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(54) Title: VIRUS-INSPIRED COMPOSITIONS AND METHODS OF REDIRECTING PREEXISTING IMMUNE RESPONSES USING THE SAME FOR TREATMENT OF CANCER

(57) Abstract: Disclosed are virus-inspired compositions and preparation methods thereof, where the compositions comprise mutant papillomavirus L1 proteins that spontaneously form capsid backbones and that are conjugated to a peptide comprising an epitope to form immune redirector capsids (IRCs). The epitopes on the peptides are designed to be recognized by a subject's immune system based on the subject's preexisting immune memory developed from the subject's past exposure to the epitope through infection or vaccination. The mutant papillomavirus L1 proteins possess three mutations including an amino-terminal truncation, a carboxy-terminal truncation, and a truncation at helix four. These mutations in the L1 protein yield capsomeres that are form non-canonical T=1 geometry capsid backbones. Disclosed are uses and methods of using the compositions in treating and/or preventing cancers in subjects in need thereof.



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