CLAIMS:

1. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use in the treatment of a tumor in a patient, wherein the Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine is for administration to the patient in a pharmaceutically effective amount.

2. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claim 1, wherein the Globo series antigens vaccine comprises Globo series antigens conjugated with a carrier protein.

3. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claim 2, wherein the Globo series antigens comprises Globo H, Stage- specific embryonic antigen 3 (SSEA3) or Stage-specific embryonic antigen 4 (SSEA4).

4. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claims 2 or 3, wherein the carrier protein comprises KLH (Keyhole limpet hemocyanin), DT-CRM 197 (diphtheria toxin cross-reacting material 197), diphtheria toxoid or tetanus toxoid.

5. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to any of claims 1-4, wherein the Globo series antigens vaccine comprises Globo H-KLH and an adjuvant.

6. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claim 5, wherein the adjuvant is selected from OBI-821, saponin, Freund's adjuvant or α-galactosyl-ceramide (α-GalCer) adjuvant.

7. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claim 1, wherein the Globo series antigens vaccine comprises OBI-822/OBI-821 and a pharmaceutically acceptable excipient, optionally wherein the pharmaceutically effective dose is less than 100 μg.

8. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to any preceding claim, wherein the immunological-reactions generated by said treatment are characterized by the immune response induced by the Globo series antigens vaccine, the Globo series antigen and/or the carrier protein.

9. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to any preceding claim, wherein the Globo series antigens vaccine or cross-reacting with Globo series antigens vaccine induce an immunogenic production of monoclonal antibody directed to Globo series antigens, optionally wherein the antibody produced is an IgG, an IgM, or both.

10. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to any preceding claim, wherein the tumor is metastatic or non-metastatic, optionally wherein the tumor is selecting from breast cancer, lung cancer, esophageal cancer, rectal cancer, biliary cancer, liver cancer, buccal cancer, gastric cancer, intestinal cancer, colon cancer, nasopharyngeal cancer, kidney cancer, prostate cancer, ovarian cancer, cervical cancer, endometrial cancer, pancreatic cancer, testicular cancer, bladder cancer, head and neck cancer, oral cancer, neuroendocrine cancer, adrenal cancer, thyroid cancer, bone cancer, gallbladder cancer, oropharyngeal cancer, laryngeal cancer, dermal cancer, basal cell carcinoma, squamous cell carcinoma, melanoma, or brain tumor.

11. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to any preceding claim, wherein the Globo series antigens vaccine or cross-reacting with Globo series antigens vaccine is for administration to the patient in combination with one or more anti-proliferative agents, optionally wherein the anti-proliferative 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, HER1/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, lonafarnib, sorafenib, gefitinib, irinotecan, tipifarnib, 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,

difluoromethylornithine (DMFO), tamoxifen, raloxifene, droloxifene, 4-hydroxytamoxifen, trioxifene, keoxifene, onapristone, toremifine citrate, 4(5)-imidazoles, aminoglutethimide, megestrol acetate,exemestane, formestanie, fadrozole, vorozole, letrozole, anastrozole, flutamide, nilutamide, bicalutamide, leuprolide, goserelin, troxacitabine (α-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.

12. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens 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 one week to five years or more, optionally wherein the vaccine is for administration once every one week, once every two weeks, once every three weeks, once every four weeks, once every five weeks, once every six weeks, once every seven weeks, once every eight weeks, once every nine weeks, once every ten weeks, once every eleven weeks or once every twelve weeks.

13. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claim 1 in the treatment of a subject 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.

14. A Globo series antigens vaccine and/or cross-reacting with Globo series antigens vaccine for use according to claim 13, 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 1-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 induces apoptosis.

15. 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.