## CLAIMS

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

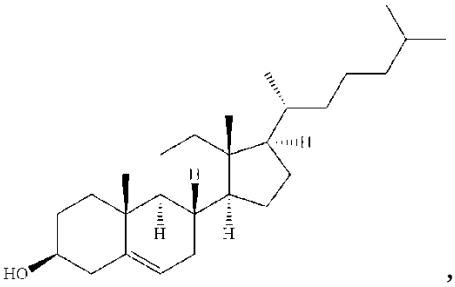
[AM]-[Linker]n-[BAM] Formula (I)

wherein n is any integer.

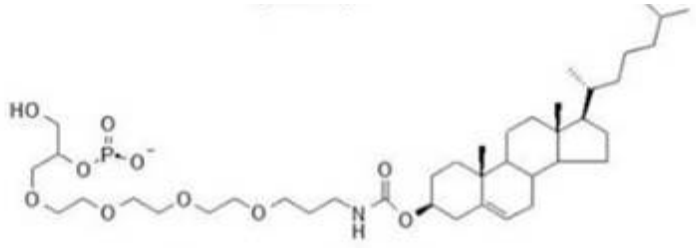
2. The extracellular vesicle of claim 1, wherein n is any number between 0 and 10.

3. The extracellular vesicle of claim 1 or 2, wherein the anchoring moiety comprises a sterol, GM1, a lipid, a vitamin, a small molecule, a peptide, or a combination thereof.

4. The extracellular vesicle of claim 3, wherein the anchoring moiety is a cholesterol or derivative having a structure selected from the group consisting of ,

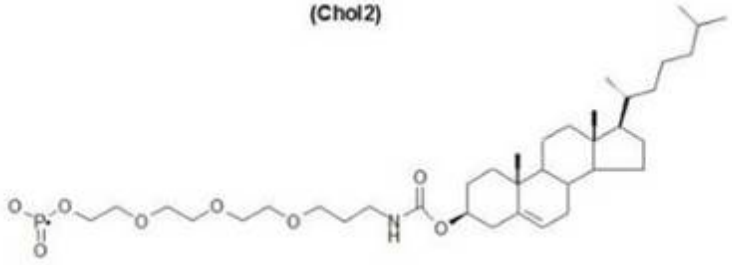



,




, and

(Chol2)




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5. The extracellular vesicle of claim 3, wherein the lipid comprises a straight chain fatty acid, a branched fatty acid, an unsaturated fatty acid, a monounsaturated fatty acid, a polyunsaturated fatty acid, a hydroxyl fatty acid, a polycarboxylic acid, or any combination thereof.

6. The extracellular vesicle of claim 3, wherein the lipid comprises a phospholipid.

7. The extracellular vesicle of claim 3, wherein the vitamin comprises vitamin D, vitamin K, vitamin E, or any combination thereof.

8. The extracellular vesicle of any one of claims 1 to 7, wherein the linker comprises a non-cleavable linker comprising polyethylene glycol (PEG), glycerol, alkyl, succinimide, maleimide, or any combination thereof.

9. The extracellular vesicle of claim 8, 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.

10. The extracellular vesicle of claim 8 or 9 wherein the linker comprises a diglycerol, triglycerol, tetraglycerol (TG), pentaglycerol, a hexaglycerol (HG), or any combination thereof.

11. The extracellular vesicle of any one of claims 8 to 10, wherein the linker comprises alkyl.

12. The extracellular vesicle of any one of claims 1 to 11, 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.

13. The extracellular vesicle of claim 12, wherein the cleavable linker is a self-immolative linker.

14. The extracellular vesicle of claim 12, 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.

15. The extracellular vesicle of any one of claims 12 to 14, wherein the linker has the formula:

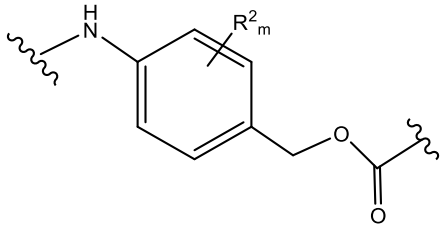
$$-A_a-Y_y-$$

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.

16. The extracellular vesicle of claim 15, wherein -Aa- is a dipeptide, a tripeptide, a tetrapeptide, a pentapeptide, or a hexapeptide.

17. The extracellular vesicle of claim 16, 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.

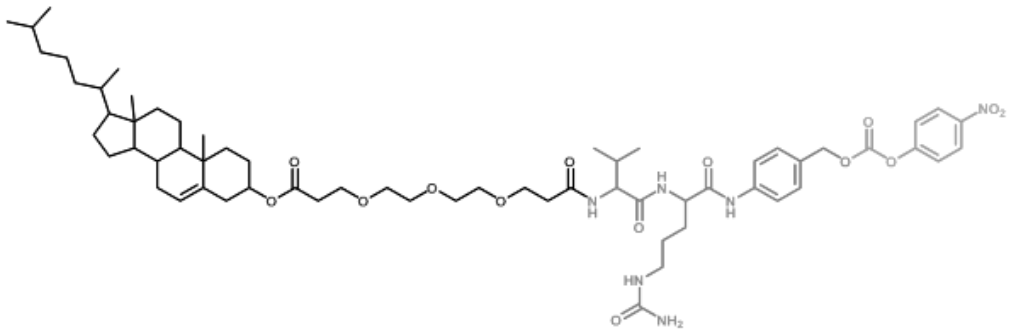
18. The extracellular vesicle of any one of claims 15 to 17, wherein $–Y_y-$ has the formula (V):




(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.

19. The extracellular vesicle of any one of claims 1 to 3, wherein the anchoring moiety comprises:



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20. The extracellular vesicle of any one of claims 1 to 3, which comprises (i) an anchoring moiety selected from the group consisting of SEQ ID NOS: 301-334 and 401-567, and (ii) a linker selected from the linker combinations of TABLE 1 or TABLE 2.

21. The extracellular vesicle of any one of claims 1 to 20, wherein the extracellular vesicle or the anchoring moiety comprises a scaffold moiety that is Scaffold X or Scaffold Y.

22. The extracellular vesicle of claim 21, 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.

23. The extracellular vesicle of claim 21, 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.

24. The extracellular vesicle of any one of claims 1 to 23, wherein the biologically active molecule is linked to the anchoring moiety and/or the scaffold moiety on the exterior surface of the EV.

25. The extracellular vesicle of any one of claims 1 to 24, wherein the biologically active molecule is a polypeptide, a peptide, a polynucleotide (DNA and/or RNA), a chemical compound, or any combination thereof.

26. The extracellular vesicle of any one of claims 1 to 25, wherein the biologically active molecule comprises an antisense oligonucleotide (ASO), a siRNA, a miRNA, a shRNA, a nucleic acid, or any combination thereof.

27. A pharmaceutical composition comprising the extracellular vesicle of any one of claims 1 to 26 and a pharmaceutically acceptable carrier.

28. A kit comprising the EV of any one of claims 1 to 26 and instructions for use.

29. The extracellular vesicle of any one of claims 1 to 26 for use in the treatment or prevention of a disease or disorder.

30. The extracellular vesicle of claim 29, wherein the disease or disorder is a cancer, an inflammatory disorder, a neurodegenerative disorder, a central nervous diseases, or a metabolic disease.

31. Use of the extracellular vesicle of any one of claims 1 to 26 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.