CLAIMS

1. A circular polyribonucleotide comprising, in the following order from 5’ to 3’:

(a) a first post-circularization element;

(b) a first spacer element having a length of 110 to 500 ribonucleotides;

(c) a polyribonucleotide cargo encoding an immunogen;

(d) a second spacer element having a length of 110 to 500 ribonucleotides; and

(e) a second post-circularization element;

and wherein the first post-circularization element and the second post-circularization element together form a circularization junction.

2. A circular polyribonucleotide comprising, in the following order from 5’ to 3’:

(a) a first post-circularization element;

(b) a first spacer element having a length of 50 to 500 ribonucleotides;

(c) a polyribonucleotide cargo encoding an immunogen;

(d) a second spacer element having a length of 110 to 500 ribonucleotides; and

(e) a second post-circularization element;

and wherein the first post-circularization element and the second post-circularization element together form a circularization junction, wherein the polyribonucleotide comprises an miRNA binding site.

3. The circular polyribonucleotide of claim 1 or 2, wherein the first spacer element and the second spacer element each comprise 120 to 500, 150 to 500, 200 to 500, 110 to 300, 120 to 300, or 150 to 300 ribonucleotides.

4. The circular polyribonucleotide of claim 1 or 2, wherein the difference between the length of the first spacer element and the length of the second spacer element is 0 to 500 nucleotides, optionally wherein the difference between the length of the first spacer element and the length of the second spacer element is 0 to 100 nucleotides, optionally wherein the difference between the length of the first spacer element and the length of the second spacer element is 0 to 50 nucleotides.

5. The circular polyribonucleotide of claim 1 or 2, wherein the first spacer or the second spacer element consists of:

(i) a polyA region comprising 80% to 100% adenosine residues;

(ii) a polyAC region comprising between 80% to 100% adenosine or cytosine residues;

(iii) a polyAU region comprising between 80% to 100% adenosine or uridine residues; or

(iii) a polyAG region comprising between 80% to 100% adenosine or guanosine residues.

6. The circular polyribonucleotide of claim 1 or 2, wherein the polyribonucleotide cargo comprises an expression sequence, optionally wherein:

(a) the polyribonucleotide cargo further comprises a non-coding sequence;

(b) the polyribonucleotide cargo comprises an IRES operably linked to the expression sequence,

(c) the expression sequence comprises a 3' untranslated region or a 5' untranslated region; and/or

(d) the immunogen encoded by the polyribonucleotide cargo comprises one or more epitopes.

7. A linear polyribonucleotide comprising, in the following order from 5' to 3':

(a) a first post-circularization element;

(b) a first spacer element having a length of 110 to 500 ribonucleotides;

(c) a polyribonucleotide cargo encoding an immunogen;

(d) a second spacer element having a length of 110 to 500 ribonucleotides; and

(e) a second post-circularization element;

and wherein the first post-circularization element and the second post-circularization element together form a circularization junction.

8. A linear polyribonucleotide comprising, in the following order from 5' to 3':

(a) a first post-circularization element;

(b) a first spacer element having a length of 50 and 500 ribonucleotides;

(c) a polyribonucleotide cargo encoding an immunogen;

(d) a second spacer element having a length of 110 to 500 ribonucleotides; and

(e) a second post-circularization element;

and wherein the first post-circularization element and the second post-circularization element together form a circularization junction, wherein the first spacer or second spacer comprises an miRNA binding site.

9. The linear polyribonucleotide of claim 7 or 8, wherein the first spacer element and the second spacer element each comprise 120 to 500, 150 to 500, 200 to 500, 110 to 300, 120 to 300, or 150 to 300 ribonucleotides.

10. The linear polyribonucleotide of claim 7 or 8, wherein the difference between the length of the first spacer element and the length of the second spacer element is 0 to 500 nucleotides, optionally wherein the difference between the length of the first spacer element and the length of the second spacer element is 0 to 100 nucleotides, optionally wherein the difference between the length of the first spacer element and the length of the second spacer element is 0 to 50 nucleotides.

11. The linear polyribonucleotide of claim 7 or 8, wherein the first spacer or the second spacer element consists of:

(i) a polyA region comprising 80% to 100% adenosine residues;

(ii) a polyAC region comprising between 80% to 100% adenosine or cytosine residues;

(iii) a polyAU region comprising between 80% to 100% adenosine or uridine residues; or

(iv) a polyAG region comprising between 80% to 100% adenosine or guanosine residues.

12. The linear polyribonucleotide of claim 7 or 8, wherein the polyribonucleotide cargo comprises an expression sequence, optionally wherein:

(a) the polyribonucleotide cargo further comprises a non-coding sequence;

(b) the polyribonucleotide cargo comprises an IRES operably linked to the expression sequence,

(c) the expression sequence comprises a 3' untranslated region or a 5' untranslated region; and/or

(d) the immunogen encoded by the polyribonucleotide cargo comprises one or more epitopes.

13. A DNA vector comprising an RNA polymerase promoter operably linked to a sequence that encodes the linear polyribonucleotide of claim 7 or 8.

14. A circular polyribonucleotide produced from the linear polyribonucleotide of claim 7 or 8 or from the DNA vector of claim 13.

15. The linear polyribonucleotide of any one of claims 7-12 or the circular polyribonucleotide of any one of claims 1-6 for use in inducing an immune response in a subject.

16. A method of producing a circular polyribonucleotide from the linear polyribonucleotide of claim 9 or 10, the method comprising providing the linear polyribonucleotide under conditions suitable for self-splicing of the linear polyribonucleotide to produce a circular polyribonucleotide.

17. An immunogenic composition comprising:

(a) the circular polyribonucleotide of any one of claims 1-6, or the linear polyribonucleotide of any one of claims 7-12, and

(b) a diluent, a carrier, an adjuvant, or any combination thereof.