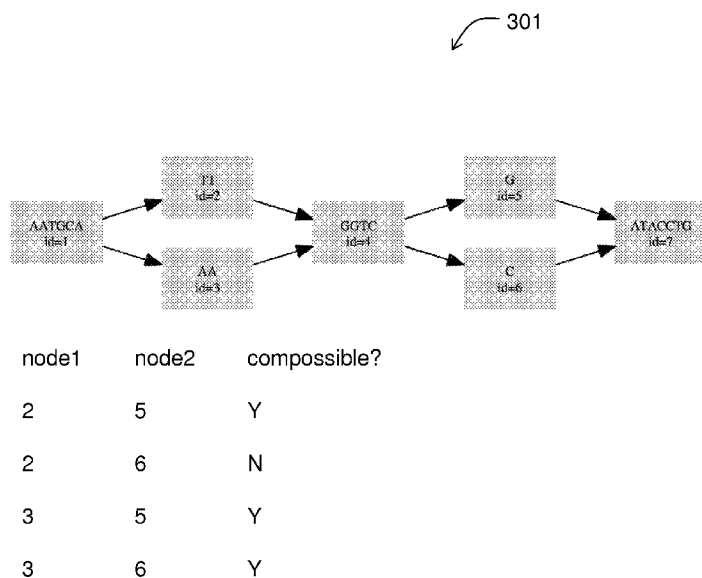
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(54) **Title:** SYSTEMS AND METHODS FOR USE OF KNOWN ALLELES IN READ MAPPING



(57) **Abstract:** The invention generally relates to genomic studies and specifically to improved methods for read mapping using identified nucleotides at known locations. The invention provides methods of using identified nucleotides at known places in a genome to guide the analysis of sequence reads from that genome by excluding potential mappings or assemblies that are not congruent with the identified nucleotides. Information about a plurality of SNPs in the subject's genome is used to identify candidate paths through a genomic directed acyclic graph (DAG). Sequence reads are mapped to the candidate paths.

FIG. 4