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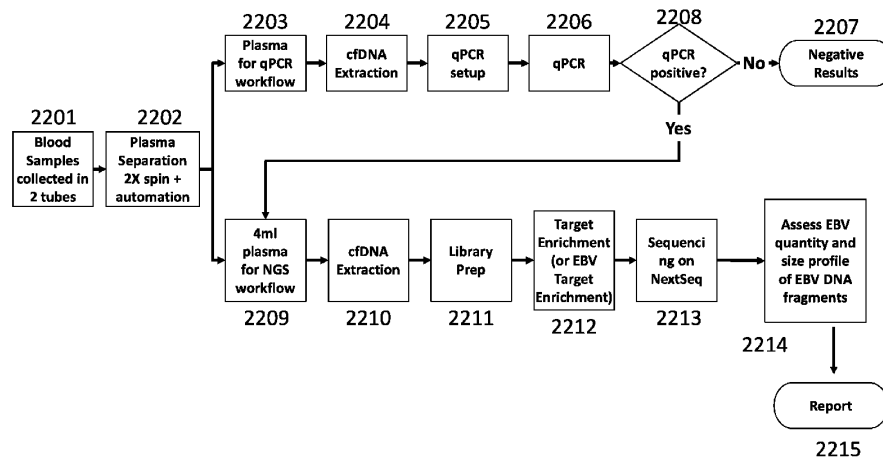
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(54) Title: METHODS AND SYSTEMS FOR TUMOR DETECTION

FIG. 22



(57) Abstract: Methods are provided to improve the positive predictive value for cancer detection using cell-free nucleic acid samples. Various embodiments are directed to applications (e.g., diagnostic applications) of the analysis of the fragmentation patterns and size of cell-free DNA, e.g., plasma DNA and serum DNA, including nucleic acids from pathogens, including viruses. Embodiments of one application can determine if a subject has a particular condition. For example, a method of present disclosure can determine if a subject has cancer or a tumor, or other pathology. Embodiments of another application can be used to assess the stage of a condition, or the progression of a condition over time. For example, a method of the present disclosure may be used to determine a stage of cancer in a subject, or the progression of cancer in a subject over time (e.g., using samples obtained from a subject at different times).

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