

-continued

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 245 250

Leu Glu Thr Asp Val Cys Thr  
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<210> SEQ ID NO 14  
 <211> LENGTH: 9  
 <212> TYPE: PRT  
 <213> ORGANISM: Plasmodium vivax  
 <220> FEATURE:

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Ala Asn Gly Ala Gly Asp Gln Pro Gly  
 1 5

What is claimed is:

1. An isolated and purified hybrid nucleic acid molecule encoding a *P. vivax* circumsporozoite (CS) hybrid (PvCS-hybrid) protein comprising the N-terminal region of CS protein, the C-terminal region of CS protein, one or more copies of an AGDR epitope identified as amino acids 94-97 of SEQ ID NO: 13, one or more Type I repeats selected from the group identified as SEQ ID NO: 3, 4, 5, 6, 7, 8 and 9, one or more Type II repeats selected from the group identified as SEQ ID NO: 10 and 14, and, one or more copies of a 12 amino acid insert identified as SEQ ID NO: 11 occurring after Type I repeats in *P. vivax* CS VK210.

2. The nucleic acid molecule of claim 1 wherein said type I repeats are chosen from SEQ ID NO: 3 and 4.

3. The nucleic acid molecule of claim 2 wherein 8-10 copies of said type I repeats are present.

4. The nucleic acid molecule of claim 1 wherein 1-10 copies of said AGDR epitope identified as amino acids 94-97 of SEQ.ID.NO: 13 are present.

5. A recombinant vector comprising the nucleic acid molecule of claim 3.

6. A recombinant vector comprising the nucleic acid molecule of claim 4.

7. An isolated host cell transformed with the vector according to claim 5.

8. The host cell of claim 7 wherein said host cell is prokaryotic.

9. The host cell of claim 7 wherein said host cell is eukaryotic.

10. A method for isolating and purifying PvCS-hybrid protein comprising:

growing a host cell containing a recombinant vector expressing PvCS-hybrid protein according to claim 5 in a suitable culture medium, causing expression of said vector under suitable conditions for production of PvCS-hybrid protein, and lysing said host cells and recovering said PvCS-hybrid protein.

11. The method of claim 10 further comprising removal of *E. coli* proteins.

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