CLAIMS

What is claimed is:

1. A composition for inducing an immune response following administration to a subject, the composition comprising:

(a) an RNA adjuvant encoding a synthetic protein, wherein the synthetic protein comprises at least a functional fragment of a toll-like receptor 5 (TLR5) agonist; and

(b) one or more delivery vehicle formulated for intranasal administration, oral administration, intradermal administration, intranodal administration, intrasplenic administration, intratumoral administration, intravenous administration, or intramuscular administration,

wherein following administration of an effective amount of the composition to a subject in the presence of an antigen, an initial innate immune response is to be induced in the subject.

2. The composition of claim 1, wherein the at least a functional fragment of the TLR5 agonist comprises a functional derivative of a bacterial motility protein.

3. The composition of claim 2, wherein the bacterial motility protein is a bacterial flagellin protein, a derivative, or a functional fragment thereof.

4. The composition of claim 1, wherein the synthetic protein is a truncated form of a bacterial flagellin protein, a secreted form of a bacterial flagellin protein, or a combination thereof.

5. The composition of claim 1, wherein the functional fragment of a toll-like receptor 5 (TLR5) agonist comprises a D0 region and a D1 region of the bacterial flagellin protein.

6. The composition of claim 1, wherein the functional fragment of a toll-like receptor 5 (TLR5) agonist comprises a D0 region, a D1 region, and a D2 region of the bacterial flagellin protein.

7. The composition of claim 1, wherein the functional fragment of a toll-like receptor 5 (TLR5) agonist comprises a D0 region, a D1 region, a D2 region, and a D3 region of the bacterial flagellin protein.

8. The composition of claim 1, wherein the RNA comprises a sequence that is at least 85% identical to any one of **SEQ ID NOS: 2 to 37**.

9. The composition of claim 1, wherein the one or more delivery vehicle is a diluent, an aqueous solution, a particle, an emulsion, a suspension, a lipid carrier, a vesicle, a vector, or any combination thereof.

10. The composition of claim 1, further comprising:

(i) one or more antigens; or

(ii) one or more RNA sequences each encoding for an antigen.

11. The composition of claim 10, wherein the one or more antigens comprise a viral antigen, a bacterial antigen, a fungal antigen, a parasitic antigen, or a tumor antigen.

12. The composition of claim 1, further comprising an RNA encoding the antigen, wherein the RNA encoding the antigen is within the same delivery vehicle as the RNA adjuvant.

13. The composition of claim 1, further comprising an RNA encoding the antigen, wherein the RNA encoding the antigen is within a different delivery vehicle as the RNA adjuvant.

14. The composition of claim 1, wherein the RNA adjuvant further comprises an RNA sequence encoding the antigen.

15. The composition of claim 1, wherein the composition further comprises a lipid carrier.

16. The composition of claim 15, wherein the RNA adjuvant is encapsulated within the lipid carrier.

17. The composition of claim 15, wherein the RNA adjuvant is in complex with the lipid carrier.

18. A pharmaceutical composition comprising the composition of claim 1; and a pharmaceutically acceptable excipient.

19. The composition of any one of claims 1-17 or the pharmaceutical composition of claim 18 for use as a medicament.

20. Use of the composition of any one of claims 1-17 or the pharmaceutical composition of claim 18 in the manufacture of a medicament for stimulating an immune response in a subject.