EXPRESSION OF FOREIGN PROTEIN EPITOPES AT THE SURFACE OF RECOMBINANT YELLOW FEVER 17D VIRUSES BASED ON THREE DIMENSIONAL MODELING OF ITS ENVELOPE PROTEIN

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The yellow fever (YF) 17D vaccine is a live attenuated virus and its genetic manipulation constitutes a new platform for vaccine development. One approach is the insertion of foreign protein epitopes into different locations of the genome. Here we describe the three dimensional (3D) modeling of YF 17D virus E protein structure as compared to TBE and the identification of a potential insertion site located at the YF 17D *fg* loop. Further 3D analysis revealed that it is possible to accommodate inserts of different sizes and amino acid composition in the flavivirus E protein *fg* loop. We demonstrate that seven YF 17D viruses bearing foreign epitopes, which vary in sequence and length show differential growth characteristics in cell culture. The testing of recombinant viruses for mouse neurovirulence suggests that insertions at the 17D E protein *fg* loop do not compromise the attenuated phenotype of YF 17D virus further confirming the potential use of this site for the development of new live attenuated 17D virus-based vaccines.