CLAIMS

1. A Globo H-KLH (Keyhole limpet hemocyanin) glycoconjugate vaccine for use in the treatment of a tumor in a patient, wherein the Globo H-KLH glycoconjugate vaccine is for administration to the patient in a pharmaceutically effective amount.

2. The Globo H-KLH glycoconjugate vaccine of Claim 1, wherein the Globo H-KLH glycoconjugate vaccine is OBI-822.

3. The Globo H-KLH glycoconjugate vaccine of Claim 1, wherein the Globo H-KLH glycoconjugate vaccine is administered as a pharmaceutical composition.

4. The Globo H-KLH glycoconjugate vaccine of Claim 3, wherein the pharmaceutical composition further comprises an adjuvant.

5. The Globo H-KLH glycoconjugate vaccine of Claim 4, wherein the adjuvant is OBI-821.

6. The Globo H-KLH glycoconjugate vaccine of Claim 3, wherein the pharmaceutical composition comprises OBI-822 vaccine and OBI-821 adjuvant.

7. A Globo H-KLH glycoconjugate vaccine for use according to Claim 1, wherein the vaccine comprises OBI-822and a pharmaceutically acceptable excipient, optionally wherein the pharmaceutically effective dose of OBI-822 is less than 100 μg.

8. A Globo H-KLH glycoconjugate vaccine for use according to any preceding claim, wherein the vaccine induces an immunogenic production of monoclonal antibody directed to Globo H antigen, optionally wherein the antibody produced is an IgG, an IgM, or both.

9. A Globo H-KLH glycoconjugate vaccine for use according to any preceding claim, wherein the tumor is metastatic or nonmetastatic, optionally wherein the tumor is selecting from breast cancer, lung cancer, liver cancer, gastric cancer, colon cancer, ovarian cancer, or pancreatic cancer.

10. A Globo H-KLH glycoconjugate vaccine for use according to any preceding claim, wherein the vaccine is for administration to the patient in combination with one or more anti-proliferative agents, optionally wherein the antiproliferative agent is selected from cyclophosphamide, opiate, granulocyte colony-stimulating factor (GCSF), estrogen inhibitors, aromatase inhibitors, pituitary downregulators, tamoxifen selective estrogen-receptor modulator, rolaxifene, estrogen receptor

down-regulator, anticoagulant, enzyme, hematopoietic growth factor, anti-neoplastic agent, antimetabolites, miscellaneous cytotoxic agents, vinca alkaloid, epipodophyllotoxins, alkylating agents, taxanes, antitumor antibiotics, camptothecins, nitrosoureas, HERI/EGFR tyrosine kinase inhibitor, VEGF protein inhibitor, HER-2/ErbB2 inhibitor, interferon, interleukin, monoclonal antibody, glucocorticoid steroid, erlotinib, docetaxel, gemcitabine, cisplatin; carboplatin; paclitaxel, trastuzumab, temozolomide, tamoxifen, doxorubicin, oxaliplatin, bortezomib, sutent, letrozole, imatinib mesylate, MEK inhibitor, fulvestrant, leucovorin (folinic acid); rapamycin, lapatinib, lonafanib, sorafenib, gefitinib, irinotecan, tipifanib, Cremophor-free, paclitaxel, vandetanib, chloranmbucil, temsirolimus, pazopanib, canfosfamide, thiotepa, cyclosphosphamide, 5-fluorouracil (5-FU), vinorelbine, novantrone, teniposide, edatrexate, daunomycin, aminopterin, capecitabine, ibandronate, topoisomerase inhibitor RFS 2000, difluoromethylomithine (DMFO), tamoxifen, raloxifene, droloxifene, 4-hydroxytamoxifen, trioxifene, keoxifene, onapristone, toremifine citrate, 4(5)-imidazo les, aminoglutethimide, megestrol acetate, exemestane, formestanie, fadrozole, vorozole, letrozole, anastrozole, flutamide, nilutamide, bicalutamide, leuprolide, goserelin, troxacitabine (a-1,3- dioxolane nucleoside cytosine analog), lipid kinase inhibitor, oblimersen, angiozyme, allovectin, leuvectin, vaxid, aldesleukin, lurtotecan, abarelix, bevacizumab, alemtuzumab, bevacizumab, cetuximab, panitumumab, rituximab, pertuzumab, trastuzumab, tositumomab, gemtuzumab or ozogamicin.

11. A Globo H-KLH glycoconjugate vaccine for use according to any preceding claim, for administration by intramuscular injection, subcutaneous injection, intravenous injection, intraperitoneal injection, intra-arterial injection, intrasynovial injection, intrathecal injection, epidural injection or intra-pleural injection, optionally wherein the vaccine is for administration intermittently at a time interval of about one week to about 41 weeks.

12. A Globo H-KLH glycoconjugate vaccine for use according to claim 1 in the treatment of a patient afflicted with cancer by immunotherapy, and for use in improving survival of the subject by modulating Globo series antigens interaction, wherein the survival comprises overall survival and/or progression free survival.

13. A Globo H-KLH glycoconjugate vaccine for use according to claim 12, wherein the modulation of Globo series antigens interaction further comprises one or more of the following:

(a) Induction of Antibody-Dependent Cellular Cytotoxicity (ADCC) and Complement-Dependent Cytotoxicity (CDC) for Tumor Killing;

(b) Induction of anti-Globo series antigens IgM/IgG immune response to elicit Antibody-Dependent Cellular Cytotoxicity (ADCC) and Complement-Dependent Cytotoxicity (CDC) mediated tumor cell killing;

(c) Induction of anti-Globo series antigens antibodies trap Globo series antigens-ceramide shedding from tumor cells to block translin-associated factor X (TRAX)-dependent angiogenesis;

(d) Induction of anti-Globo series antigens antibodies to block Globo series antigens-ceramide induced Notch I-dependent immunosuppression and thereby enhancing T cell

proliferation and cytokine production;

(e) Induction of anti-Globo series antigens antibodies to lead to apoptosis;

(f) Inhibition of Globo series antigens induced angiogenesis; or

(g) OBI-822 vaccination induced apoptosis.

14. A pharmaceutically acceptable excipient comprising OBI-822 for use in improving OBI-822 vaccine induced immune-responsiveness in a subject in need thereof, wherein the pharmaceutically acceptable excipient comprising OBI-822 is for administration to the subject in an immunogenic effective amount, and wherein the pharmaceutically acceptable excipient comprising OBI-822 is for administration according to one or more of the following:

(a) administration two or more times (e.g., 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or more times);

(b) administration at an adjustable time interval and/or dosing amount regimen between two successive administrations;

(c) administration by adjustable routes of administration and/or for administration at adjustable injection locations; or

(d) any combination of the above;

thereby each administration increases antibody immune response and/or increases antigen-antibody binding affinity.

15. A Globo H-KLH glycoconjugate vaccine for use according to any preceding claim, wherein the Globo series antigens is Globo H, Stage-specific embryonic antigen-4 or Stage-specific embryonic antigen-3.