CLAIMS:

1. A fusosome comprising:

a) a lipid bilayer comprising a re-targeted paramyxoviral fusogen, wherein the fusogen is linked to a targeting moiety and the re-targeted fusogen leads to preferential delivery of an exogenous agent to a target cell compared to a non-target cell; and

b) a nucleic acid that comprises or encodes:

(i) a positive target cell- specific regulatory element operatively linked to a nucleic acid encoding the exogenous agent, wherein the positive tissue-specific regulatory element increases expression of the exogenous agent in the target cell relative to an otherwise similar fusosome lacking the positive tissue-specific regulatory element; or

(ii) a non-target cell- specific regulatory element operatively linked to the nucleic acid encoding the exogenous agent, wherein the non-target cell-specific regulatory element decreases expression of the exogenous agent in a non-target cell or tissue relative to an otherwise similar fusosome lacking the non-target cell-specific regulatory element.

2. A fusosome comprising:

a) a lipid bilayer comprising a re-targeted paramyxoviral fusogen, wherein the fusogen is linked to a targeting moiety and the re-targeted fusogen leads to preferential delivery of an exogenous agent to a target cell compared to a non-target cell; and

b) a nucleic acid that comprises or encodes:

(i) a positive target cell- specific regulatory element operatively linked to a nucleic acid encoding the exogenous agent, wherein the positive tissue-specific regulatory element increases expression of the exogenous agent in a target cell or tissue relative to an otherwise similar fusosome lacking the positive tissue-specific regulatory element; and

(ii) a non-target cell- specific regulatory element operatively linked to the nucleic acid encoding the exogenous agent, wherein the non-target cell-specific regulatory element decreases expression of the exogenous agent in a non-target cell or tissue relative to an otherwise similar fusosome lacking the non-target cell-specific regulatory element.

3. The fusosome of claim 1 or claim 2, wherein the fusosome comprises the exogenous agent or a nucleic acid encoding the exogenous agent.

4. The fusosome of any of claims 1-3, wherein one or more of:

i) the fusosome fuses at a higher rate with a target cell than with a non-target cell, optionally wherein the higher rate is by at least at least 1%, 2%, 3%, 4%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 2-fold, 3-fold, 4-fold, 5-fold, l0-fold, 20-fold, 50-fold, or l00-fold;

ii) the fusosome fuses at a higher rate with a target cell than with another fusosome, optionally wherein the higher rate is by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, 2-fold, 3-fold, 4-fold, 5-fold, l0-fold, 20-fold, 50-fold, or l00-fold;

iii) the fusosome fuses with target cells at a rate such that the exogenous agent in the fusosome is delivered to at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, of target cells after 24, 48, or 72 hours;

iv) the fusosome delivers the nucleic acid to a target cell at a higher rate than to a non-target cell, optionally wherein the higher rate is by at least at least 1%, 2%, 3%, 4%, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 2-fold, 3-fold, 4-fold, 5-fold, l0-fold, 20- fold, 50-fold, or l00-fold;

v) the fusosome delivers the nucleic acid to a target cell at a higher rate than to another fusosome, optionally wherein the higher rate is by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, 2-fold, 3-fold, 4-fold, 5-fold, l0-fold, 20-fold, 50-fold, or 100- fold; or

vi) the fusosome delivers the nucleic acid to a target cell at a rate such that the exogenous agent in the fusosome is delivered to at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, of target cells after 24, 48, or 72 hours.

5. The fusosome of any of claims 1-4, wherein, when the fusosome is administered to a subject, one or more of:

i) less than 10%, 5%, 4%, 3%, 2%, or 1% of the exogenous agent detectably present in the subject is in non-target cells;

ii) at least 90%, 95%, 96%, 97%, 98%, or 99% of the cells of the subject that detectably comprise the exogenous agent, are target cells, optionally wherein the target cells are of a single cell type, optionally wherein the target cells are T cells;

iii) less than 1,000,000, 500,000, 200,000, 100,000, 50,000, 20,000, or 10,000 cells of the cells of the subject that detectably comprise the exogenous agent are non-target cells;

iv) average levels of the exogenous agent in all target cells in the subject are at least 100-fold, 200-fold, 500-fold, or 1, 000-fold higher than average levels of the exogenous agent in all non-target cells in the subject; or

v) the exogenous agent is not detectable in any non-target cell in the subject.

6. The fusosome of any of claims 1-5, wherein the re-targeted paramyxoviral fusogen comprises a sequence chosen from paramyxovirus F and G proteins or F and H proteins or F and HN proteins or a derivative thereof, or any combination thereof.

7. The fusosome of claim 6, wherein the re-targeted paramyxoviral fusogen comprises a sequence chosen from Nipah virus F and G proteins, measles virus F and H proteins, tupaia paramyxovirus F and H proteins, Hendra virus F and G proteins, Henipavirus F and G proteins, Morbilivirus F and H proteins,respirovirus F and HN protein, a Sendai virus F and HN protein, rubulavirus F and HN proteins, or avulavirus F and HN proteins, or a derivative thereof, or any combination thereof.

8. The fusosome of claim 6, wherein the re-targeted paramyxoviral fusogen comprises a sequence of canine distemper virus.

9. The fusosome of any of claims 1-8, wherein the re-targeted paramyxoviral fusogen comprises a domain of at least 100 amino acids in length having at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, or 99% sequence identity to a wild-type paramyxovirus fusogen, optionally wherein the wild-type paramyxovirus fusogen is set forth in any one of SEQ ID NOS: 1-132.

10. The fusosome of claim 9, wherein the wild-type paramyxovirus is a Nipah virus, optionally wherein the Nipah virus is a henipavirus.

11. The fusosome of claim 10, wherein the re-targeted paramyxoviral fusogen comprises a Nipah virus F and G protein.

12. The fusosome of any of claims 1-11, wherein the positive target cell-specific regulatory element comprises a tissue- specific promoter, a tissue-specific enhancer, a tissue-specific splice site, a tissue-specific site extending half-life of an RNA or protein, a tissue-specific mRNA nuclear export promoting site, a tissue-specific translational enhancing site, or a tissue-specific post-translational modification site.

13. The fusosome of any of claims 1-12, wherein the positive target cell-specific regulatory element comprises a tissue- specific promoter.

14. The fusosome of claims 12 or 13, wherein the tissue-specific promoter is a promoter that drives expression in a liver cell.

15. The fusosome of claim 14, wherein the liver cell is a hepatocyte.

16. The fusosome of any of claims 12-15, wherein the tissue-specific promoter is selected from the group comprising hAAT, ApoE.HCR-hAAT, enhanced transthyretin, TTR, Alb, Apoa2, Cyp3a4, LP1B, MIR122, hemopexin, HLP, and VEC.

17. The fusosome of any of claims 1-16, wherein the non-target cell specific regulatory element comprises a tissue- specific miRNA recognition sequence, tissue-specific protease recognition site, tissue-specific ubiquitin ligase site, tissue-specific transcriptional repression site, or tissue-specific epigenetic repression site.

18. The fusosome of any of claims 1-17, wherein the non-target cell specific regulatory element comprises a tissue- specific miRNA recognition sequence.

19. The fusosome of claim 18, wherein the non-target cell specific regulatory element is situated or encoded within a transcribed region encoding the exogenous agent.

20. The fusosome of claim 19, wherein an RNA produced by the transcribed region comprises the tissue-specific miRNA recognition sequence within a UTR or coding region.

21. The fusosome of any of claim 1-20, wherein the target cell is a cancer cell and the non-target cell is a non-cancerous cell.

22. The fusosome of any of claims 1-21, wherein the exogenous agent is an exogenous polypeptide or exogenous RNA.

23. The fusosome of claim 22, wherein the exogenous agent is a therapeutic agent.

24. The fusosome of any of claims 1-23, wherein the exogenous agent comprises a membrane protein.

25. The fusosome of claim 24, wherein the membrane protein comprises a chimeric antigen receptor (CAR), a T cell receptor, an integrin, an ion channel, a pore forming protein, a Toll-Like Receptor, an interleukin receptor, a cell adhesion protein, or a transport protein.

26. The fusosome of claims 1-25, wherein the fusosome further comprises:

i) a first exogenous or overexpressed immunosuppressive protein on the lipid bilayer and a second exogenous or overexpressed immunosuppressive protein on the lipid bilayer;

ii) a first exogenous or overexpressed immunosuppressive protein on the lipid bilayer and a second immunostimulatory protein that is absent or present at reduced levels, optionally wherein the reduced level is by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, compared to a fusosome generated from an otherwise similar, unmodified source cell; or

iii) a first immunostimulatory protein that is absent or present at reduced levels, optionally wherein the reduced level by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, compared to a fusosome generated from an otherwise similar, unmodified source cell and a second immunostimulatory protein that is absent or present at reduced levels, optionally wherein the reduced level is by at least 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, or 90%, compared to a fusosome generated from an otherwise similar, unmodified source cell.

27. The fusosome of claim 26, wherein, when administered to a subject, one or more of:

i) the fusosome does not produce a detectable antibody response, or antibodies against the fusosome are present at a level of less than 10%, 5%, 4%, 3%, 2%, or 1% above a background level;

ii) the fusosome does not produce a detectable cellular immune response, or a cellular immune response against the fusosome is present at a level of less than 10%, 5%, 4%, 3%, 2%, or 1% above a background level;

iii) the fusosome does not produce a detectable innate immune response, or the innate immune response against the fusosome is present at a level of less than 10%, 5%, 4%, 3%, 2%, or 1% above a background level;

iv) less than 10%, 5%, 4%, 3%, 2%, or 1% of fusosomes are inactivated by serum;

v) a target cell that has received the exogenous agent from the fusosome does not produce a detectable antibody response, or antibodies against the target cell are present at a level of less than 10%, 5%, 4%, 3%, 2%, or 1% above a background level; or

vi) a target cell that has received the exogenous agent from the fusosome does not produce a detectable cellular immune response, or a cellular response against the target cell is present at a level of less than 10%, 5%, 4%, 3%, 2%, or 1% above a background level.

28. The fusosome of claim 27, wherein the background level is the corresponding level in the same subject prior to administration of the fusosome.

29. The fusosome of claim 27 or claim 28, wherein the immunosuppressive protein is a complement regulatory protein or CD47.

30. The fusosome of any of claims 21-23, wherein the immunostimulatory protein is an MHC protein.

31. The fusosome of claim 30, wherein the MHC protein is an HLA protein that is an HLA-G or HLA-E or a combination thereof.

32. The fusosome of any of claims 1-31, wherein the nucleic acid comprises one or more insulator elements.

33. The fusosome of claim 32, wherein the nucleic acid comprises two insulator elements.

34. The fusosome of claim 33, wherein the two insulator elements comprise a first insulator element upstream of a region encoding the exogenous agent and a second insulator element downstream of a region encoding the exogenous agent.

35. The fusosome of claim 34, wherein the first insulator element and second insulator element comprise the same or different sequences.

36. The fusosome of any of claims 1-35, wherein the target cell is selected from the group comprising: a T cell, a CD3+ T cell, a CD4+ T cell, a CD8+ T cell, a hepatocyte, a haematopoietic stem cell, a CD34+ haematopoietic stem cell, a CD 105+ haematopoietic stem cell, a CD117+ haematopoietic stem cell, a CD 105+ endothelial cell, a B cell, a CD20+ B cell, a CD19+ B cell, a cancer cell, a CD133+ cancer cell, an EpCAM+ cancer cell, a CD19+ cancel cell, a Her2/Neu+ cancer cell, a GluA2+ neuron, a GluA4+ neuron, a NKG2D+ natural killer cell, a SLC1A3+ astrocyte, a SLC7A10+ adipocyte, or a CD30+ lung epithelial cell.

37. The fusosome of any of claims 1-36, wherein the targeting moiety comprises an antibody or an antigen-binding fragment thereof (e.g.,Fab, Fab', F(ab')2, Fv fragments, scFv antibody fragments, disulfide-linked Fvs (sdFv), a Fd fragment consisting of the VH and CH1 domains, linear antibodies, single domain antibodies such as sdAb (either VL or VH), nanobodies, or camelid VHH domains), an antigen-binding fibronectin type III (Fn3) scaffold such as a fibronectin polypeptide minibody.

38. The fusosome of any of claims 1-37, wherein the fusosome is a retroviral vector or particle.

39. The fusosome of any of claims 1-38, wherein the fusosome is a lentiviral vector or particle.

40. A fusosome of any of claims 1-39 for use in a method of delivering an exogenous agent to a subject comprising administering to the subject a fusosome of any of the preceding claims, thereby delivering the exogenous agent to the subject.

41. A fusosome of any of claims 1-39 for use in a method of treatment of a disease or condition , in a subject.

42 Use of a fusosome of any of claims 1-39 for manufacture of a medicament for treating a disease or condition in a subject.

43. The fusosome of claim 40 or claim 41 or the use of claim 42, wherein the subject is a human subject.

44. A method of making a fusosome of any of claims 1-39, comprising:

a) providing a cell that comprises the nucleic acid and the retargeted paramyxoviral fusogen ;

b) culturing the cell under conditions that allow for production of the fusosome, and

c) separating, enriching, or purifying the fusosome from the cell, thereby making the fusosome.