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(54) Title: PERSONALIZED IMMUNOGENIC COMPOSITIONS AND METHODS FOR PRODUCING AND USING SAME

(57) Abstract: Provided is a method of preparing a personalized immunogenic composition, which may be prepared by obtaining genetic sequences from a liquid biopsy, comparing the genetic sequences to a wild-type reference genome to identify mutant sequences, selecting epitopes from the mutant sequences, producing the peptides encoded by the selected epitopes, and incorporating the produced peptides into an immunogenic composition. Obtaining the genetic sequences may include next-generation sequencing of genetic material that has been enriched from the liquid biopsy. Deep sequencing (average coverage of 10,000X and above) may be used to detect gene mutations with rare frequencies. Immunogenicity of selected epitopes may be predicted using various in silico methods and epitopes used in an immunogenic composition may be selected from those selected epitopes with high binding affinity to HLA. An immunogenic composition prepared using these methods may be administered to a subject.



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