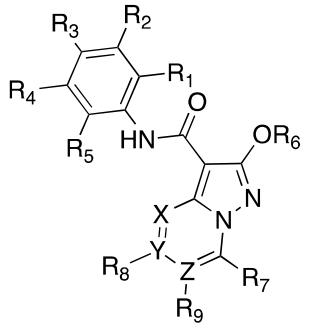
CLAIMS

1. A compound of formula (I):



Formula (I)

wherein R_1, R_2, R_4 and R_5 are independently selected from a hydrogen atom, deuterium atom, a halogen atom, a linear and/or branched C_{1-8} alkyl group, an alkyloxy group, an alkylammino group, an alkylthio group, a halo C_{1-8} alkyl group, a halo C_{1-8} alkyloxy group, a halo C_{1-8} alkylamino group, a nitro group, a cyano group;

R_3 is:

- an aromatic group selected from the group consisting of: phenyl group, heteroaryl group preferably an azinyl group such as pyridinyl group, pyrimidinyl group; phenoxy group; azinyloxy group such as pyridinyloxy group, pyrimidinyloxy group; phenylthio group; azinylthio group such as pyridinylthio group, pyrimidinylthio group; phenylsulfinyl group; phenylsulfonyl group; phenylsulfonylamino group; N-phenylcarbamoyl group;
- an aliphatic group selected from the group consisting of: C_{1-12} alkyl group; C_{1-12} alkyloxy group; C_{1-12} alkylthio group; C_{1-12} alkylsulfinyl group; C_{1-12} alkylsulfonyl group; C_{1-12} alkylsulfonylamino group; C_{1-12} alkylamino group; C_{1-12} alkylaminosulfonyl group; halo C_{1-12} alkyl group; halo C_{1-12} alkyloxy group; halo C_{1-12} alkylthio group; halo C_{1-12} alkylsulfinyl group; halo C_{1-12} alkylsulfonyl group; halo C_{1-12} alkylsulfonylamino group; halo C_{1-12} alkylamino group; halo C_{1-12} alkylaminosulfonyl group;

R_7, R_8 and R_9 are independently selected from a hydrogen atom, deuterium atom, a halogen atom, a nitro group, a cyano group, a C_{1-4} alkyl group, a halo C_{1-4} alkyl group, a mercapto C_{1-4} alkyl group, an amino C_{1-4} alkyl group, and a hydroxy C_{1-4} alkyl group;

R_6 is selected from the group consisting of a linear or branched C_{1-6} alkyl substituted with a group selected from a phosphate, a -COOH, a -$CONHR_{10}$, wherein R_{10} is selected from hydrogen and C_{1-6} alkyl chain;

X, Y and Z are independently selected from a carbon atom, a nitrogen atom, with the proviso that when one of X, Y or Z is nitrogen, the other two positions are carbon atoms and when Y or Z are nitrogen atoms, R8 and R9 are not present.

2. A compound according to claim 1, wherein at least one of R_1, R_2, R_4 and R_5 is or contains a halogen atom, preferably a fluorine or chlorine atom, more preferably a fluorine atom.

3. A compound according to claim 1, wherein at least one of R_1, R_2, R_4 and R_5 is selected from hydrogen, -OCF_3, methyl, isopropyl, methyl, 1,1,1-trifluoro-2-propanoxy.

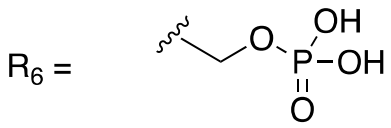
4 A compound according to any one of claims 1 to 3, wherein R_3 is selected from trifluoromethoxyphenyl, 2,2 difluoropropyloxyphenyl, 3-pyridinyl, phenyloxy, ortho-trifluoromethylphenyl, meta-trifluoromethylphenyl, meta-chlorophenyl, ortho-chlorophenyl, meta-fluorophenyl, ortho-fluorophenyl, meta-hydroxyphenyl, meta-butoxyphenyl.

5. A compound according to any one of claims 1 to 4, wherein R_7, R_8 and R_9 are independently selected from hydrogen, methyl, chloro, methyloxy, and hydroxymethyl.

6. A compound according to any one of claims 1 to 5, wherein X, Z are carbon atoms, Y is carbon or nitrogen, R_7, R_8, R_9 are hydrogen, R_1, R_2, R_4, R_5 are fluorine, R_3 is a phenyl or 2,2-difluoro(C_1-C_3)alkyloxyphenyl or trifluoro(C_1-C_3)alkylphenyl or trifluoro(C_1-C_3)alkyloxyphenyl.

7. A compound according to any one of claims 1 to 6, wherein X, Y, Z are carbon atoms, R_7, R_8, R_9 are hydrogen atoms, R_1, R_4 are hydrogen atoms, R_2 is a methyl, R_5 is iso-propyl, R_3 is phenyloxy.

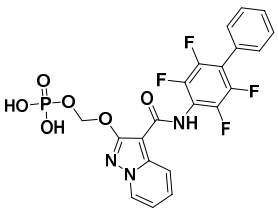
8. A compound according to any one of claims 1 to 7, wherein R_6 is a phosphonoxymethyl group represented by formula (II):



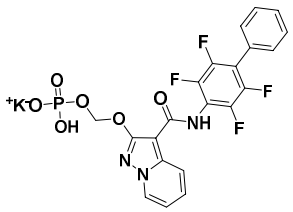
Formula (II)

9. A compound according to claim 8, wherein R_6 is in salified form, wherein the salt is selected from an alkali metal salt, preferably lithium, sodium, potassium, and cesium salt; an alkaline earth metal salt, preferably calcium, magnesium or strontium salt; aluminum or zinc salt; an ammonium salt; a quaternary ammonium salt having 1 to 20 carbon atoms, preferably tris(hydroxymethyl)aminomethane (tromethamine), tetramethylammonium, tetraethylammonium, tetra(n-propyl)ammonium, tetra(n-butyl)ammonium, N-benzyl-N,N,N-trimethylammonium; a lysine salt, a choline salt; a benzalkonium salt.

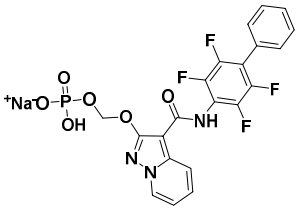
10. A compound according to any one of claims 1 to 9, wherein the compound is selected from the following formulas:



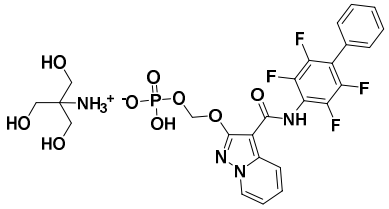
1



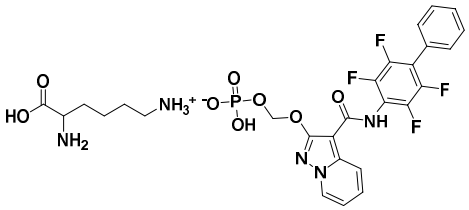
2



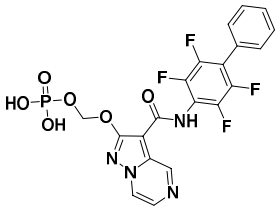
2a



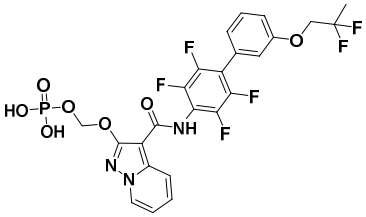
2b



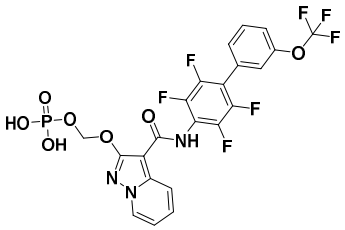
2c



3



5



7

11. A pharmaceutical composition comprising a compound of Formula (I) according to any one of claims 1 to 10 and a pharmaceutically accepted carrier, excipient and/or diluent.

12. A composition comprising a compound of Formula (I) according to any one of claims 1 to 11 and one or more anticancer agents, preferably selected from: Abemaciclib, Abiraterone, Acalabrutinib, Actimide, Adagrasib, Artemisinin, Artesunate Ado-Trastuzumab Emtansine, Afatinib, Alectinib, Alpelisib, Atezolizumab, Amivantamab, Amsacrine, Anastozole, Apalutamide, Asparaginase, Axitinib, Azacitidine, Azathioprine, Belzutifan, Bevacizumab, Bicalutamide, Bleomycin, Brentuximab vedotin, Brigatinib, Busulfan, Cabazitaxel, Cabozantinib, Capecitabine, Capmatinib, Cyclophosphamide, Carboplatin, Carmustine, Cedazuridine, Cemiplimab-rwlc, Ceritinib, Cisplatin, Chlorambucil, Cytarabine, Cladribine,

Clofarabine, CNX774,Cobimetininb, Dabrafenib, Dacarbaziine, Dacomitinib, Dactinomycin Darolutamide, Daunorubicin, Decitabine, Degarelix, Dilazep, Dihydroartemisinin, Dinutuximab, Dinutuximab beta, Dipyridamole, Docetaxel, Dordaviprone, Doxifluridine, Doxorubicin, Draflazine, Durvalumab, Epcoritamab, Enasidenib, Encorafenib, Enfortumab vedotin-ejfv, Entrectinib, Enzalutamide, EOS984 ,Epirubicin, Erastin, Erdafitinib, Erlotinib, Etoposide, Everolimus, Exemestane, Fam-trastuzumab deruxtecan-nxki, Fenalidomide, Feucovorin, Fludarabine, Fluorouracil, FPMINT, Flutamide, Gemcitabine, Gefitinib, Glofitamab, Hydroxyurea, , Ibrutinib, Idarubicin, Infigratinib, Ifosfamide, Ipilimumab, Irinotecan, Isotretinoin, Ivosidenib, JNK-IN-8, , Larotrectinib, Lenvatinib, Lenalidomide, Letrozole, Leucovorin, Lomustine, Loncastuximab tesirine-lpy, Lorlatinib, L-alanosine, 8MDP , Mechlorethamine, Melphalan, Mercaptopurine, Methotrexate, Mioflazine, Mitomycin-C, Mitoxantrone, Mizoribine, Mobocertinib, Mosunetuzumab-axgb, Mycophenolic acid, Nab-paclitaxel, Nanoliposomal irinotecan, Naxitamab, Neratinib, Nilutamide, Niraparib, Nivolumab, Obinutuzumab, Olaparib, ONC212, Osimertinib, Oxaliplatin, Paclitaxel, Pacritinib, Panobinostat, Pazopanib, PBP 4883, Pebrolizumab, Pertuzumab, Pemetrexed, Pemigatinib, Pirtobutinib, Pralsetinib, Polatuzumab vedotin-piiq, Rapadocin,, Ramucirumab, Regorafenib, Relugolix, Revlimid, Rituximab, RO7117997, Rucaparib, Sacituzumab govitecan, Selepercatinib, Selinexor, Sorafenib, Sotarasib, Sulfasalazine, Sunitinib, Talazoparib, Tamibarotene, Tamoxifen, Tazemetostat, Temozolomide, Teniposide, Tepotinib, Thioguanine, Thiotepa, Ticagrelor, Tivozanib, Tofacitinib, Topotecan, Tafasitamab-cxix, Temsirolimus, Trametinib, Trastuzumab, Tremelimumab, Trifluridine/Tipiracil, Treosulfan, Troglitazone, Valrubicin, Venetoclax, Vemurafenib, Vinblastine, Vincristine, Vindesine and Vinorelbine, Vorasenib, Zanubrutinib, Ziv-aflibercept.

13. Use of a compound of Formula (I) according to any one of claims from 1 to 10 or a pharmaceutical composition according to claim 11 or a composition according to claim 12, in the manufacture of a medicament for the treatment of cancer, preferably for the treatment of

a) hematologic malignancies, preferably selected from the group consisting of: acute myeloid leukemia, myelodysplastic syndromes, chronic myeloid leukemia and other myeloproliferative neoplasms, multiple myeloma, angioimmunoblastic T-cell lymphoma and acute lymphoblastic leukemia, Hodgkin’s and non-Hodgkin’s lymphomas, IDH mutated tumors,

BRAF-mutated, RAS-mutated, PTEN-mutated and MYC/MYCN-driven hematologic neoplasms;

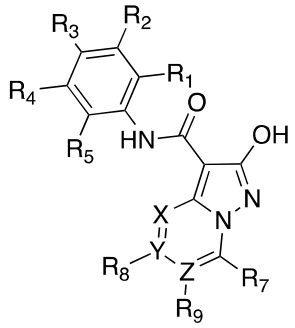
b) solid tumors, preferably selected from the group consisting of: osteosarcoma; Ewing sarcoma; melanoma; BRAF mutated tumors; PTEN-mutant tumors; H3K27M-mutated diffuse midline glioma; diffuse intrinsic pontine glioma; atypical teratoid rhabdoid tumor; ependymomas, neuroendocrine tumors; multiple endocrine neoplasia type 1 (MEN1) tumors; mutated MEN1 tumors; KRAS-driven tumorous, preferably mutated KRAS hepatic tumors, mutated KRAS lung tumors, mutated KRAS pancreatic tumors, mutated KRAS colon carcinoma; prostate tumors; bladder tumors; kidney tumors; ferroptosis sensitive tumors preferably, lung cancer, glioblastoma, breast cancer, preferably triple-negative breast cancer, pancreatic cancer, hepatocellular carcinoma and colorectal cancer; IDH mutated tumors, preferably low-grade gliomas, secondary glioblastoma, primary glioblastoma, cartilaginous and bone tumors, fibrosarcoma, sinonasal undifferentiated carcinoma, intrahepatic cholangiocarcinoma; MYC and MYCN driven tumors, preferably neuroblastoma, medulloblastoma, retinoblastoma, astrocytoma, glioblastoma multiforme, castration-resistant prostate cancer, neuroendocrine prostate cancer, rhabdomyosarcoma, Wilms tumors, small cell lung cancer, pancreatic tumors; $AMPK\alpha1_{low}$ expressing tumors; $GPX4_{low}$ expressing tumors; p53 wild type and mutated cancers.

14. Use of a compound of Formula (I) according to any one of claims from 1 to 10 or a pharmaceutical composition according to claim 11, in the manufacture of a medicament for the treatment of a viral infection, preferably for the treatment of a viral infection caused by a DNA virus or an RNA virus, wherein the virus is selected from the group consisting of *Herpesviridae*, *Orthomyxoviridae*, *Paramyxoviridae* and *Coronaviridae*.

15. The use according to claim 14, wherein the virus is selected from the group consisting of Herpes simplex virus 1 to 8 (HSV-1-8), paramyxovirus, pneumovirus, morbillivirus, Influenza A virus, Influenza B virus, Respiratory syncytial virus (RSV), severe acute respiratory syndrome coronavirus 1 (SARS-CoV-1), severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and Middle East respiratory syndrome-related coronavirus (MERS-CoV).

16. A composition comprising a compound of Formula (I) as defined in claim 1 and one or more antiviral agents, preferably selected from acyclovir, adefovir, amantadine, baloxavir marboxil, bamlanivimab/etesevimab, brivudine, casirivimab/imdevimab, cidofovir, famciclovir, favipiravir, fomivirsen, foscarnet, ganciclovir, N(4)-Hydroxycytidine, indinavir, idoxuridine, laninamivir, lopinavir, molnupiravir, nelfinavir, nirmatrelvir, oseltamivir, penciclovir, permivir, ribavirin, sotrovimab, tenofovir, tenofovir alafenamide, tenofovir diisoproxilfumarate, trifluridine, telbivudine, vidarabine, sofosbuvir, nevirapine, efavirenz, raltegravir, remdesvir, rimantadine, ritonavir, ritonavir – amlanivimab, saquinavir, tixagevimab/cilgavimab, trifluridine, valacyclovir, valganciclovir, vidarabine, zanamivir, zidovudine.

17. Use of a compound of Formula (Ia):



Formula (Ia)

wherein R_1, R_2, R_4 and R_5 are independently selected from a hydrogen atom, deuterium atom, a halogen atom, a linear and/or branched C_{1-8} alkyl group, an alkyloxy group, an alkylammino group, an alkylthio group, a halo C_{1-8} alkyl group, a halo C_{1-8} alkyloxy group, a halo C_{1-8} alkylamino group, a nitro group, a cyano group;

R_3 is:

- an aromatic group selected from the group consisting of: phenyl group, heteroaryl group preferably an azinyl group such as pyridinyl group, pyrimidinyl group; phenoxy group; azinyloxy group such as pyridinyloxy group, pyrimidinyloxy group; phenylthio group; azinylthio group such as pyridinylthio group, pyrimidinylthio group; phenylsulfinyl group; phenylsulfonyl group; phenylsulfonylamino group; N-phenylcarbamoyl group.

- an aliphatic group selected from the group consisting of: C_{1-12} alkyl group; C_{1-12} alkyloxy group; C_{1-12} alkylthio group; C_{1-12} alkylsulfinyl group; C_{1-12} alkylsulfonyl group; C_{1-12} alkylsulfonylamino group; C_{1-12} alkylamino group; C_{1-12} alkylaminosulfonyl group; halo C_{1-12} alkyl group; halo C_{1-12} alkyloxy group; halo C_{1-12} alkylthio group; halo C_{1-12} alkylsulfinyl group; halo C_{1-12} alkylsulfonyl group; halo C_{1-12} alkylsulfonylamino group; halo C_{1-12} alkylamino group; halo C_{1-12} alkylaminosulfonyl group.

R_7, R_8 and R_9 are independently selected from a hydrogen atom, deuterium atom, a halogen atom, a nitro group, a cyano group, a C_{1-4} alkyl group, a halo C_{1-4} alkyl group, a mercapto C_{1-4} alkyl group, an amino C_{1-4} alkyl group, and a hydroxy C_{1-4} alkyl group;
X, Y and Z are independently selected from a carbon atom, a nitrogen atom, with the proviso that when one of X, Y or Z is nitrogen, the other two positions are carbon atoms and that when Y or Z are nitrogen atoms, R8 and R9 are not present;

In the manufacture of a medicament for the treatment of:

a) hematologic malignancies selected from the group consisting of: myelodysplastic syndromes, chronic myeloid leukemia and other myeloproliferative neoplasms, multiple myeloma, angioimmunoblastic T-cell lymphoma and acute lymphoblastic leukemia, Hodgkin's and non-Hodgkin's lymphomas, IDH mutated tumors, BRAF-mutated, RAS-mutated, PTEN-mutated and MYC/MYCN-driven hematologic neoplasms;

b) solid tumors selected from the group consisting of: osteosarcoma; Ewing sarcoma; melanoma; BRAF mutated tumors; H3K27M-mutated diffuse midline glioma; diffuse intrinsic pontine glioma; atypical teratoid rhabdoid tumor; ependymomas, neuroendocrine tumors; multiple endocrine neoplasia type 1 (MEN1) tumors; mutated MEN1 tumors; KRAS-driven tumorous, preferably mutated KRAS hepatic tumors, mutated KRAS lung tumors, mutated KRAS pancreatic tumors, mutated KRAS colon carcinoma; prostate tumors; bladder tumors; kidney tumors; ferroptosis sensitive tumors preferably, lung cancer, glioblastoma, breast cancer, pancreatic cancer, hepatocellular carcinoma and colorectal cancer; IDH mutated tumors, preferably low-grade gliomas, secondary glioblastoma, primary glioblastoma, cartilaginous and bone

tumors, fibrosarcoma, sinonasal undifferentiated carcinoma, intrahepatic cholangiocarcinoma; MYC and MYCN driven tumors, preferably neuroblastoma, medulloblastoma, retinoblastoma, astrocytoma, glioblastoma multiforme, castration-resistant prostate cancer, neuroendocrine prostate cancer, , rhabdomyosarcoma, Wilms tumors, small cell lung cancer, pancreatic tumors; AMPKα1$_{low}$ expressing tumors; GPX4$_{low}$ expressing tumors; p53 wild type and mutated cancers.

18. A composition comprising a compound of Formula (Ia) as defined in claim 17 and one or more anticancer agents, preferably selected from: Abemaciclib, Abiraterone, Acalabrutinib, Actimide, Adagrasib, Artemisinin, Artesunate Ado-Trastuzumab Emtansine, Afatinib, Alectinib, Alpelisib, Atezolizumab, Amivantamab, Amsacrine, Anastozole, Apalutamide, Asparaginase, Axitinib, Azacitidine, Azathioprine, Belzutifan, Bevacizumab, Bicalutamide, Bleomycin, Brentuximab vedotin, Brigatinib, Busulfan, Cabazitaxel, Cabozantinib, Capecitabine, Capmatinib, Cyclophosphamide, Carboplatin, Carmustine, Cedazuridine, Cemiplimab-rwlc, Ceritinib, Cisplatin, Chlorambucil, Cytarabine, Cladribine, Clofarabine, CNX774,Cobimetininb, Dabrafenib, Dacarbaziine, Dacomitinib, Dactinomycin Darolutamide, Daunorubicin, Decitabine, Degarelix, Dilazep, Dihydroartemisinin, Dinutuximab, Dinutuximab beta, Dipyridamole, Docetaxel, Dordaviprone, Doxifluridine, Doxorubicin, Draflazine, Durvalumab, Epcoritamab, Enasidenib, Encorafenib, Enfortumab vedotin-ejfv, Entrectinib, Enzalutamide, EOS984, Epirubicin, Erastin, Erdafitinib, Erlotinib, Etoposide, Everolimus, Exemestane, , , Fam-trastuzumab deruxtecan-nxki, Fenalidomide, Feucovorin, Fludarabine, Fluorouracil, FPMINT, Flutamide, Gemcitabine, Gefitinib, Glofitamab, Hydroxyurea, , Ibrutinib, Idarubicin, Infigratinib, Ifosfamide, Ipilimumab, Irinotecan, Isotretinoin, Ivosidenib, JNK-IN-8, Larotrectinib, Lenvatinib, Lenalidomide, Letrozole, Leucovorin, Lomustine, Loncastuximab tesirine-lpy, Lorlatinib, L-alanosine, 8MDP, Mechlorethamine, Melphalan, Mercaptopurine, Methotrexate, Mioflazine, Mitomycin-C, Mitoxantrone, Mizoribine, Mobocertinib, Mosunetuzumab-axgb, Mycophenolic acid, Nab-paclitaxel, Nanoliposomal irinotecan, Naxitamab, Neratinib, Nilutamide, Niraparib, Nivolumab, Obinutuzumab, ONC212, Olaparib, Osimertinib, Oxaliplatin, Paclitaxel, Pacritinib, Panobinostat, Pazopanib, PBP 4883, Pebrolizumab, Pertuzumab, Pemetrexed, Pemigatinib, Pirtobutinib, Pralsetinib, Polatuzumab vedotin-piiq, Rapadocin, Ramucirumab, Regorafenib, Relugolix, Revlimid, Rituximab, RO7117997, Rucaparib, Sacituzumab govitecan, Selepercatinib, Selinexor, Sorafenib, Sotarasib, Sulfasalazine,

Sunitinib, Talazoparib, Tamibarotene, Tamoxifen, Tazemetostat, Temozolomide, Teniposide, Tepotinib, Thioguanine, Thiotepa, Ticagrelor, Tivozanib, Tofacitinib, Topotecan, Tafasitamab-cxix, Temsirolimus, Trametinib, Trastuzumab, Tremelimumab, Trifluridine/Tipiracil, Treosulfan, Troglitazone, Valrubicin, Venetoclax, Vemurafenib, Vinblastine, Vincristine, Vindesine and Vinorelbine, Vorasenib, Zanubrutinib, Ziv-aflibercept.

19. Use of a compound of Formula (Ia) as defined in claim 17 in the manufacture of a medicament for the treatment of a viral infection caused by Herpes simplex virus 3-8 (HSV-3-8).

20. A composition comprising a compound of formula (Ia) as defined in claim 17 and one or more antiviral agents, preferably selected from acyclovir, adefovir, amantadine, baloxavir marboxil, bamlanivimab/etesevimab, brivudine, casirivimab/imdevimab, cidofovir, famciclovir, favipiravir, fomivirsen, foscarnet, ganciclovir, N(4)-Hydroxycytidine, indinavir, idoxuridine, laninamivir, lopinavir, molnupiravir, nelfinavir, nirmatrelvir, oseltamivir, penciclovir, permivir, ribavirin, sotrovimab, tenofovir, tenofovir alafenamide, tenofovir diisoproxilfumarate, trifluridine, telbivudine, vidarabine, sofosbuvir, nevirapine, efavirenz, raltegravir, remdesvir, rimantadine, ritonavir, ritonavir – amlanivimab, saquinavir, tixagevimab/cilgavimab, trifluridine, valacyclovir, valganciclovir, vidarabine, zanamivir, zidovudine.