WHAT IS CLAIMED IS:

1. An extracellular vesicle (EV) comprising a biologically active molecule (BAM) covalently linked to the EV via an anchoring moiety (AM) according to the formula:

$$[AM]\text{-}L_1\text{-}[SP_1]\text{-}L_2\text{-}[SP_2]\text{-}L_3\text{-}[BAM] \quad \text{(Formula 1)}$$

wherein:

[AM] is the anchoring moiety;

L_1 is a cleavable or non-cleavable linkage;

L_2 and L_3 are optional cleavable or non-cleavable linkages;

SP_1 is an optional first spacer; and,

SP_2 is an optional second spacer.

2. The extracellular vesicle of claim 1, wherein the anchoring moiety [AM] comprises a sterol, a lipid, a vitamin, a peptide, or a combination thereof and optionally a spacer.

3. The EV of claim 1 or 2, wherein L_1, L_2, L_3, or any combination thereof is a cleavable linkage comprising a phosphodiester bond or a non-cleavable linkage comprising a phosphorothioate bond.

4. The EV of any one of claims 1-3, wherein the SP_1 optional first spacer and/or the SP_2 an optional second spacer independently comprise an alkyl spacer, a glycol spacer, or a combination thereof.

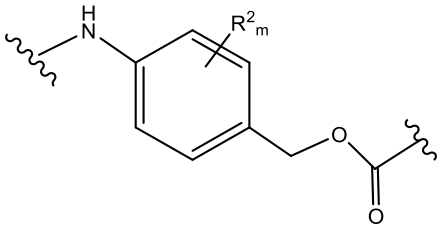
5. The EV of any one of claims 1 to 4, wherein the L_1, L_2, or L_3 cleavable linkage, or any combination thereof, has the formula:

$$\text{-Aa-Yy-}$$

wherein each –A- is independently an amino acid unit or a combination thereof, a is independently an integer from 1 to 15; -Y- is a spacer unit, and y is 0, 1, or 2, wherein -Aa- is a dipeptide, a

tripeptide, a tetrapeptide, a pentapeptide, or a hexapeptide, or a combination thereof, wherein each dipeptide, tripeptide, tetrapeptide, pentapeptide, or hexapeptide in the combination can be the same or different.

6. The EV of claim 5, wherein –Yy- has the formula:



wherein each R_2 is independently C_{1-8} alkyl, -O-(C_{1-8} alkyl), halogen, nitro, or cyano; and m is an integer from 0 to 4.

7. The EV of any one of claims 1 to 6, wherein the anchoring moiety [AM] comprises a scaffold protein selected from the group consisting of prostaglandin F2 receptor negative regulator (the PTGFRN protein); basigin (the BSG protein); immunoglobulin superfamily member 2 (the IGSF2 protein); immunoglobulin superfamily member 3 (the IGSF3 protein); immunoglobulin superfamily member 8 (the IGSF8 protein); integrin beta-1 (the ITGB1 protein); integrin alpha-4 (the ITGA4 protein); 4F2 cell-surface antigen heavy chain (the SLC3A2 protein); a class of ATP transporter proteins (the ATP1A1, ATP1A2, ATP1A3, ATP1A4, ATP1B3, ATP2B1, ATP2B2, ATP2B3, ATP2B4 proteins); a functional fragment thereof; and any combination thereof.

8. The EV of claim 7, wherein the scaffold protein comprises an amino acid sequence at least 50%, at least 60%, at least 70%, at least 80%, at least 85%, at least 90%, at least 95%, at least 96%, at least 97%, at least 98%, at least 99%, or about 100% identical to SEQ ID NO:302.

9. The EV of any one of claims 1 to 8, wherein the biologically active molecule comprises an ASO, wherein the ASO targets a STAT6 transcript, a CEBP/β transcript, a STAT3 transcript, a KRAS transcript, a NRAS transcript, an NLPR3 transcript, or any combination thereof, wherein the biologically active molecule [BAM] is linked via the anchoring moiety [AM] to the exterior surface of the EV.

10. A pharmaceutical composition comprising the EV of any one of claims 1 to 9 and a pharmaceutically acceptable carrier.

11. A kit comprising the EV of any one of claims 1 to 9 or the pharmaceutical composition of claim 10 and instructions for use.

12. Use of the EV of any one of claims 1 to 9 or the pharmaceutical composition of claim 10 in the manufacture of a medicament for the treatment of a disease or disorder in a subject in need thereof.

13. A method of attaching a biologically active molecule (BAM) to an extracellular vesicle (EV), comprising linking an anchoring moiety (AM) to the EV, wherein the anchoring moiety (AM) is attached to the biologically active moiety (BAM) according to the formula:

$$[AM]\text{-}L_1\text{-}[SP_1]\text{-}L_2\text{-}[SP_2]\text{-}L_3\text{-}[BAM]$$

wherein:
[AM] is the anchoring moiety and is selected from the group of cholesterol-C6, cholesterol-TEG, tocopherol-C8, tocopherol, and palmitate-C6;
L_1 is a cleavable or non-cleavable linkage;
L_2 and L_3 are optional cleavable or non-cleavable linkages, wherein L_1, L_2, L_3, or a combination thereof is a phosphodiester or phosphorothioate bond;
SP_1 is an optional first spacer selected from group of C3, C6, TEG, or HEG; and,
SP_2 is an optional second spacer.

14. A method of increasing the load density of a biologically active molecule (BAM) attached to an extracellular vesicle (EV), comprising screening a library of anchoring moieties (AM) attached to the biologically active moiety (BAM) according to the formula:

$$[AM]\text{-}L_1\text{-}[SP_1]\text{-}L_2\text{-}[SP_2]\text{-}L_3\text{-}[BAM]$$

wherein:
[AM] is the anchoring moiety selected from the group consisting of cholesterol-C6, cholesterol-TEG, tocopherol-C8, tocopherol, and palmitate-C6;
L_1 is a cleavable or non-cleavable linkage;
L_2 and L_3 are optional cleavable or non-cleavable linkages;
SP_1 is an optional first spacer selected from the group consisting of C3, C6, TEG and HEG; and,
SP_2 is an optional second spacer selected from the group consisting of C3, C6, TEG and HEG.

15. The method of claim 14, wherein the load density of a biologically active molecule (BAM) attached to an EV is increased at least about 1-fold, at least about 1.5-fold, at least about 2-fold, at least about 2.5-fold, at least about 3-fold, at last about 4-fold, at least about 5-fold, at least about 6-fold, at least about 7-fold, at least 8-fold, at least about 9-fold, or at least about 10-fold.

16. An extracellular vesicle (EV) comprising an antisense oligonucleotide [ASO] covalently linked to the EV via an anchoring moiety [AM] according to the formula:

$$[AM]\text{-}L_1\text{-}[SP_1]\text{-}L_2\text{-}[SP_2]\text{-}L_3\text{-}[ASO]$$

wherein:
[AM] is the anchoring moiety selected from the group consisting of cholesterol-C6, cholesterol-TEG, tocopherol-C8, tocopherol, and palmitate-C6;
L_1 is a phosphodiesterase cleavable linkage;
SP_1 is an optional first spacer selected from the group consisting of C3, C6, TEG and HEG;
L_2 is optional phosphorothioate non-cleavable linkage;

SP_2 is an optional second spacer selected from the group consisting of C3, C6, TEG, and HEG; and,
L_3 is an optional phosphorothioate non-cleavable linkage.

17. The EV of claim 16, where the load density of ASO attached to the EV is increased by at least about 1.5-fold, and the average number of ASO molecules per exosome is between about 2000 and about 5500.

18. The EV of any one of claims 1 to 17, wherein the EV is an exosome.

19. An exosome comprising an antisense oligonucleotide [ASO] covalently linked to the exosome via an anchoring moiety [AM] according to the formula:

$$[AM]\text{-}L_1\text{-}[SP_1]\text{-}L_2\text{-}[BAM]$$

wherein [AM] is cholesterol-TEG; L_1 is a phosphodiesterase cleavable bond; SP_1 is TEG; and L_2 is a phosphorothioate non-cleavable bond.

20. The exosome of claim 18 or 19, wherein the exosome is an exosome overexpressing PTGFRN.