CLAIMS

1. A vector comprising a DNA encoding a RNA molecule operably linked to a promoter suitable for expression of the DNA in a eukaryotic cell, wherein the RNA molecule encodes an infectious positive single stranded ((+)SS) RNA virus, and wherein the DNA comprises at least three introns.

2. The vector of claim 1, wherein the (+)SS RNA virus is a flavivirus, alphavirus, picornavirus, rubivirus, coronavirus, Norwalk virus, Hepatitis A virus, Hepatitis C virus, severe acute respiratory (SAR) virus, and lentivirus.

3. The vector of claim 2, wherein the flavivirus is a Japanese encephalitis virus (JEV), Dengue virus, Yellow Fever virus, West Nile virus, tick borne encephalitis virus, Hepatitis C virus, and Zika virus.

4. The vector of claim 3, wherein the flavivirus is JEV.

5. A vector comprising a DNA encoding a chimeric RNA molecule operably linked to a promoter suitable for expression of the DNA in a eukaryotic cell, wherein the chimeric RNA molecule encodes an infectious (+)SS RNA virus, and wherein the DNA comprises at least three introns.

6. The vector of claim 5, wherein the (+)SS RNA virus is encoded by a chimeric RNA molecule comprising the RNA of at least two different (+)SS RNA viruses.

7. The vector of claim 6, wherein the at least two different (+)SS RNA viruses comprise JEV and at least one other virus, Yellow fever virus and at least one other virus, or Dengue virus and at least one other virus.

8. The vector of claim 7, wherein the at least one other virus is a Zika virus, a West Nile virus, a Yellow fever virus, or a Dengue virus.

9. The vector of claim 8, wherein the at least two different (+)SS RNA viruses are JEV and Zika virus.

10. The vector of claim 1 or 5, wherein at least one intron is in a region encoding a non-structural protein and one intron is in a region encoding a structural protein.

11. The vector of claim 10, wherein the intron contains a stop codon or several stop codons.

12. The vector of claim 11, wherein the DNA comprises three introns.

13. The vector of claim 1 or 5, wherein the DNA comprises at least four introns, at least five introns, or at least six introns.

14. The vector of claim 1 or 5, wherein the infectious (+) SS RNA virus is a nonpathogenic virus.

15. The vector of claim 14, wherein the nonpathogenic virus is an attenuated virus.

16. The vector of claim 1 or 5, wherein the promoter is a CMV promoter, a RSV promoter, a SV40 promoter, a HSV promoter, a human Pol I promoter, a human Pol II promoter, or a human Pol III promoter.

17. A composition comprising the vector of claim 1 or 5 and a carrier.

18. A pharmaceutical composition comprising the vector of claim 14 or 15 and a pharmaceutically acceptable carrier.

19. A vaccine comprising a therapeutically effective amount of a vector of claim 14 or 15.

20. A vaccine comprising a therapeutically effective amount of the pharmaceutical composition of claim 18.

21. A homogenous population of clonally purified (+) SS RNA virus obtained from eukaryotic cells transfected with the vector of claim 1 or 5.

22. A composition comprising the homogeneous population of clonally purified (+) SS RNA virus of claim 21 and a carrier.

23. A pharmaceutical composition comprising the homogenous population of clonally purified (+)SS RNA virus of claim 21 and a pharmaceutically acceptable carrier.

24. A vaccine comprising a therapeutically effective amount of a homogeneous clonally purified live (+)SS RNA virus population obtained from cells transfected with the vector of claim 14 or 15.

25. A method of preparing a homogeneous clonally purified live (+)SS RNA virus population, wherein the method comprises transfecting the vector of claim 1 or 5 into a eukaryotic cell and isolating (+)SS RNA viruses, thereby obtaining the homogeneous clonally purified live (+)SS RNA virus population.

26. The method of claim 25, wherein the eukaryotic cell is a Vero cell, a CHO cell, or a MDCK cell.

27. A method of preparing a vaccine for protecting a subject against a disease caused by an infectious (+) SS RNA virus, wherein the method comprises transfecting the vector of claim 14 or 15 into a eukaryotic cell and isolating the (+) SS RNA viruses, thereby obtaining a vaccine.

28. The method of claim 27, wherein the eukaryotic cell is a Vero cell, a CHO cell, or a MDCK cell.

29. A method for protecting a subject against a disease caused by an infectious (+) SS RNA virus, wherein the method comprises administering the vaccine of claim 20 or 24 to a subject.

30. The method of claim 29, wherein the subject is a mammal.

31. The method of claim 30, wherein the mammal is a human or a veterinary animal

32. A method of preparing a stable plasmid, wherein the method comprises a DNA encoding a genomic RNA of an infectious (+) SS RNA virus, wherein the method comprises introducing at least three introns into the DNA, and wherein at least one intron is in the region encoding a structural protein of the (+) SS RNA virus and at least one intron is in the region encoding a non-structural protein of the (+) SS RNA virus.

33. A method of preparing a vector of claim 1 or 5, wherein the method comprises transfecting the vector of claim 1 or 5 into a host cell and isolating the vector from the host cell.

34. An isolated cell transfected with a vector of claim 1 or 5.

35. A method of protecting a subject against a disease caused by an infectious (+) SS RNA virus, wherein the method comprises administering a vaccine comprising the homogeneous clonally purified live (+)SS RNA virus population of claim 25.