Claims

1. A composition comprising:

   (a) a plurality of Globo H moieties covalently linked to one to twenty (n=1 to 20) keyhole limpet hemocyanin (KLH) moiety subunit(s), wherein the Globo H moieties are covalently bound to the KLH moiety subunit(s) on one or more amino acid residues; and

   (b) an α-galactosyl-ceramide (α-GalCer) adjuvant,

wherein the composition has an epitope ratio ranging from 750 to 3000.

2. The composition of claim 1, wherein the amino acid residues are basic, neutral, hydrophobic amino acid residues and/or a combination thereof.

3. The composition of claim 1, wherein the amino acid residues are lysine, arginine, histidine, asparagine, proline, glutamine and/or a combination thereof.

4. The composition of claim 1, wherein the KLH moiety subunit(s) is a monomer (n=1).

5. The composition of claim 1, wherein the KLH moiety subunit(s) is a dimer (n=2).

6. The composition of claim 1, wherein the KLH moiety subunit(s) is a trimer (n=3).

7. The composition of claim 1, wherein the KLH moiety subunit(s) is a tetramer (n=4).

8. The composition of claim 1, wherein the KLH moiety subunit(s) is a pentamer (n=5).

9. The composition of claim 1, wherein the KLH moiety subunit(s) is a hexamer (n=6).

10. The composition of claim 1, wherein the KLH moiety subunit(s) is a heptamer (n=7).

11. The composition of claim 1, wherein the KLH moiety subunit(s) is an octamer (n=8).

12. The composition of claim 1, wherein the KLH moiety subunit(s) is a nonamer (n=9).

13. The composition of claim 1, wherein the KLH moiety subunit(s) is a decamer (n=10).

14. The composition of claim 1, wherein the KLH moiety subunit(s) is an undecamer (n=11).

15. The composition of claim 1, wherein the KLH moiety subunit(s) is a dodecamer (n=12).

16. The composition of claim 1, wherein the KLH moiety subunit(s) is a tridecamer (n=13).

17. The composition of claim 1, wherein the KLH moiety subunit(s) is a tetradecamer (n=14).

18. The composition of claim 1, wherein the KLH moiety subunit(s) is a pentadecamer (n=15).

19. The composition of claim 1, wherein the KLH moiety subunit(s) is a hexadecamer (n=16).

20. The composition of claim 1, wherein the KLH moiety subunit(s) is a heptadecamer (n=17).

21. The composition of claim 1, wherein the KLH moiety subunit(s) is an octadecamer (n=18).

22. The composition of claim 1, wherein the KLH moiety subunit(s) is a nonadecamer (n=19).

23. The composition of claim 1, wherein the KLH moiety subunit(s) is a didecamer (n=20).

24. The composition of claims 1, wherein the KLH moiety subunit(s) are the same.

25. The composition of claims 1, wherein the KLH moiety subunit(s) are different.

26. The composition of claim 1, wherein each KLH moiety subunit has the same number of Globo H moieties.

27. The composition of claim 1, wherein each KLH moiety subunit has a different number of Globo H moieties.

28. The composition of claim 1, wherein the Globo H moiety comprises (Fucα1→2 Galβ1→3 GalNAcβ1→3 Galα1→4 Galβ1→4 Glc).

29. The composition of claim 1, wherein the KLH moiety subunit is of SEQ ID NO. 1.

30. The composition of claim 1, wherein the KLH moiety subunit is at least 95% identical to a corresponding KLH moiety of SEQ ID NO. 1.

31. The composition of claim 1, wherein the KLH moiety subunit is at least 90% identical to a corresponding KLH moiety of SEQ ID NO. 1.

32. The composition of claim 1, wherein the KLH moiety subunit is at least 80% identical to a corresponding KLH moiety of SEQ ID NO. 1.

33. The composition of claim 1, wherein the KLH moiety subunit is of SEQ ID NO. 2.

34. The composition of claim 1, wherein the KLH moiety subunit is at least 95% identical to a corresponding KLH moiety of SEQ ID NO. 2.

35. The composition of claim 1, wherein the KLH moiety subunit is at least 90% identical to a corresponding KLH moiety of SEQ ID NO. 2.

36. The composition of claim 1, wherein the KLH moiety subunit is at least 80% identical to a corresponding KLH moiety of SEQ ID NO. 2.

37. The composition of claim 1, wherein the Globo H moiety covalently linked to a keyhole limpet hemocyanin (KLH) moiety subunit is linked by a 4-(4-N- maleimidomethyl) cyclohexane-1-carboxyl hydrazide (MMCCH) linkage.

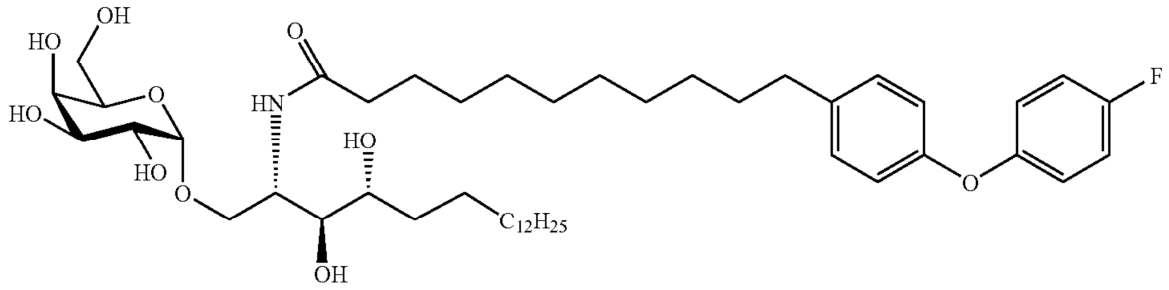
38. Use of the composition of claim 1 in the manufacture of a medicament for the treatment of a Globo H expressing cancer.

39. The use of claim 46, wherein the Globo H expressing cancer is breast cancer, lung cancer, stomach cancer, colon cancer, pancreatic cancer, prostate cancer, ovarian cancer, epithelial cancer, endometrial cancer, liver cancer, buccal cancer, nasopharyngeal cancer, dermal cancer, renal cancer, brain tumor, cervical cancer, intestinal cancer or bladder cancer.

40. Use of the composition of claim 1 in the manufacture of a medicament as an antigen for inducing antibodies in a subject comprising administering to the subject an effective amount of the composition of claim 1.

41. The use of claim 49, wherein the subject is an animal or human.

42. The composition of claim 1, wherein the a-GalCer adjuvant has the following structure:



43. The composition of claim 1, wherein the KLH moiety subunit(s) can form a monomer, dimer, trimer, tetramer, pentamer, hexamer, hexamer, heptamer, octamer, nonamer, decamer, undecamer, dodecamer, tridecamer, tetradecamer, pentadecamer, hexadecamer, heptadecamer, octadecamer, nonadecamer or didecamer.