CLAIM

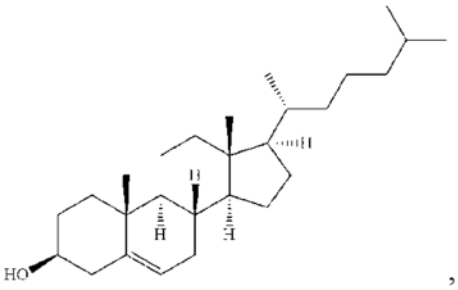
1. An extracellular vesicle (EV) comprising a biologically active molecule (BAM) covalently linked to the EV via an anchoring moiety (AM) with the structure:

[AM]-[Linker]n-[BAM] Formula (I)

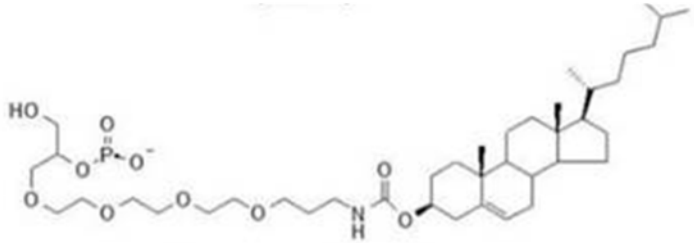
wherein [AM] is selected from the group consisting of: cholesterol-C6, cholesterol-TEG, tocopherol-C8, tocopherol, and palmitate-C6,

wherein n is any integer between 1 and 10.

2. The extracellular vesicle of claim 1, wherein the anchoring moiety is a cholesterol or derivative having a structure selected from the group consisting of,

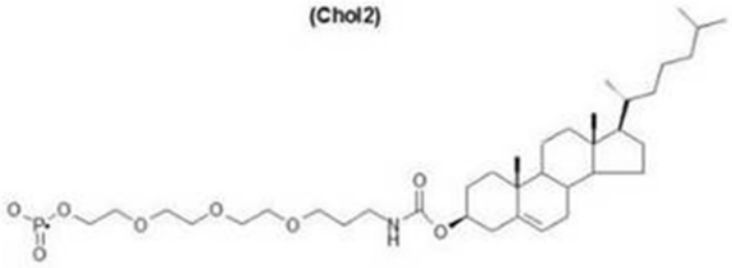


,



, and

(Chol2)



.

3. The extracellular vesicle of claim 1 or 2, wherein the linker comprises a non-cleavable linker comprising polyethylene glycol (PEG), glycerol, alkyl, succinimide, maleimide, or any combination thereof.

4. The extracellular vesicle of claim 3, wherein the non-cleavable linker comprises polyethylene glycol (PEG) characterized by a formula R3-(O-CH_2-CH_2)$_n$- or R3-(O-CH_2-CH_2)$_n$-O-, wherein R3 is hydrogen, methyl or ethyl and n is an integer between 2 and 200.

5. The extracellular vesicle of claim 3 or 4 wherein the linker comprises a diglycerol, triglycerol, tetraglycerol (TG), pentaglycerol, a hexaglycerol (HG), or any combination thereof.

6. The extracellular vesicle of any one of claims 3 to 5, wherein the linker comprises alkyl.

7. The extracellular vesicle of claim 1 or 2, wherein the linker comprises a cleavable linker that is a redox cleavable linker, a reactive oxygen species cleavable linker, a pH dependent cleavable linker, an enzymatic cleavable linker, a protease cleavable linker, an esterase cleavable linker, a phosphatase cleavable linker, a photoactivated cleavable linker, a self-immolative linker, or any combination thereof.

8. The extracellular vesicle of claim 7, wherein the cleavable linker is a self-immolative linker.

9. The extracellular vesicle of claim 7, wherein the cleavable linker comprises a cinnamyl group, a naphthyl group, a biphenyl group, a heterocyclic ring, a homoaromatic group, coumarin, furan, thiophene, thiazole, oxazole, isoxazole, pyrrole, pyrazole, pyridine, imidazone, triazole, or any combination thereof.

10. The extracellular vesicle of any one of claims 7 to 9, wherein the linker has the formula:

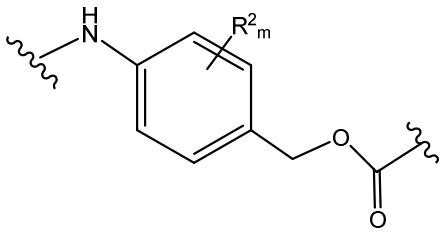
$$-A_a-Y_y-$$

wherein each –A- is independently an amino acid unit, a is independently an integer from 1 to 12; -Y- is a spacer unit, and y is 0, 1, or 2.

11. The extracellular vesicle of claim 10, wherein -Aa- is a dipeptide, a tripeptide, a tetrapeptide, a pentapeptide, or a hexapeptide.

12. The extracellular vesicle of claim 11, wherein a is 2 and –Aa- is selected from the group consisting of valine-alanine, valine-citrulline, phenylalanine-lysine, N-methylvaline-citrulline, cyclohexylalanine-lysine, and beta-alanine-lysine.

13. The extracellular vesicle of any one of claims 10 to 12, wherein $–Y_y-$ has the formula (V):



(V),

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.

14. The extracellular vesicle of claim 1 or 2, which comprises a linker selected from the linker combinations of TABLE 1 or TABLE 2.

15. The extracellular vesicle of any one of claims 1 to 14, wherein the extracellular vesicle or the anchoring moiety comprises a scaffold moiety that is Scaffold X or Scaffold Y.

16. The extracellular vesicle of claim 15, wherein the Scaffold X is 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.

17. The extracellular vesicle of claim 15, wherein the Scaffold Y is selected from the group consisting of myristoylated alanine rich Protein Kinase C substrate (the MARCKS protein), myristoylated alanine rich Protein Kinase C substrate like 1 (the MARCKSL1 protein), brain acid soluble protein 1 (the BASP1 protein), a functional fragment thereof, and any combination thereof.

18. The extracellular vesicle of any one of claims 1 to 17, wherein the biologically active molecule is linked to the anchoring moiety and/or the scaffold moiety on the exterior surface of the EV.

19. The extracellular vesicle of any one of claims 1 to 18, wherein the biologically active molecule is a polypeptide, a peptide, a polynucleotide (DNA and/or RNA), a chemical compound, or any combination thereof.

20. The extracellular vesicle of any one of claims 1 to 19, wherein the biologically active molecule comprises an antisense oligonucleotide (ASO), a siRNA, a miRNA, a shRNA, a nucleic acid, or any combination thereof.

21. A pharmaceutical composition comprising the extracellular vesicle of any one of claims 1 to 20 and a pharmaceutically acceptable carrier.

22. A kit comprising the EV of any one of claims 1 to 20 and instructions for use.

23. The extracellular vesicle of any one of claims 1 to 20 for use in the treatment or prevention of a disease or disorder.

24. The extracellular vesicle of claim 23, wherein the disease or disorder is a cancer, an inflammatory disorder, a neurodegenerative disorder, a central nervous diseases, or a metabolic disease.

25. Use of the extracellular vesicle of any one of claims 1 to 20 in the manufacture of a medicament for the treatment of a cancer, an inflammatory disorder, a neurodegenerative disorder, a central nervous diseases, or a metabolic disease.