

What is claimed:

1. A tri-segmented Pichinde virus particle comprising one L segment and two S segments, wherein the first S segment comprises an open reading frame (“ORF”) encoding the Pichinde viral glycoprotein (“GP”) in a position under control of a Pichinde virus genomic 3’ untranslated region (“UTR”) and an ORF encoding a first gene of interest in a position under control of a Pichinde virus genomic 5’ UTR and

the second S segment comprises an ORF encoding the nucleoprotein (“NP”) in a position under control of a Pichinde virus genomic 3’ UTR and an ORF encoding a second gene of interest in a position under control of a Pichinde virus genomic 5’ UTR and

the L segment comprises an ORF encoding the RNA dependent RNA polymerase L (“L protein”) in a position under control of a Pichinde virus genomic 3’ UTR and an ORF encoding the matrix protein Z (“Z protein”) in a position under control of a Pichinde virus genomic 5’ UTR.
2. The tri-segmented Pichinde virus particle of claim 1, wherein propagation of the tri-segmented Pichinde virus particle does not result in a replication-competent bi-segmented viral particle after 70 days of persistent infection in mice lacking type I interferon receptor, type II interferon receptor and recombination activating gene 1 (RAG1) and having been infected with 10⁴ PFU of the tri-segmented Pichinde virus particle.
3. The tri-segmented Pichinde virus particle of claim 1, wherein inter-segmental recombination of the two S segments, uniting two Pichinde virus ORFs on only one instead of two separate segments, abrogates viral promoter activity.
4. The tri-segmented Pichinde virus particle of any one of claims 1 to 3, wherein the Pichinde virus 3’ UTR is the 3’ UTR of the Pichinde virus S segment or the Pichinde virus L segment, and wherein the Pichinde virus 5’ UTR is the 5’ UTR of the Pichinde virus S segment or the Pichinde virus L segment.
5. The tri-segmented Pichinde virus particle of any one of claims 1 to 4, wherein the first and/or the second gene of interest encodes an antigen derived from an infectious organism, tumor, or allergen.

6. The tri-segmented Pichinde virus particle of claim 5, wherein the antigen is selected from human immunodeficiency virus antigens, papillomavirus antigens, hepatitis B virus antigens, hepatitis C virus antigens, varizella zoster virus antigens, cytomegalovirus antigens, mycobacterium tuberculosis antigens, tumor associated antigens, and tumor specific antigens, wherein the tumor specific antigens comprise tumor neoantigens and tumor neoepitopes.
7. The tri-segmented Pichinde virus particle of any one of claims 1 to 4, wherein the first and/or the second gene of interest encodes a fluorescent protein.
8. The tri-segmented Pichinde virus particle of any one of claims 1 to 7, wherein the tri-segmented Pichinde virus particle is infectious and replication competent.
9. The tri-segmented Pichinde virus particle of any one of claims 1 to 8, wherein the tri-segmented Pichinde virus particle is attenuated.
10. The tri-segmented Pichinde virus particle of any one of claims 1 to 9, wherein the tri-segmented Pichinde virus particle is derived from strain Munchique CoAn4763 isolate P18, or P2 strain.
11. A cDNA or a set of cDNAs encoding the genomic segment or segments of the tri-segmented Pichinde virus particle of any one of claims 1 to 10.
12. A DNA expression vector or a set of DNA expression vectors comprising the cDNA or the set of cDNAs of claim 11.
13. A host cell comprising the tri-segmented Pichinde virus particle of any one of claims 1 to 10, the cDNA or the set of cDNAs of claim 11, or the DNA expression vector or the set of DNA expression vectors of claim 12.
14. A method of generating the Pichinde virus particle of any one of claims 1 to 10, wherein the method comprises:
 - (i) transfecting into a host cell one or more cDNAs of the L segment and the two S segments;
 - (ii) maintaining the host cell under conditions suitable for virus formation; and

- (iii) harvesting the Pichinde virus particle.
- 15. The method of claim 14, wherein the transcription of the one L segment and the two S segments is performed using a bidirectional promoter.
- 16. The method of claim 14, wherein transcription of the one L segment, and the two S segments are each under the control of a promoter selected from the group consisting of:
 - (i) a RNA polymerase I promoter;
 - (ii) a RNA polymerase II promoter; and
 - (iii) a T7 promoter.
- 17. A vaccine comprising the tri-segmented Pichinde virus particle of any one of claims 1 to 10 and a pharmaceutically acceptable carrier.
- 18. A pharmaceutical composition comprising the tri-segmented Pichinde virus particle of any one of claims 1 to 10 and a pharmaceutically acceptable carrier.