Claims

1. A signal peptide comprising an amino acid sequence the same or substantially the same as the amino acid sequence of the following (a) or (b)

(a) the amino acid sequence shown by SEQ ID NO: 1

(b) a partial amino acid sequence of the amino acid sequence of said (a), comprising at least the amino acid sequence shown by amino acid NOs 11 - 25.

2. An isolated nucleic acid ~~substantially~~ consisting of a base sequence encoding the signal peptide of claim 1.

3. A West Nile virus-like particle expression vector comprising a nucleic acid comprising a base sequence encoding the signal peptide of claim 1, and prM protein and E protein derived from West Nile virus.

4. A transformant obtained by transformation with the vector of claim 3.

5. A method of producing a West Nile virus-like particle, comprising culturing the transformant of claim 4, and recovering a virus-like particle secreted in a medium.

6. A West Nile virus-like particle obtained by the method of claim 5.

7. A West Nile virus vaccine comprising the particle of claim 6 as an active ingredient.

8. A West Nile virus vaccine comprising the vector of claim 3 as an active ingredient.

9. A method of preventing West Nile fever, comprising

administering an effective amount of the vector of claim 3 to a subject.

10. A method of preventing West Nile fever, comprising administering an effective amount of the virus-like particles of claim 6 to a subject.

Claims

1. An expression vector for the production of West Nile Virus (WNV) virus-like particles consisting of WNV prM, M and E protein, wherein in said vector the nucleic acid sequence encoding WNV prM is fused to a nucleic acid sequence encoding a signal peptide consisting of amino acids 8 - 25 of SEQ ID NO: 1, amino acids 9 - 25 of SEQ ID NO: 1, amino acids 10 - 25 of SEQ ID NO: 1 or amino acids 11 - 25 of SEQ ID NO: 1 and said vector further comprises a nucleic acid sequence encoding WNV E protein.

2. An expression vector as defined in claim 1 for use in a method of preventing West Nile fever comprising administering an effective amount of said vector to a subject.

3. A host cell obtained by transformation with the vector of claim 1, in culture medium.

4. A method of producing a West Nile virus-like particle consisting of WNV prM, M and E protein, which method comprises culturing the host cell of claim 3, and recovering a said virus-like particle secreted in the medium.

5. A West Nile virus vaccine comprising the vector of claim 1 as an active ingredient.