[006a] In one aspect, there is provided a recombinant replication competent Isfahan virus comprising an N protein gene encoding an N protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:2, a P protein gene encoding a P protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:3, an M protein gene encoding an M protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:4, a G protein gene encoding a G protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:5, and an L protein gene encoding an L protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:6; and further comprising a heterologous polynucleotide sequence encoding a heterologous polypeptide.

[006b] In one aspect, there is provided a host cell comprising the Isfahan virus as described herein.

[006c] In one aspect, there is provided an immunogenic composition comprising a recombinant replication competent Isfahan virus as described herein;

and a pharmaceutically acceptable diluent, excipient or carrier.

[006d] In one aspect, there is provided the use of an immunogenic composition comprising a recombinant replication competent Isfahan virus as described herein in the manufacture of a medicament for inducing an antigen-specific immune response to said antigen in a mammalian subject, wherein said antigen is a viral antigen, a bacterial antigen, a tumor-specific or cancer antigen, a parasitic antigen or an allergen, and wherein the immunogenic composition is to be administered to said subject.

[006e] In one aspect, there is provided a prime-boost immunization kit for inducing an antigen-specific immune response in a mammalian subject, said kit comprising:

(a) a Isfahan composition comprising a recombinant replication competent Isfahan virus as described herein and a pharmaceutically acceptable diluent, excipient or carrier; and

(b) a vesicular stomatitis virus composition comprising a recombinant replication competent vesicular stomatitis virus encoding an N protein gene, a P protein gene, an M protein gene, a G protein gene, an L protein gene, and a heterologous polynucleotide sequence, wherein said heterologous polynucleotide sequence (i) is flanked by a transcription start signal and a transcription stop signal, and (ii) encodes a heterologous polypeptide; and a pharmaceutically acceptable diluent, excipient or carrier; and

(c) instructions for administration of the Isfahan composition prior to or after the vesicular stomatitis virus composition.

[006f] In one aspect, there is provided a use of the immunogenic compositions as described herein, in the manufacture of a medicament for inducing an antigen-specific immune response in a mammalian subject, wherein said antigen is a viral antigen, a bacterial antigen, a tumor-specific or cancer antigen, a parasitic antigen or an allergen, wherein the immunogenic compositions as described herein are to be administered in a prime-boost regimen wherein the Isfahan composition is to be administered prior to or after the vesicular stomatitis virus composition.

[007] In a further aspect the rISFV comprises one or more of (i) an N protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID

CLAIMS

1. A recombinant replication competent Isfahan virus comprising an N protein gene encoding an N protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:2, a P protein gene encoding a P protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:3, an M protein gene encoding an M protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:4, a G protein gene encoding a G protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:5, and an L protein gene encoding an L protein having an amino acid sequence that is 90, 95, 98, or 100% identical to the amino acid sequence of SEQ ID NO:6; and further comprising a heterologous polynucleotide sequence encoding a heterologous polypeptide.

2. The Isfahan virus of claim 1, wherein the heterologous polynucleotide sequence is flanked by a transcription start signal and a transcription stop signal.

3. The Isfahan virus of claim 1, wherein the heterologous polynucleotide encodes an immunogenic polypeptide.

4. The Isfahan virus of claim 1, wherein the heterologous polynucleotide encodes one or more antigens, preferably the antigen is a viral antigen, a bacterial antigen, a tumor-specific or cancer antigen, a parasitic antigen or an allergen.

5. The Isfahan virus of claim 4, wherein the antigen is a viral antigen.

6. The Isfahan virus of claim 5, wherein the viral antigen is from Chikungunya virus.

7. The Isfahan virus of claim 1, wherein the heterologous polynucleotide sequence is located at position 1, 2, 3, 4, 5 or 6 of the Isfahan virus genome.

8. The Isfahan virus of claim 1, wherein the N protein gene is located at position 1, 2, 3, 4, or 5 of the Isfahan virus genome.

9. The Isfahan virus of claim 1, wherein the G protein gene encodes a G protein having a carboxy-terminal truncation, preferably the G protein has a carboxy-terminal truncation of 20 to 25 amino acids.

10. The Isfahan virus of claim 1, wherein the heterologous polynucleotide sequence is located at position 5 and the N protein gene is located at position 4 of the Isfahan virus genome.

11. A host cell comprising the Isfahan virus of claim 1.

12. An immunogenic composition comprising a recombinant replication competent Isfahan virus of any one of claims 1 to 10 and a pharmaceutically acceptable diluent, excipient or carrier.

13. Use of an immunogenic composition comprising a recombinant replication competent Isfahan virus of claim 12 in the manufacture of a medicament for inducing an antigen-specific immune response to said antigen in a mammalian subject, wherein said antigen is a viral antigen, a bacterial antigen, a tumor-specific or cancer antigen, a parasitic antigen or an allergen, and wherein the immunogenic composition of claim 12 is to be administered to said subject.

14. A prime-boost immunization kit for inducing an antigen-specific immune response in a mammalian subject, said kit comprising:

(a) a Isfahan composition comprising a recombinant replication competent Isfahan virus of any one of claims 1 to 10 and a pharmaceutically acceptable diluent, excipient or carrier; and

(b) a vesicular stomatitis virus composition comprising a recombinant replication competent vesicular stomatitis virus encoding an N protein gene, a P protein gene, an M protein gene, a G protein gene, an L protein gene, and a heterologous polynucleotide sequence, wherein said heterologous polynucleotide sequence (i) is flanked by a transcription start signal and a transcription stop signal, and (ii) encodes a heterologous polypeptide; and a pharmaceutically acceptable diluent, excipient or carrier; and

(c) instructions for administration of the Isfahan composition prior to or after the vesicular stomatitis virus composition.

15. Use of the immunogenic compositions of claim 14 in the manufacture of a medicament for inducing an antigen specific immune response in a mammalian subject, wherein said antigen is a

viral antigen, a bacterial antigen, a tumor-specific or cancer antigen, a parasitic antigen or an allergen, wherein the immunogenic compositions of claim 14 are to be administered in a prime-boost regimen wherein the Isfahan composition is to be administered prior to or after the vesicular stomatitis virus composition.