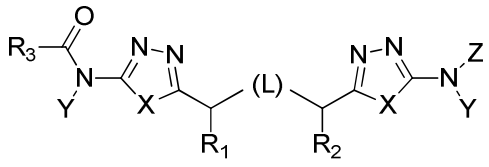
CLAIMS

1. Use of a glutaminase inhibitor in the manufacture of a medicament for the treatment or prevention of cancer, a myeloproliferative disease, an immunological disease, or a neurological disease, wherein the medicament is to be conjointly administered with an anticancer agent selected from an enzyme inhibitor, a mitotic inhibitor, a DNA-modifying agent, and a cytidine analog.

2. The use of claim 1, wherein the anticancer agent is selected from microtubule assembly inhibitors, AKT inhibitors, mTOR inhibitors, MEK inhibitors, RTK inhibitors, ATM inhibitors, ATR inhibitors, PI3K inhibitors, EGFR inhibitors, B-Raf inhibitors, C-kit inhibitors, DNA cross-linking agents, DNA intercalating agents, and cytidine analogs.

3. The use of claim 1 or claim 2, wherein the anticancer agent is selected from vincristine, carboplatin, cisplatin, gemcitabine, MK2206, everolimus, trametinib, sunitinib, sorafenib, BEZ235, paclitaxel, docetaxel, erlotinib, selumetinib, sirolimus, trametinib, temsirolimus, pazopanib, and GSK1120212.

4. The use of any one of the preceding claims, wherein the glutaminase inhibitor is a compound of formula I,



(I),

or a pharmaceutically acceptable salt thereof, wherein:

L represents CH_2SCH_2, CH_2CH_2, $CH_2CH_2CH_2$, CH_2, CH_2S, SCH_2, CH_2NHCH_2, CH=CH, or

, wherein any hydrogen atom of a CH or CH_2 unit may be replaced by alkyl or alkoxy, any hydrogen of an NH unit may be replaced by alkyl, and any hydrogen atom of a CH_2 unit of CH_2CH_2, $CH_2CH_2CH_2$ or CH_2 may be replaced by hydroxy;

X, independently for each occurrence, represents S, O or CH=CH, wherein any hydrogen atom of a CH unit may be replaced by alkyl;

Y, independently for each occurrence, represents H or $CH_2O(CO)R_7$;

R_7, independently for each occurrence, represents H or substituted or unsubstituted alkyl, alkoxy, aminoalkyl, alkylaminoalkyl, heterocyclylalkyl, or heterocyclylalkoxy;

Z represents H or $R_3(CO)$;

R_1 and R_2 each independently represent H, alkyl, alkoxy or hydroxy;

R_3, independently for each occurrence, represents substituted or unsubstituted alkyl, hydroxyalkyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, heteroaryloxyalkyl or $C(R_8)(R_9)(R_{10})$, $N(R_4)(R_5)$ or OR_6, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_4 and R_5 each independently represent H or substituted or unsubstituted alkyl, hydroxyalkyl, acyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_6, independently for each occurrence, represents substituted or unsubstituted alkyl, hydroxyalkyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$; and

R_8, R_9 and R_{10} each independently represent H or substituted or unsubstituted alkyl, hydroxy, hydroxyalkyl, amino, acylamino, aminoalkyl, acylaminoalkyl, alkoxycarbonyl, alkoxycarbonylamino, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, or R_8 and R_9 together with the carbon to which they are attached, form a carbocyclic or heterocyclic ring system, wherein any free hydroxyl group may be acylated to form $C(O)R_7$, and wherein at least two of R_8, R_9, and R_{10} are not H.

5. The use of claim 4, wherein L represents CH_2SCH_2, CH_2CH_2, CH_2S or SCH_2.

6. The use of claim 4, wherein L represents CH_2CH_2.

7. The use of any one of claims 4-6, wherein Y represents H.

8. The use of any one of claims 4-7, wherein X, independently for each occurrence, represents S or CH=CH, wherein any hydrogen atom of a CH unit may be replaced by alkyl.

9. The use of any one of claims 4-8, wherein Z represents $R_3(CO)$.

10. The use of any one of claims 4-9, wherein each occurrence of R_3 is not identical.

11. The use of any one of claims 4-10, wherein R_1 and R_2 each represent H.

12. The use of any one of claims 4-11, wherein R_3, independently for each occurrence, represents substituted or unsubstituted arylalkyl, heteroarylalkyl, cyclo-alkyl, or heterocycloalkyl.

13. The use of any one of claims 4-12, wherein R_3, independently for each occurrence, represents $C(R_8)(R_9)(R_{10})$, wherein R_8 represents substituted or unsubstituted aryl, arylalkyl, heteroaryl, or heteroaralkyl, R_9 represents H, and R_{10} represents hydroxy, hydroxyalkyl, alkoxy, or alkoxyalkyl.

14. The use of claim 4, wherein L represents CH_2SCH_2, CH_2CH_2, CH_2S or SCH_2, Y represents H, X represents S, Z represents $R_3(CO)$, R_1 and R_2 each represent H, and R_3, independently for each occurrence, represents substituted or unsubstituted arylalkyl, heteroarylalkyl, cycloalkyl, or heterocycloalkyl.

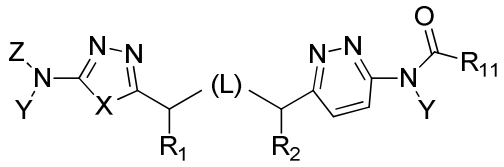
15. The use of claim 4, wherein L represents CH_2SCH_2, CH_2CH_2, CH_2S or SCH_2, Y represents H, X represents S, Z represents $R_3(CO)$, R_1 and R_2 each represent H, and R_3, independently for each occurrence, represents $C(R_8)(R_9)(R_{10})$, wherein R_8 represents substituted

or unsubstituted aryl, arylalkyl, heteroaryl, or heteroaralkyl, R_9 represents H, and R_{10} represents hydroxy, hydroxyalkyl, alkoxy, or alkoxyalkyl.

16. The use of any one of claims 4-15, wherein L represents CH_2CH_2, Y represents H, X, independently for each occurrence, represents S or CH=CH, Z represents $R_3(CO)$, R_1 and R_2 each represent H, and R_3, independently for each occurrence, represents arylalkyl, heteroarylalkyl, cycloalkyl, or heterocycloalkyl.

17. The use of any one of claims 4-16, wherein each occurrence of R_3 is identical.

18. The use of any one of claims 1-3, wherein the glutaminase inhibitor is a compound of formula Ia,



(Ia),

or a pharmaceutically acceptable salt thereof, wherein:

L represents CH_2SCH_2, CH_2CH_2, $CH_2CH_2CH_2$, CH_2, CH_2S, SCH_2, CH_2NHCH_2, CH=CH, or , preferably CH_2CH_2, wherein any hydrogen atom of a CH or CH_2 unit may be replaced by alkyl or alkoxy, any hydrogen of an NH unit may be replaced by alkyl, and any hydrogen atom of a CH_2 unit of CH_2CH_2, $CH_2CH_2CH_2$ or CH_2 may be replaced by hydroxy;

X represents S, O or CH=CH, preferably S or CH=CH, wherein any hydrogen atom of a CH unit may be replaced by alkyl;

Y, independently for each occurrence, represents H or $CH_2O(CO)R_7$;

R_7, independently for each occurrence, represents H or substituted or unsubstituted alkyl, alkoxy, aminoalkyl, alkylaminoalkyl, heterocyclylalkyl, arylalkyl, or heterocyclylalkoxy;

Z represents H or $R_3(CO)$;

R_1 and R_2 each independently represent H, alkyl, alkoxy or hydroxy, preferably H;

R_3 represents substituted or unsubstituted alkyl, hydroxyalkyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, heteroaryloxyalkyl or $C(R_8)(R_9)(R_{10})$, $N(R_4)(R_5)$ or OR_6, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_4 and R_5 each independently represent H or substituted or unsubstituted alkyl, hydroxyalkyl, acyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_6, independently for each occurrence, represents substituted or unsubstituted alkyl, hydroxyalkyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$; and

R_8, R_9 and R_{10} each independently represent H or substituted or unsubstituted alkyl, hydroxy, hydroxyalkyl, amino, acylamino, aminoalkyl, acylaminoalkyl, alkoxycarbonyl, alkoxycarbonylamino, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, or R_8 and R_9 together with the carbon to which they are attached, form a carbocyclic or heterocyclic ring system, wherein any free hydroxyl group may be acylated to form $C(O)R_7$, and wherein at least two of R_8, R_9 and R_{10} are not H;

R_{11} represents substituted or unsubstituted aryl, arylalkyl, aryloxy, aryloxyalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, or $C(R_{12})(R_{13})(R_{14})$, $N(R_4)(R_{14})$ or OR_{14}, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_{12} and R_{13} each independently respresent H or substituted or unsubstituted alkyl, hydroxy, hydroxyalkyl, amino, acylamino, aminoalkyl, acylaminoalkyl, alkoxycarbonyl, alkoxycarbonylamino, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl,

heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$, and wherein both of R_{12} and R_{13} are not H; and

R_{14} represents substituted or unsubstituted aryl, arylalkyl, aryloxy, aryloxyalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl.

19. The use of claim 18, wherein R_{11} represents substituted or un-substituted arylalkyl.

20. The use of claim 18 or claim 19, wherein R_{11} represents substituted or un-substituted benzyl.

21. The use of any one of claims 18-20, wherein L represents CH_2SCH_2, CH_2CH_2, CH_2S or SCH_2.

22. The use of any one of claims 18-21, wherein L represents CH_2CH_2.

23. The use of any one of claims 18-22, wherein each Y represents H.

24. The use of any one of claims 18-23, wherein X represents S or CH=CH.

25. The use of any one of claims 18-24, wherein X represents S.

26. The use of any one of claims 18-25, wherein Z represents $R_3(CO)$.

27. The use of any one of claims 18-26, wherein R_3 and R_{11} are not identical.

28. The use of any one of claims 18-27, wherein R_1 and R_2 each represent H.

29. The use of any one of claims 18-28, wherein R_3 represents substituted or unsubstituted arylalkyl, heteroarylalkyl, cycloalkyl or heterocycloalkyl.

30. The use of any one of claims 18-29, wherein R_3 represents substituted or unsubstituted heteroarylalkyl.

31. The use of any one of claims 18-30, wherein R_3 represents $C(R_8)(R_9)(R_{10})$, wherein R_8 represents substituted or unsubstituted aryl, arylalkyl, heteroaryl or heteroaralkyl, R_9 represents H, and R_{10} represents hydroxy, hydroxyalkyl, alkoxy or alkoxyalkyl.

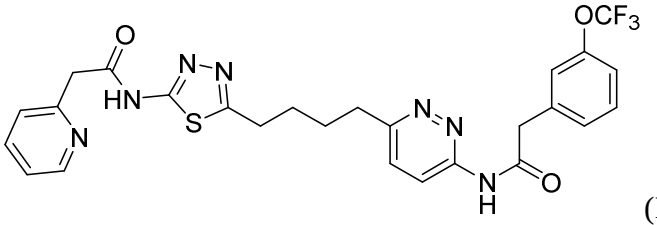
32. The use of claim 18, wherein L represents CH_2SCH_2, CH_2CH_2, CH_2S, or SCH_2, Y represents H, X represents S, Z represents $R_3(CO)$, R_1 and R_2 each represent H, R_3 represents substituted or unsubstituted arylalkyl, heteroarylalkyl, cycloalkyl or heterocycloalkyl, and R_{11} represents substituted or unsubstituted arylalkyl.

33. The use of any one of claims 18-32, wherein R_3 represents substituted or unsubstituted heteroarylalkyl.

34. The use of any one of claims 18-33, wherein L represents CH_2CH_2, Y represents H, X represents S or CH=CH, Z represents $R_3(CO)$, R_1 and R_2 each represent H, R_3 represents substituted or unsubstituted arylalkyl, heteroarylalkyl, cycloalkyl or heterocycloalkyl, and R_{11} represents substituted or unsubstituted arylalkyl.

35. The use of any one of claims 18-34, wherein R_3 represents substituted or unsubstituted heteroarylalkyl.

36. The use of any one of claims 18-35, wherein the glutaminase inhibitor is a compound having the structure of formula (II):



(II), or a pharmaceutically acceptable salt thereof.

37. The use of any one of the preceding claims, wherein the cancer is Acute Lymphoblastic Leukemia (ALL), Acute Myeloid Leukemia (AML), Adrenocortical Carcinoma, Anal Cancer,

Appendix Cancer, Atypical Teratoid/Rhabdoid Tumor, Basal Cell Carcinoma, Bile Duct Cancer, Bladder Cancer, Bone Cancer, Brain Tumor, Astrocytoma, Brain and Spinal Cord Tumors, Brain Stem Glioma, Central Nervous System Atypical Teratoid/Rhabdoid Tumor, Central Nervous System Embryonal Tumors, Breast Cancer, Bronchial Tumors, Burkitt Lymphoma, Carcinoid Tumor, Carcinoma of Unknown Primary, Central Nervous System Cancer, Cervical Cancer, Childhood Cancers, Chordoma, Chronic Lymphocytic Leukemia (CLL), Chronic Myelogenous Leukemia (CML), Chronic Myeloproliferative Disorders, Colon Cancer, Colorectal Cancer, Craniopharyngioma, Cutaneous T-Cell Lymphoma, Ductal Carcinoma In Situ (DCIS), Embryonal Tumors, Endometrial Cancer, Ependymoblastoma, Ependymoma, Esophageal Cancer, Esthesioneuroblastoma, Ewing Sarcoma, Extracranial Germ Cell Tumor, Extragonadal Germ Cell Tumor, Extrahepatic Bile Duct Cancer, Eye Cancer, Fibrous Histiocytoma of Bone, Gallbladder Cancer, Gastric Cancer, Gastrointestinal Carcinoid Tumor, Gastrointestinal Stromal Tumors (GIST), Germ Cell Tumor, Extracranial Germ Cell Tumor, Extragonadal Germ Cell Tumor, Ovarian Germ Cell Tumor, Gestational Trophoblastic Tumor, Glioma, Hairy Cell Leukemia, Head and Neck Cancer, Heart Cancer, Hepatocellular Cancer, Histiocytosis, Langerhans Cell Cancer, Hodgkin Lymphoma, Hypopharyngeal Cancer, Intraocular Melanoma, Islet Cell Tumors, Kaposi Sarcoma, Kidney Cancer, Langerhans Cell Histiocytosis, Laryngeal Cancer, Leukemia, Lip and Oral Cavity Cancer, Liver Cancer, Lobular Carcinoma In Situ (LCIS), Lung Cancer, Lymphoma, AIDS-Related Lymphoma, Macroglobulinemia, Male Breast Cancer, Medulloblastoma, Medulloepithelioma, Melanoma, Merkel Cell Carcinoma, Malignant Mesothelioma, Metastatic Squamous Neck Cancer with Occult Primary, Midline Tract Carcinoma Involving *NUT* Gene, Mouth Cancer, Multiple Endocrine Neoplasia Syndrome, Multiple Myeloma/Plasma Cell Neoplasm, Mycosis Fungoides, Myelodysplastic Syndrome, Myelodysplastic/Myeloproliferative Neoplasm, Chronic Myelogenous Leukemia (CML), Acute Myeloid Leukemia (AML), Myeloma, Multiple Myeloma, Chronic Myeloproliferative Disorder, Nasal Cavity Cancer, Paranasal Sinus Cancer, Nasopharyngeal Cancer, Neuroblastoma, Non-Hodgkin Lymphoma, Non-Small Cell Lung Cancer, Oral Cancer, Oral Cavity Cancer, Lip Cancer, Oropharyngeal Cancer, Osteosarcoma, Ovarian Cancer, Pancreatic Cancer, Papillomatosis, Paraganglioma, Paranasal Sinus Cancer, Nasal Cavity Cancer, Parathyroid Cancer, Penile Cancer, Pharyngeal Cancer, Pheochromocytoma, Pineal Parenchymal Tumors of

Intermediate Differentiation, Pineoblastoma, Pituitary Tumor, Plasma Cell Neoplasm, Pleuropulmonary Blastoma, Breast Cancer, Primary Central Nervous System (CNS) Lymphoma, Prostate Cancer, Rectal Cancer, Renal Cell Cancer, Renal Pelvis Cancer, Ureter Cancer, Transitional Cell Cancer, Retinoblastoma, Rhabdomyosarcoma, Salivary Gland Cancer, Sarcoma, Sézary Syndrome, Skin Cancer, Small Cell Lung Cancer, Small Intestine Cancer, Soft Tissue Sarcoma, Squamous Cell Carcinoma, Squamous Neck Cancer with Occult Primary, Stomach Cancer, Supratentorial Primitive Neuroectodermal Tumors, T-Cell Lymphoma, Testicular Cancer, Throat Cancer, Thymoma, Thymic Carcinoma, Thyroid Cancer, Transitional Cell Cancer of the Renal Pelvis and Ureter, Gestational Trophoblastic Tumor, Unknown Primary, Unusual Cancer of Childhood, Urethral Cancer, Uterine Cancer, Uterine Sarcoma, Waldenström Macroglobulinemia, or Wilms Tumor.

38. The use of any one of the preceding claims, wherein the cancer is selected from biliary cancer, breast cancer, colorectal cancer, leukemia, acute myeloid leukemia (AML), acute lymphoblastic leukemia (ALL), chronic lymphocytic leukemia (CLL), chronic myelogenous leukemia (CML), hairy cell leukemia, T-cell leukemia, brain malignancy, lymphoma, diffuse large B-cell lymphoma (DLBCL), follicular lymphoma, Hodgkin's lymphoma, MALT lymphoma, mantle cell lymphoma (MCL), no-Hodgkin lymphoma (NHL), endometrial cancer, head and neck cancers, Kaposi's sarcoma, lung cancer, melanoma, multiple myeloma (MM), myelodisplastic disease (MDS), ocular disease, ovarian cancer, pancreatic cancer, prostate cancer, renal cancer, thyroid cancer, tuberous sclerosis, and Waldenstrom macrogloulinemia (WM).

39. The use of claim 38, wherein the cancer is multiple myeloma.

40. The use of any one of claims 37-39, wherein the cancer is resistant to an anticancer agent selected from an enzyme inhibitor, a mitotic inhibitor, a DNA-modifying agent, and a cytidine analog.

41. The use of claim 40, wherein the anticancer agent is selected from microtubule assembly inhibitors, AKT inhibitors, mTOR inhibitors, MEK inhibitors, RTK inhibitors, ATM inhibitors,

ATR inhibitors, PI3K inhibitors, EGFR inhibitors, B-Raf inhibitors, C-kit inhibitors, DNA cross-linking agents, DNA intercalating agents, and cytidine analogs.

42. The use of claim 40, wherein the anticancer agent is selected from vincristine, carboplatin, cisplatin, gemcitabine, MK2206, everolimus, trametinib, sunitinib, sorafenib, BEZ235, paclitaxel, docetaxel, erlotinib, selumetinib, sirolimus, trametinib, temsirolimus, pazopanib, and GSK1120212.

43. The use of any one of claims 1-36, wherein the myeloproliferative disease is selected from chronic eosinophilic leukemia, chronic myelogenous leukemia (CML), chronic neutrophilic leukemia, essential thrombocythemia, polycythemia vera, and myelofibrosis.

44. The use of claim 43, wherein the myeloproliferative disease is resistant to an anticancer agent selected from an enzyme inhibitor, a DNA-modifying agent, and a cytidine analog.

45. The use of claim 44, wherein the anticancer agent is selected from microtubule assembly inhibitors, AKT inhibitors, mTOR inhibitors, MEK inhibitors, RTK inhibitors, ATM inhibitors, ATR inhibitors, PI3K inhibitors, EGFR inhibitors, B-Raf inhibitors, C-kit inhibitors, DNA cross-linking agents, DNA intercalating agents, and cytidine analogs.

46. The use of claim 44, wherein the anticancer agent is selected from vincristine, carboplatin, cisplatin, gemcitabine, MK2206, everolimus, trametinib, sunitinib, sorafenib, BEZ235, paclitaxel, docetaxel, erlotinib, selumetinib, sirolimus, trametinib, temsirolimus, pazopanib, and GSK1120212.

47. The use of any one of claims 1-36, wherein the immune-related disease is selected from ankylosing spondylitis, Crohn's disease, erythema nodosum leprosum (ENL), graft versus host disease (GVHD), HIV-associated wasting syndrome, lupus erythematosus, organ transplant rejection, post-polycythemia, psoriasis, psoriatic arthritis, recurrent aphthous ulcers, rheumatoid arthritis (RA), severe recurrent aphthous stomatitis, systemic sclerosis, and tuberous sclerosis.

48. The use of claim 47, wherein the immune-related disease is resistant to an anticancer agent selected from an enzyme inhibitor, a mitotic inhibitor, a DNA-modifying agent, and a cytidine analog.

49. The use of claim 48, wherein the anticancer agent is selected from microtubule assembly inhibitors, AKT inhibitors, mTOR inhibitors, MEK inhibitors, RTK inhibitors, ATM inhibitors, ATR inhibitors, PI3K inhibitors, EGFR inhibitors, B-Raf inhibitors, C-kit inhibitors, DNA cross-linking agents, DNA intercalating agents, and cytidine analogs.

50. The use of claim 48, wherein the anticancer agent is selected from vincristine, carboplatin, cisplatin, gemcitabine, MK2206, everolimus, trametinib, sunitinib, sorafenib, BEZ235, paclitaxel, docetaxel, erlotinib, selumetinib, sirolimus, trametinib, temsirolimus, pazopanib, and GSK1120212.

51. The use of any one of the preceding claims, further comprising the conjoint administration of one or more additional chemotherapeutic agents.

52. The use of claim 51, wherein the one or more additional chemotherapeutic agents includes aminoglutethimide, amsacrine, anastrozole, asparaginase, Bacillus Calmette–Guérin vaccine (bcg), bicalutamide, bleomycin, bortezomib, buserelin, busulfan, campothecin, capecitabine, carboplatin, carfilzomib, carmustine, chlorambucil, chloroquine, cisplatin, cladribine, clodronate, colchicine, cyclophosphamide, cyproterone, cytarabine, dacarbazine, dactinomycin, daunorubicin, demethoxyviridin, dexamethasone, dichloroacetate, dienestrol, diethyl-stilbestrol, docetaxel, doxorubicin, epirubicin, estradiol, estramustine, etoposide, everolimus, exemestane, filgrastim, fludarabine, fludrocortisone, fluorouracil, fluoxymesterone, flutamide, gemcitabine, genistein, goserelin, hydroxyurea, idarubicin, ifosfamide, imatinib, interferon, irinotecan, letrozole, leucovorin, leuprolide, levamisole, lomustine, lonidamine, mechlorethamine, medroxy-progesterone, megestrol, melphalan, mercaptopurine, mesna, metformin, methotrexate, mitomycin, mitotane, mitoxantrone, nilutamide, nocodazole, octreotide, oxaliplatin, paclitaxel, pamidronate, pentostatin, perifosine, plicamycin, porfimer, procarbazine, raltitrexed, rituximab, sorafenib, streptozocin, sunitinib, suramin, tamoxifen,

temozolomide, temsirolimus, teniposide, testosterone, thalidomide, thioguanine, thiotepa, titanocene dichloride, topotecan, trastuzumab, tretinoin, vinblastine, vincristine, vindesine, or vinorelbine.

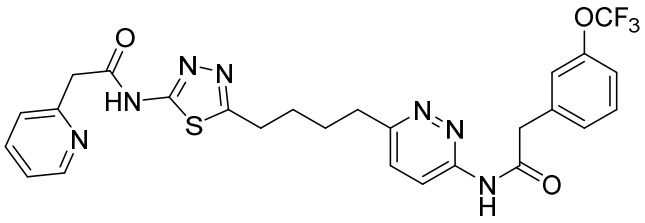
53. The use of any one of the preceding claims, wherein the use further comprises the administration of one or more non-chemical methods of cancer treatment.

54. The use of claim 1, wherein the anticancer agent is a PARP inhibitor.

55. The use of claim 54, wherein the PARP inhibitor is selected from olaparib, talazoparib, rucaparib, and veliparib.

56. The use of claim 55, wherein the PARP inhibitor is olaparib.

57. The use of any one of claims 1-4, wherein the anti-cancer agent is everolimus and the glutaminase inhibitor is a compound of formula II:

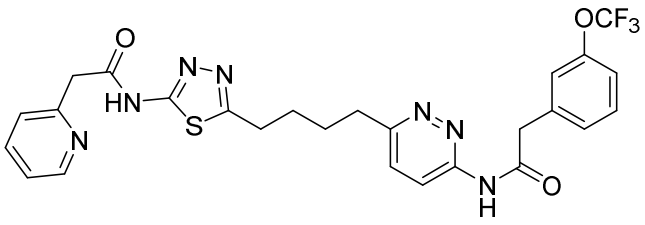


(II), or a pharmaceutically acceptable salt thereof.

58. The use of claim 57, wherein the cancer is renal cell carcinoma.

59. The use of claim 40, wherein the cancer is resistant to erlotinib.

60. The use of claim 59, wherein the anti-cancer agent is erlotinib and the glutaminase inhibitor is a compound of formula II:



(II), or a pharmaceutically acceptable salt thereof.

61. The use of claim 60, wherein the cancer is non-small cell lung cancer.

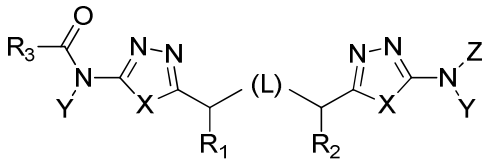
62. The use of claim 1, wherein the anticancer agent is a cytidine analog.

63. A pharmaceutical composition comprising a glutaminase inhibitor and an anticancer agent selected from an enzyme inhibitor, a mitotic inhibitor, a DNA-modifying agent, and a cytidine analog.

64. The pharmaceutical composition of claim 63, wherein the anticancer agent is selected from microtubule assembly inhibitors, AKT inhibitors, mTOR inhibitors, MEK inhibitors, RTK inhibitors, ATM inhibitors, ATR inhibitors, PI3K inhibitors, EGFR inhibitors, B-Raf inhibitors, C-kit inhibitors, DNA cross-linking agents, DNA intercalating agents, and cytidine analogs.

65. The pharmaceutical composition of claim 63, wherein the anticancer agent is selected from vincristine, carboplatin, cisplatin, gemcitabine, MK2206, everolimus, trametinib, sunitinib, sorafenib, BEZ235, paclitaxel, docetaxel, erlotinib, selumetinib, sirolimus, trametinib, temsirolimus, pazopanib, and GSK1120212.

66. The pharmaceutical composition of any one of claims 63-65, wherein the glutaminase inhibitor is a compound of formula I,



(I),

or a pharmaceutically acceptable salt thereof, wherein:

L represents CH_2SCH_2, CH_2CH_2, $CH_2CH_2CH_2$, CH_2, CH_2S, SCH_2, CH_2NHCH_2, CH=CH, or , wherein any hydrogen atom of a CH or CH_2 unit may be replaced by alkyl or alkoxy, any hydrogen of an NH unit may be replaced by alkyl, and any hydrogen atom of a CH_2 unit of CH_2CH_2, $CH_2CH_2CH_2$ or CH_2 may be replaced by hydroxy;

X, independently for each occurrence, represents S, O or CH=CH, wherein any hydrogen atom of a CH unit may be replaced by alkyl;

Y, independently for each occurrence, represents H or $CH_2O(CO)R_7$;

R_7, independently for each occurrence, represents H or substituted or unsubstituted alkyl, alkoxy, aminoalkyl, alkylaminoalkyl, heterocyclylalkyl, or heterocyclylalkoxy;

Z represents H or $R_3(CO)$;

R_1 and R_2 each independently represent H, alkyl, alkoxy or hydroxy;

R_3, independently for each occurrence, represents substituted or unsubstituted alkyl, hydroxyalkyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, heteroaryloxyalkyl or $C(R_8)(R_9)(R_{10})$, $N(R_4)(R_5)$ or OR_6, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_4 and R_5 each independently represent H or substituted or unsubstituted alkyl, hydroxyalkyl, acyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$;

R_6, independently for each occurrence, represents substituted or unsubstituted alkyl, hydroxyalkyl, aminoalkyl, acylaminoalkyl, alkenyl, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl, heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, wherein any free hydroxyl group may be acylated to form $C(O)R_7$; and

R_8, R_9 and R_{10} each independently represent H or substituted or unsubstituted alkyl, hydroxy, hydroxyalkyl, amino, acylamino, aminoalkyl, acylaminoalkyl, alkoxycarbonyl, alkoxycarbonylamino, alkenyl, alkoxy, alkoxyalkyl, aryl, arylalkyl, aryloxy, aryloxyalkyl, cycloalkyl, cycloalkylalkyl, heterocyclyl, heterocyclylalkyl, heteroaryl,

heteroarylalkyl, heteroaryloxy, or heteroaryloxyalkyl, or R_8 and R_9 together with the carbon to which they are attached, form a carbocyclic or heterocyclic ring system, wherein any free hydroxyl group may be acylated to form $C(O)R_7$, and wherein at least two of R_8, R_9 and R_{10} are not H.

67. The pharmaceutical composition of claim 66, wherein the compound is a compound as defined in any one of claims 4-36.