WHAT IS CLAIMED IS:

1. A nucleic acid construct comprising a nucleic acid sequence encoding a modified Eastern Equine Encephalitis virus (EEEV) genome or replicon RNA, wherein the modified EEEV genome or replicon RNA comprises a native 5'untranslated region (5'-UTR) and is devoid of at least a portion of the nucleic acid sequence encoding one or more viral structural proteins.

2. The nucleic acid construct of claim 1, further comprising one or more expression cassettes, wherein each of the expression cassettes comprises a promoter operably linked to a heterologous nucleic acid sequence.

3. The nucleic acid construct of claim 2, wherein at least one of the expression cassettes comprises a subgenomic (*sg*) promoter operably linked to a heterologous nucleic acid sequence.

4. The nucleic acid construct of any one of claims 1-3, wherein the nucleic acid construct further comprises a 3' untranslated region (3'-UTR), optionally the 3'-UTR is native 3'-UTR or a heterologous 3'-UTR.

5. The nucleic acid construct of any one of claims 2-4, wherein at least one of expression cassettes comprises a coding sequence for a gene of interest (GOI).

6. The nucleic acid construct of claim 5, wherein the GOI encodes a polypeptide selected from the group consisting of a therapeutic polypeptide, a prophylactic polypeptide, a diagnostic polypeptide, a nutraceutical polypeptide, an industrial enzyme, and a reporter polypeptide.

7. The nucleic acid construct of any one of claims 5-6, wherein the GOI encodes a polypeptide selected from the group consisting of an antibody, an antigen, an immune modulator, an enzyme, a signaling protein, and a cytokine.

8. The nucleic acid construct of any one of claims 5-7, wherein the coding sequence of the GOI is optimized for expression at a level higher than the expression level of a reference coding sequence.

9. The nucleic acid construct of any one of claims 5-8, wherein the coding sequence of the GOI is optimized for enhanced RNA stability.

10. The nucleic acid construct of any one of claims 1-9, wherein the nucleic acid construct is incorporated into a vector, optionally wherein the vector is a self-replicating RNA (srRNA) vector.

11. The nucleic acid construct of any one of claims 1-10, wherein the nucleic acid construct further comprises the sequence of SEQ ID NO: 3 and/or SEQ ID NO: 4.

12. A recombinant cell comprising the nucleic acid construct according to any one of claims 1-11.

13. A cell culture comprising at least one recombinant cell according to claim 12, and a culture medium.

14. A transgenic animal comprising a nucleic acid construct according to any one of claims 1-11.

15. A method for producing a polypeptide of interest, comprising (i) rearing the transgenic animal according to claim 14, or (ii) culturing a recombinant cell comprising the nucleic acid construct according to any one of claims 5-11 under conditions wherein the transgenic animal or the recombinant cell produces the polypeptide encoded by the GOI.

16. A method for producing a polypeptide of interest in a subject, comprising introducing to the subject the nucleic acid construct according to any one of claims 5-11.

17. A recombinant polypeptide produced by the method of any one of claims 15-16, wherein the polypeptide is selected from the group consisting of:

(a) a therapeutic polypeptide, a prophylactic polypeptide, a diagnostic polypeptide, a nutraceutical polypeptide, an industrial enzyme, and a reporter polypeptide; or

(b) an antibody, an antigen, an immune modulator, an enzyme, a signaling protein, and a cytokine.

18. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and:

a) the nucleic acid construct of any one of claims 5-11;

b) the recombinant cell comprising the nucleic acid construct of (a); and/or

c) the recombinant polypeptide of claim 17.

19. The pharmaceutical composition of claim 18, wherein the composition is formulated in a liposome, a lipid-based nanoparticle (LNP), or a polymer nanoparticle.

20. Use of a composition in the manufacture of a medicament for inducing a pharmacodynamic effect and/or eliciting an immune response in a subject in need thereof, wherein the composition comprises:

a) the nucleic acid construct of any one of claims 5-11;

b) the recombinant cell comprising the nucleic acid of (a);

c) the recombinant polypeptide of claim 17; and/or

d) the pharmaceutical composition of any one of claims 18-19.

21. A kit for inducing a pharmacodynamic effect and/or eliciting an immune response, the kit comprising:

a) the nucleic acid construct of any one of claims 5-11;

b) the recombinant cell comprising the nucleic acid of (a);

c) the recombinant polypeptide of claim 17; and/or

d) the pharmaceutical composition of any one of claims 18-19.

22. A nucleic acid construct of any one of claims 5-11, a recombinant cell of claim 12, a recombinant polypeptide of claim 17 and/or a pharmaceutical composition of any one of claims 18-19.