-continued

```
<223> OTHER INFORMATION: Description of Artificial Sequence: Synthetic
      6xHis tag

<400> SEQUENCE: 14

His His His His His His
1               5


<210> SEQ ID NO 15
<211> LENGTH: 20
<212> TYPE: PRT
<213> ORGANISM: Artificial Sequence
<220> FEATURE:
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      peptide

<400> SEQUENCE: 15

Met Ala His His His His His His Pro Gly Gly Ser Gly Ser Gly Thr
1               5                   10                  15

Asn Asn Asp Phe
            20


<210> SEQ ID NO 16
<211> LENGTH: 4
<212> TYPE: PRT
<213> ORGANISM: Plasmodium falciparum

<400> SEQUENCE: 16

Thr Ile Asp Ser
1
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What is claimed is:

1. A method for preparing a codon harmonized Pfs48/45 antigen sequence encoded by a pre-fertilization gene comprising:

Determining the frequency of codon usage of the pre-fertilization gene coding sequence, wherein the Pfs48/45 sequence corresponding to the nucleic acid sequence represented by SEQ ID NO: 7;

Substituting codons in the coding sequence of SEQ ID NO: 7 with codons of similar frequency from a host cell which code for the Pfs48/45 antigen, thereby preparing a codon harmonized Pfs48/45 antigen sequence wherein the codon harmonized Pfs48/45 sequence comprises the nucleotide sequence of SEQ ID NO: 2.

2. An isolated codon harmonized nucleotide sequence that comprises the nucleotide sequence of SEQ ID NO: 2 prepared according to the method of claim **1**.

3. A vector comprising a codon harmonized Pfs48/45 sequence suitable for expression in a cell, wherein the codon harmonized Pfs48/45 sequence comprises the nucleotide sequence of SEQ ID NO: 2.

4. A cell expressing the vector of claim **3**.

5. A kit comprising

an immunogenic composition comprising one or more *Plasmodium falciparum* or *Plasmodium vivax* pre-fertilization or post-fertilization antigens, and instructions for use in reducing transmission of *Plasmodium falciparum* or *Plasmodium vivax,*

together with one or more of the isolated codon harmonized nucleotide sequence comprising SEQ ID NO 2 and/or the vector of claim **3**.

* * * * *