CLAIMS

~~The invention claimed is:~~

1. A molecule comprising

(i) a targeting moiety

(ii) at least one payload wherein said at least one payload is a therapeutic agent or a detectable label,

(iii) a linker/linkers covalently linking said payload/payloads and said targeting moiety, and

(iv) at least one solubility tag,

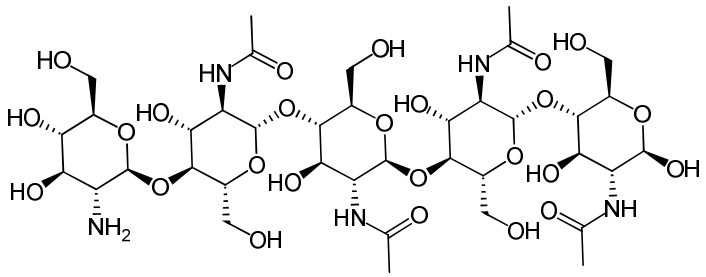
wherein said solubility tag comprises a chito-oligosaccharide of at least 3 and up to 12 monosaccharide units.

2. The molecule according to claim 1, wherein said solubility tag is/said solubility tags are linked by a covalent bond to said at least one payload and/or to said linker(s).

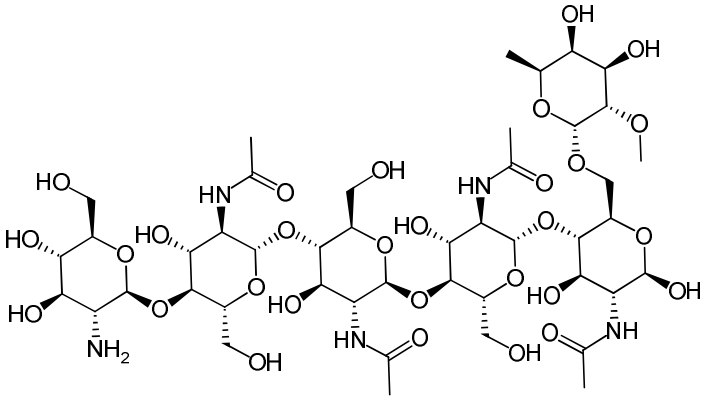
3. The molecule according to claim 1, wherein said chito-oligosaccharide is a chito-oligosaccharide selected from the group consisting of $(GlcN)_3$, $(GlcN)_2$–GlcNAc, $(GlcNAc)_2$–GlcN, GlcN-$(GlcNAc)_2$, $(GlcNAc)_3$, $(GlcN)_4$, $(GlcN)_3$–GlcNAc, $(GlcNAc)_2$–$(GlcN)_2$, GlcNAc–GlcN–GlcNAc– GlcN, GlcNAc–$(GlcN)_2$–GlcNAc, GlcN–$(GlcNAc)_2$–GlcN, GlcN–GlcNAc–GlcN–GlcNAc, $(GlcN)_2$–$(GlcNAc)_2$, $(GlcNAc)_3$–GlcN, $(GlcNAc)_2$–GlcN–GlcNAc, GlcNAc–GlcN–$(GlcNAc)_2$, GlcN–$(GlcNAc)_3$, $(GlcNAc)_4$, $(GlcN)_5$, $(GlcN)_3$–$(GlcNAc)_2$, $(GlcNAc)_2$–$(GlcN)_2$–GlcNAc, GlcNAc–GlcN–GlcNAc–GlcN–GlcNAc, GlcNAc–$(GlcN)_2$–$(GlcNAc)_2$, GlcN–$(GlcNAc)_2$–GlcN–GlcNAc, GlcN–GlcNAc–GlcN–$(GlcNAc)_2$, GlcN–$(GlcNAc)_4$, $(GlcNAc)_5$, $(GlcN)_6$, $(GlcN)_2$–GlcNAc–$(GlcN)_3$, GlcNAc–$(GlcN)_4$–GlcNAc, GlcN–GlcNAc–GlcN–GlcNAc–$(GlcN)_2$, GlcNAc–$(GlcN)_2$–GlcNAc–GlcN–GlcNAc, GlcNAc–$(GlcN)_3$–$(GlcNAc)_2$, GlcN–

GlcNAc–GlcN–$(GlcNAc)_3$, GlcNAc–$(GlcN)_2$–$(GlcNAc)_3$, $(GlcNAc)_6$, $(GlcN)_7$, and $(GlcNAc)_7$.

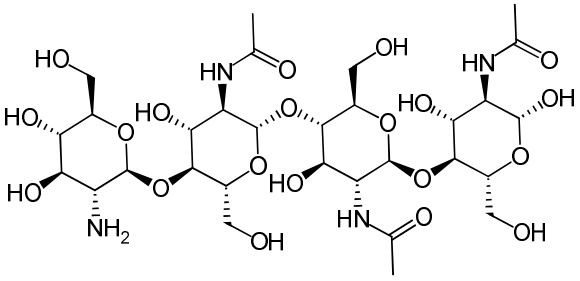
4. The molecule according to any of claims 1 to 3, wherein said solubility tag comprises or is a chemical group with a structural formula selected from the following (I) to (IV):



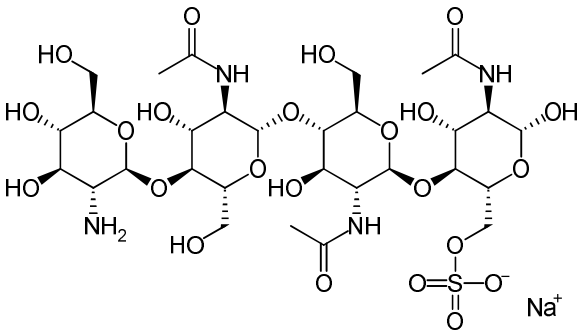
(I);



(II);



(III);



(IV).

5. The molecule according to any of claims 1 to 4, wherein said targeting moiety is selected from the group consisting of a protein, a peptide, a peptide mimetic, a nucleic acid, an oligonucleotide and a small molecule.

6. The molecule according to any of claims 1 to 5, wherein said targeting moiety is an antibody against an antigen present on the surface of a target cell or an antigen-binding fragment of such an antibody.

7. The molecule according to any of claims 1 to 6, wherein said targeting moiety specifically is capable of binding to a tumor antigen.

8. The molecule according to any of claims 1 to 7, wherein said therapeutic agent is a cytotoxic agent, anti-inflammatory agent, immunostimulatory agent or immunosuppressive agent.

9. The molecule according to any of claims 1 to 8, wherein said linker/each of said linkers has a molecular weight of up to 1,500 Da.

10. A method for increasing the solubility of a chemical compound, said chemical compound comprising

(i) a targeting moiety,

(ii) at least one payload wherein said at least one payload is a therapeutic agent or a detectable label, and

(iii) a linker/linkers covalently linking said payload/payloads and said targeting moiety,

wherein said method comprises the preparation of a molecule in which said chemical compound is covalently linked to at least one

solubility tag, wherein said solubility tag comprises an chito-oligosaccharide having at least 3 and up to 12 monosaccharide units.

11. A pharmaceutical composition comprising the molecule of any of claims 1 to 9, wherein said pharmaceutical composition further comprises a pharmaceutically acceptable carrier, diluent and/or excipient.

12. A molecule according to any of claims 1 to 9 or a pharmaceutical composition according to claim 11 for use as a medicament.

13. A compound for use in the preparation of a molecule according to any of claims 1 to 9, wherein said compound comprises a solubility tag as defined in any of claims 1 to 4 linked to an activator group selected from the group consisting of a maleimide, halogen-acetamide, Michael acceptor, or a group suitable for cycloaddition selected from a ketone, hydrazone, semicarbazone, carboxylic acid, alkene or alkyne.

14. The molecule according to any of claims 1 to 9, wherein said molecule comprises an antibody-drug conjugate.

15. The molecule according to any of claims 1 to 9, wherein said molecule comprises a peptide-drug conjugate.

~~16. A molecule comprising~~

~~(i) a targeting moiety~~

~~(ii) at least one payload wherein said at least one payload is a therapeutic agent or a detectable label,~~

~~(iii) a linker/linkers covalently linking said payload/payloads and said targeting moiety, and~~

~~(iv) at least one solubility tag,~~

~~wherein said solubility tag comprises at least 3 and up to 12 monosaccharide units.~~

17. The molecule according to claim 16, wherein said solubility tag is/said solubility tags are linked by a covalent bond to said at least one payload and/or to said linker(s).

18. The molecule according to any of claims 16 or 17, wherein said monosaccharide units are independently selected from the group consisting of aldoses, ketoses and chemically modified forms of said aldoses or ketoses.

19. The molecule according to any of claims 16 to 18, wherein said monosaccharide units are individually selected from the group consisting of tetroses, pentoses, hexoses, and chemically modified forms of tetroses, pentoses and hexoses,

wherein said tetroses are individually selected from the group consisting of erythrose and threose,

said pentoses are individually selected from the group consisting of ribose, arabinose, xylose and lyxose, and

said hexoses are individually selected from the group consisting of allose, altrose, glucose, mannose, gulose, idose, galactose and talose.

20. The molecule according to any of claims 16 to 19, wherein said targeting moiety is selected from the group consisting of a protein, a peptide, a peptide mimetic, a nucleic acid, an oligonucleotide and a small molecule.

21. The molecule according to any of claims 16 to 20, wherein said targeting moiety is an antibody against an antigen present on the surface of a target cell or an antigen-binding fragment of such an antibody.

22. The molecule according to any of claims 16 to 21, wherein said targeting moiety specifically is capable of binding to a tumor antigen.

23. The molecule according to any of claims 16 to 22, wherein said therapeutic agent is a cytotoxic agent, anti-inflammatory agent, immunostimulatory agent or immunosuppressive agent.

24. The molecule according to any of claims 16 to 23, wherein said linker/each of said linkers has a molecular weight of up to 1,500 Da.

25. A method for increasing the solubility of a chemical compound, said chemical compound comprising

(i) a targeting moiety,

(ii) at least one payload wherein said at least one payload is a therapeutic agent or a detectable label, and

(iii) a linker/linkers covalently linking said payload/payloads and said targeting moiety,

wherein said monosaccharide units are individually selected from the group consisting of tetroses, pentoses, hexoses, and chemically modified forms of tetroses, pentoses and hexoses,

wherein said tetroses are individually selected from the group consisting of erythrose and threose,

said pentoses are individually selected from the group consisting of ribose, arabinose, xylose and lyxose, and

said hexoses are individually selected from the group consisting of allose, altrose, glucose, mannose, gulose, idose, galactose and talose;

wherein said method comprises the preparation of a molecule in which said chemical compound is covalently linked to at least one solubility tag, wherein said solubility tag comprises at least 3 and up to 12 monosaccharide units.

26. A pharmaceutical composition comprising the molecule of any of claims 16 to 24, wherein said pharmaceutical composition further comprises a pharmaceutically acceptable carrier, diluent and/or excipient.

~~27. A molecule according to any of claims 16 to 24 or a pharmaceutical composition according to claim 26 for use as a medicament.~~

~~28. A compound for use in the preparation of a molecule according to any of claims 16 to 24, wherein said compound comprises a solubility tag as defined in any of claims 16 to 19 linked to an activator group.~~

~~29. The molecule according to any of claims 16 to 24, wherein said molecule comprises an antibody-drug conjugate.~~

~~30. The molecule according to any of claims 16 to 24, wherein said molecule comprises a peptide-drug conjugate.~~