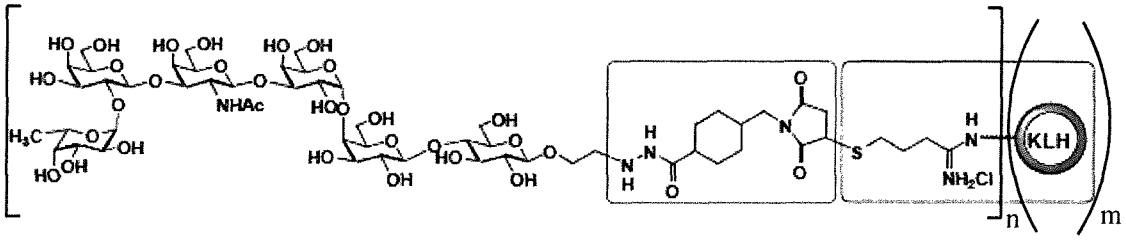
CLAIMS

1. A compound comprising the structure:



wherein

n independently is an integer from 1 to 1500,

KLH in the compound are monomer, dimer, trimer, tetramer, pentamer, hexamer, heptamer, octamer, nonamer, decamer or combinations thereof, and

wherein for said compound, each of Globo H moieties as shown in the structure is covalently bound via a linker to a basic amino acid residue on a KLH moiety, and wherein the compound has an epitope ratio ranging from 750 to 3000 and the epitope ratio is defined as (actual Globo H moiety weight/Globo H moiety molecular weight)/(actual KLH moiety weight/KLH moiety molecular weight).

2. The compound of claim 1, wherein the KLH is a monomer and n is from 1 to 150.

3. The compound of claim 1, wherein the KLH is a dimer and n is from 1 to 300.

4. The compound of claim 1, wherein the KLH is a trimer and n is from 1 to 450.

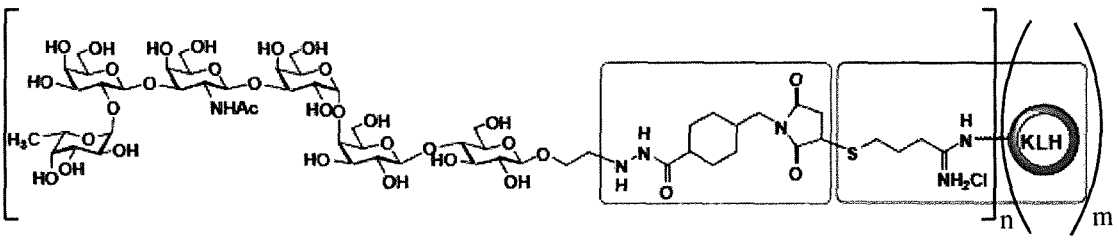
5. The compound of claim 1, wherein the KLH is a tetramer and n is from 1 to 600.

6. The compound of claim 1, wherein the KLH is a pentamer and n is from 1 to 750.

7. The compound of claim 1, wherein n is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, or 150.

8. A therapeutic composition comprising a plurality of Globo H moieties covalently linked to keyhole limpet hemocyanin (KLH) moieties in a form of the KLH in the compound are monomer, dimer, trimer, tetramer, pentamer or combinations thereof, wherein the number of Globo H moieties is from 1 to 750, and wherein the composition has an epitope ratio ranging from 750 to 1500 and the epitope ratio is defined as (actual Globo H moiety weight/Globo H moiety molecular weight)/(actual KLH moiety weight/KLH moiety molecular weight).

9. A pharmaceutical composition comprising: a compound comprising the structure:



wherein n independently is an integer from 1 to 1500, wherein the KLH in the compound are monomer, dimer, trimer, tetramer, pentamer, hexamer, heptamer, octamer, nonamer, decamer or

combinations thereof, wherein the compound has an epitope ratio ranging from 750 to 3000 and the epitope ratio is defined as (actual Globo H moiety weight/Globo H moiety molecular weight)/(actual KLH moiety weight/KLH moiety molecular weight), and optionally a pharmaceutically acceptable carrier.

10. The pharmaceutical composition of claim 9, wherein the KLH is a monomer and n is from 1 to 150.

11. The pharmaceutical composition of claim 9, the KLH is a dimer and n is from 1 to 300.

12. The pharmaceutical composition of claim 9, the KLH is a trimer and n is from 1 to 450.

13. The pharmaceutical composition of claim 9, the KLH is a tetramer and n is from 1 to 600.

14. The pharmaceutical composition of claim 9, the KLH is a pentamer and n is from 1 to 750.

15. A pharmaceutical composition comprising a therapeutic conjugate comprising a plurality of Globo H moieties covalently linked to one to five keyhole limpet hemocyanin (KLH) moiety subunits, wherein the conjugate has an epitope ratio ranging from 750 to 1500 and the epitope ratio is defined as (actual Globo H moiety weight/Globo H moiety molecular weight)/(actual KLH moiety weight/KLH moiety molecular weight).

16. A pharmaceutical composition comprising a plurality of Globo H moieties covalently linked to one or more KLH moiety subunit, wherein 1% to 99% of the KLH moieties in the composition are monomer, dimer, trimer, tetramer, pentamer, hexamer, heptamer, octamer, nonamer, decamer or combinations thereof, and wherein the pharmaceutical composition has an epitope ratio ranging from 25 to 150.

17. The pharmaceutical composition of claim 16 further comprising an adjuvant, wherein the adjuvant is complete and incomplete Freund's adjuvant, Toll-Like Receptor molecules, LPS, lipoproteins, lipopeptides, flagellin, double-stranded RNA, viral DNA, unmethylated CpG islands, levamisole, bacillus Calmette-Guerin, Isoprinosine, Zadaxin, PD-1 antagonists, PD-1 antibodies, CTLA antagonists, CTLA antibodies, interleukin, cytokines, GM-CSF, glycolipid, aluminum salt based, aluminum phosphate, alum, aluminum hydroxide, liposomes, TLR2 agonists, lipopeptide, nanoparticles, monophosphoryl lipid A, an OPT-821 saponin, oil in water nano-emulsions, and bacteria-like particle.

18. The pharmaceutical composition of claim 16 further comprising a cytokine selected from the group consisting of IL-2, IL-12, IL-18, IL-2, IFN-γ, TNF, IL-4, IL-10, IL-13, IL-21, GM-CSF and TGF-β.

19. The pharmaceutical composition of claim 16 further comprising a chemokine.

20. The pharmaceutical composition of claim 16 further comprising an agent selected from the group consisting of hormonal therapeutic agents comprising selective estrogen receptor modulators or androgen receptor modulators, monoclonal antibody therapy, chemotherapy, retinoid receptor modulators, cytotoxic/cytostatic agents, antineoplastic agents, antiproliferative agents, prenyl-protein transferase inhibitors, HMG-CoA reductase inhibitors, nitrogen mustards, nitroso ureas, angiogenesis inhibitors comprising bevacizumab, inhibitors of cell proliferation and survival signaling pathway, apoptosis inducing agents, agents that interfere with cell cycle checkpoints, agents that interfere with receptor tyrosine kinases (RTKs), mammalian target of rapamycin (mTOR) inhibitors, human epidermal growth factor receptor 2 (HER2) inhibitors, epidermal

growth factor receptor (EGFR) inhibitors, integrin blockers, NSAIDs, PPAR agonists, inhibitors of inherent multidrug resistance (MDR), anti-emetic agents, agents useful in the treatment of anemia, agents useful in the treatment of neutropenia, immunologic-enhancing drugs, biphosphonates, aromatase inhibitors, agents inducing terminal differentiation of neoplastic cells, γ-secretase inhibitors, cancer vaccines, PD-1/PD-L1 inhibitors, CTLA-4 immunotherapy, CDK4/6 inhibitors, PI3K inhibitors, mTOR inhibitors, AKT inhibitors, Pan-Her inhibitors, and any combination thereof.

21. The pharmaceutical composition of claim 16, further comprising a pharmaceutically acceptable carrier.

22. The pharmaceutical composition of claim 16, wherein the pharmaceutical composition is a cancer vaccine.

23. The pharmaceutical composition of claim 16 formulated for subcutaneous injection, intravenous administration or intra-muscular administration.

24. Use of the compound according to any one of claims 1 to 7, the therapeutic composition according to claim 8 or the pharmaceutical composition according to any one of claims 9 to 23 in the preparation of a medicament for treating Globo H expressing cancer in a patient.

25. Use of the pharmaceutical composition according to claim 16 in the preparation of a medicament for treating Globo H expressing cancer.

26. The use of claim 24 or claim 25, wherein the cancer is an epithelial cancer.

27. The use of claim 24 or claim 25, wherein the cancer is selected from breast cancer, lung cancer, liver cancer, buccal cancer, stomach cancer, colon cancer, nasopharyngeal cancer,

dermal cancer, renal cancer, brain tumor, prostate cancer, ovarian cancer, cervical cancer, endometrial cancer, intestinal cancer, pancreatic cancer and bladder cancer.

28. The use of claim 24 or claim 25, wherein the cancer is breast cancer.

29. The use of claim 24 or claim 25, wherein therapeutically effective amount of Globo-H moiety in the medicament comprises from 0.01 μg/kg to 250 mg/kg.

30. The use of claim 24 or claim 25, wherein therapeutically effective amount of Globo-H moiety in the medicament comprises from 0.10 μg/kg to 0.75 μg/kg.

31. The use of claim 24 or claim 25, wherein therapeutically effective amount of Globo-H-KLH complex in the medicament comprises from 0.01 μg/kg to 250 mg/kg.

32. The use of claim 24 or claim 25, wherein therapeutically effective amount of Globo-H-KLH complex in the medicament comprises from 0.60 μg/kg to 4.50 μg/kg.

33. Use of the compound according to any one of claims 1 to 7, the therapeutic composition according to claim 8 or the pharmaceutical composition according to any one of claims 9 to 23 in the manufacturing of a preparation for inducing protective immune response in an animal or a human.