SUMMARY

[0003] Disclosed are therapeutic methods of treating a cancer patient, the methods comprising administering to the patient a therapeutically effective amount of TG02. In one embodiment, the patient's cancer is characterized as overexpressing of MYC, MCL1, or both.

[0004] Disclosed are therapeutic methods of treating a cancer patient, the methods comprising administering to the patient therapeutically effective amounts of TG02 and an immune checkpoint inhibitor, e.g., a PD-1 inhibitor, a PD-L1 inhibitor, a CTLA-4 inhibitor, a LAG3 inhibitor, a TIM3 inhibitor, or a cd47 inhibitor.

[0005] Disclosed are therapeutic methods of treating a cancer patient, the methods comprising administering to the patient therapeutically effective amounts of TG02 and a COX inhibitor, e.g., apricoxib or 6-bromo-8-(methyl-D3)-2-(trifluoromethyl)-2H-chromene-3-carboxylic acid.

[0006] Disclosed are therapeutic methods of treating a cancer patient, the methods comprising administering to the patient therapeutically effective amounts of TG02, an immune checkpoint inhibitor, and a COX-2 inhibitor.

[0007] Disclosed are therapeutic methods of treating a cancer patient who has tumors that overexpress MYC, MCL1, or both.

[0007a] In one aspect, the present disclosure refers to use of TG02 or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for treating a cancer with overexpressed MYC and/or MCL1 in a patient relapsing from or refractory to standard anti-PD-1 or anti-PD-L1 therapy, wherein therapeutically effective amounts of TG02 or pharmaceutically acceptable salt thereof are to be administered to the patient with an immune checkpoint inhibitor, wherein the immune checkpoint inhibitor is an anti-PD-1 antibody selected from the group consisting of nivolumab, pembrolizumab, pidilizumab, and STI-1110, or an anti-PD-L1 antibody selected from the group consisting of avelumab, atezolizumab, durvalumab and STI-1014.

[0008] Disclosed are kits comprising TG02, TG02 and an immune checkpoint inhibitor, TG02 and a COX-2 inhibitor, and TG02 and an immune checkpoint inhibitor and a COX-2 inhibitor.

[0009] Disclosed is a pharmaceutical composition comprising TG02, a COX-2 inhibitor, e.g., apricoxib or 6-bromo-8-(methyl-D3)-2-(trifluoromethyl)-2H-chromene-3-carboxylic acid and a pharmaceutically acceptable excipient.

BRIEF DESCRIPTION OF DRAWINGS

[0010] Fig. 1 is a bar graph showing the *in vitro* activity of TG02, TMZ (temozolomide), and TG02 + TMZ in GSC923 cells.

WHAT IS CLAIMED IS:

1. Use of TG02 or a pharmaceutically acceptable salt thereof in the manufacture of a medicament for treating a cancer with overexpressed MYC and/or MCL1 in a patient relapsing from or refractory to standard anti-PD-1 or anti-PD-L1 therapy, wherein therapeutically effective amounts of TG02 or pharmaceutically acceptable salt thereof are to be administered to the patient with an immune checkpoint inhibitor, wherein the immune checkpoint inhibitor is an anti-PD-1 antibody selected from the group consisting of nivolumab, pembrolizumab, pidilizumab, and STI-1110, or an anti-PD-L1 antibody selected from the group consisting of avelumab, atezolizumab, durvalumab and STI-1014.

2. The use of claim 1, wherein the cancer is a solid tumor.

3. The use of claim 1 or 2, wherein the cancer is a hematological malignancy.

4. The use of any one of claims 1-3, wherein the cancer selected from the group consisting of adrenal cancer, acinic cell carcinoma, acoustic neuroma, acral lentigious melanoma, acrospiroma, acute eosinophilic leukemia, acute erythroid leukemia, acute lymphoblastic leukemia, acute megakaryoblastic leukemia, acute monocytic leukemia, acute promyelocytic leukemia, adenocarcinoma, adenoid cystic carcinoma, adenoma, adenomatoid odontogenic tumor, adenosquamous carcinoma, adipose tissue neoplasm, adrenocortical carcinoma, adult T-cell leukemia/lymphoma, aggressive NK-cell leukemia, AIDS-related lymphoma, alveolar rhabdomyosarcoma, alveolar soft part sarcoma, ameloblastic fibroma, anaplastic large cell lymphoma, anaplastic thyroid cancer, angioimmunoblastic T-cell lymphoma, angiomyolipoma, angiosarcoma, astrocytoma, atypical teratoid rhabdoid tumor, B-cell chronic lymphocytic leukemia, B-cell prolymphocytic leukemia, B-cell lymphoma, basal cell carcinoma, biliary tract cancer, bladder cancer, blastoma, bone cancer, Brenner tumor, Brown tumor, Burkitt's lymphoma, breast cancer, brain cancer, carcinoma, carcinoma in situ, carcinosarcoma, cartilage tumor, cementoma, myeloid sarcoma, chondroma, chordoma, choriocarcinoma, choroid plexus papilloma, clear-cell sarcoma of the kidney, craniopharyngioma, cutaneous T-cell lymphoma, cervical cancer, colorectal cancer, Degos disease, desmoplastic small round cell tumor, diffuse

large B-cell lymphoma, dysembryoplastic neuroepithelial tumor, dysgerminoma, embryonal carcinoma, endocrine gland neoplasm, endodermal sinus tumor, enteropathy-associated T-cell lymphoma, esophageal cancer, fetus in fetu, fibroma, fibrosarcoma, follicular lymphoma, follicular thyroid cancer, ganglioneuroma, gastrointestinal cancer, germ cell tumor, gestational choriocarcinoma, giant cell fibroblastoma, giant cell tumor of the bone, glial tumor, glioblastoma, glioma, gliomatosis cerebri, glucagonoma, gonadoblastoma, granulosa cell tumor, gynandroblastoma, gallbladder cancer, gastric cancer, hairy cell leukemia, hemangioblastoma, head and neck cancer, hemangiopericytoma, hematological malignancy, hepatoblastoma, hepatocellular carcinoma, hepatosplenic T-cell lymphoma, Hodgkin's lymphoma, non-Hodgkin's lymphoma, invasive lobular carcinoma, intestinal cancer, kidney cancer, laryngeal cancer, lentigo maligna, lethal midline carcinoma, leukemia, leydig cell tumor, liposarcoma, lung cancer, lymphangioma, lymphangiosarcoma, lymphoepithelioma, lymphoma, acute lymphocytic leukemia, acute myelogeous leukemia, chronic lymphocytic leukemia, liver cancer, small cell lung cancer, non-small cell lung cancer, MALT lymphoma, malignant fibrous histiocytoma, malignant peripheral nerve sheath tumor, malignant triton tumor, mantle cell lymphoma, marginal zone B-cell lymphoma, mast cell leukemia, mediastinal germ cell tumor, medullary carcinoma of the breast, medullary thyroid cancer, medulloblastoma, melanoma, meningioma, merkel cell cancer, mesothelioma, metastatic urothelial carcinoma, mixed Mullerian tumor, mucinous tumor, multiple myeloma, muscle tissue neoplasm, mycosis fungoides, myxoid liposarcoma, myxoma, myxosarcoma, nasopharyngeal carcinoma, neurinoma, neuroblastoma, neurofibroma, neuroma, nodular melanoma, ocular cancer, oligoastrocytoma, oligodendroglioma, oncocytoma, optic nerve sheath meningioma, optic nerve tumor, oral cancer, osteosarcoma, ovarian cancer, Pancoast tumor, papillary thyroid cancer, paraganglioma, pinealoblastoma, pineocytoma, pituicytoma, pituitary adenoma, pituitary tumor, plasmacytoma, polyembryoma, precursor T-lymphoblastic lymphoma, primary central nervous system lymphoma, primary effusion lymphoma, preimary peritoneal cancer, prostate cancer, pancreatic cancer, pharyngeal cancer, pseudomyxoma periotonei, renal cell carcinoma, renal medullary carcinoma, retinoblastoma, rhabdomyoma, rhabdomyosarcoma, Richter's transformation, rectal cancer, sarcoma, Schwannomatosis, seminoma, Sertoli cell tumor, sex cord-gonadal stromal tumor, signet ring cell carcinoma, skin cancer, small blue round cell tumors, small cell carcinoma, soft tissue sarcoma, somatostatinoma, soot wart, spinal tumor, splenic marginal zone lymphoma, squamous cell carcinoma, synovial sarcoma, Sezary's disease, small intestine cancer, squamous

carcinoma, stomach cancer, T-cell lymphoma, testicular cancer, thecoma, thyroid cancer, transitional cell carcinoma, throat cancer, urachal cancer, urogenital cancer, urothelial carcinoma, uveal melanoma, uterine cancer, verrucous carcinoma, visual pathway glioma, vulvar cancer, vaginal cancer, Waldenstrom's macroglobulinemia, Warthin's tumor, and Wilms' tumor.

5. The use of claim 4, wherein the cancer is selected from the group consisting of multiple myeloma, hepatocellular carcinoma, glioblastoma, lung cancer, breast cancer, head and neck cancer, prostate cancer, melanoma, and colorectal cancer.

6. The use of any one of claims 1-5, wherein the cancer has become resistant to conventional treatments.

7. The use of any one of claims 1-6, wherein MYC overexpression or MCL1 overexpression is differentially present in a biological sample taken from the patient as compared with a biological sample taken from a subject of another phenotypic status.

8. The use of any one of claims 1-7, wherein the pharmaceutically acceptable salt of TG02 is the citrate salt.