because of the tough requirement of technologies in antibody, linker molecule, toxin molecules, and conjugation, as well as the limitation of bringing toxins within the tumor microenvironment molecules, there are still some difficulties in actual clinical studies.

SUMMARY OF THE INVENTION

[0001] In one aspect, the present invention provides a compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety that is capable of activating human immune cells, including but not limited to dendritic cells, macrophages, monocytes, myeloid-derived suppressor cells, NK cells, B cells, T cells or tumor cells, or a combination thereof, Ln is a linker, and n is an integer selected from 0 and 1.

[0013] In one aspect, there is provided a compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety that is capable of activating a human dendritic cell, NK cell, macrophage, or tumor cell, or a combination thereof, Ln is a linker, and n is an integer selected from 0 and 1,

with the proviso that when TM comprises an antibody, AM does not comprise a CpG oligonucleotide.

[0013a] In one aspect, there is provided a use of pharmaceutical composition comprising a therapeutically effective amount of the compound as described herein or a pharmaceutically acceptable salt thereof, and a pharmaceutical acceptable carrier, in the manufacture of a medicament for treating a disease condition in a subject.

[0013b] In some embodiments, the human dendritic cell is a plasmacytoid dendritic cell. In some embodiments, the human dendritic cell is a myeloid dendritic cell.

[0002] In some embodiments, the AM is capable of binding specifically to human toll like receptor 7 (TLR7) and/or TLR8; or activating human immune cells via TLR7 and/or TLR8.

[0003] In another aspect, the present invention provides a compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety that is capable of binding specifically to human TLR7 and/or TLR8, or activating human immune cells via TLR7 and/or TLR8, Ln is a linker, and n is an integer selected from 0 and 1.

[0004] In some embodiments, wherein the AM is capable of binding specifically to both human TLR7 and TLR8; or activating human immune cells via TLR7 and/or TLR8.

[0005] In some embodiments, wherein when TM comprises an antibody, AM does not comprise a CpG oligonucleotide.

[0006] In some embodiments, wherein the targeting moiety is capable of binding to a tumor cell specifically or preferably in comparison to a non-tumor cell. In some embodiments, the tumor cell is of a carcinoma, a sarcoma, a lymphoma, a myeloma, or a central nervous system cancer.

[0007] In some embodiments, the targeting moiety is capable of binding to a tumor antigen specifically or preferably in comparison to a non-tumor antigen. In some embodiments, the tumor antigen is selected from the group consisting of: CD2, CD19, CD20, CD22, CD27, CD33, CD37, CD38, CD40, CD44, CD47, CD52, CD56, CD70, CD79, and CD137. In some embodiments, the tumor antigen is selected

WHAT IS CLAIMED IS:

1. A compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety that is capable of activating a human dendritic cell, NK cell, or tumor cell, or a combination thereof, Ln is a linker, and n is an integer selected from 0 and 1.

2. The compound of claim 1, wherein said human dendritic cell is a plasmacytoid dendritic cell.

3. The compound of claim 1, wherein said human dendritic cell is a myeloid dendritic cell.

4. The compound of claim 1, wherein said AM is capable of binding specifically to human TLR7 or TLR8.

5. The compound of claim 1, wherein said AM is capable of binding specifically to human TLR7 and TLR8.

6. A compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety that is capable of binding specifically to human TLR7 and/or TLR8, Ln is a linker, and n is an integer selected from 0 and 1.

7. The compound of claim 6, wherein said AM is capable of binding specifically to both human TLR7 and TLR8.

8. The compound of any one of claims 1 to 7, wherein when TM comprises an antibody, AM does not comprise a CpG oligonucleotide.

9. The compound of any one of claims 1 to 8, wherein said targeting moiety is capable of binding to a tumor cell specifically or preferably in comparison to a non-tumor cell.

10. The compound of claim 9, wherein said the tumor cell is of a carcinoma, a sarcoma, a lymphoma, a myeloma, or a central nervous system cancer.

11. The compound of any one of claims 1 to 8, wherein said targeting moiety is capable of binding to a tumor antigen specifically or preferably in comparison to a non-tumor antigen.

12. The compound of claim 11, wherein said tumor antigen is selected from the group consisting of: CD2, CD19, CD20, CD22, CD27, CD33, CD37, CD38, CD40, CD44, CD47, CD52, CD56, CD70, CD79, and CD137.

13. The compound of claim 11, wherein said tumor antigen is selected from the group consisting of: 4-1BB, 5T4, AGS-5, AGS-16, Angiopoietin 2, B7.1, B7.2, B7DC, B7H1, B7H2, B7H3, BT-062, *BTLA*, CAIX, Carcinoembryonic antigen, CTLA4, Cripto, ED-B, ErbB1, ErbB2, ErbB3, ErbB4, EGFL7, EpCAM, EphA2, EphA3, EphB2, FAP, Fibronectin, Folate Receptor, Ganglioside GM3, GD2, glucocorticoid-induced tumor necrosis factor receptor (GITR), gp100, gpA33, GPNMB, ICOS, IGF1R, Integrin αv, Integrin αvβ , KIR, LAG-3, Lewis Y, Mesothelin, c-MET, MN Carbonic anhydrase IX, MUC1, MUC16, Nectin-4, NKGD2, NOTCH, OX40, OX40L, PD-1, PDL1, PSCA, PSMA, RANKL, ROR1, ROR2, SLC44A4, Syndecan-1, TACI, TAG-72, Tenascin, *TIM3*, TRAILR1, TRAILR2,VEGFR-1, VEGFR-2, VEGFR-3, and variants thereof.

14. The compound of any one of claims 1 to 13, wherein said targeting moiety comprises an immunoglobulin, a protein, a peptide, a small molecule, a nanoparticle, or a nucleic acid.

15. The compound of claim 14, wherein said targeting moiety comprises an antibody, or a functional fragment thereof.

16. The compound of claim 15, the antibody is selected from the group consisting of: Rituxan (rituximab), Herceptin (trastuzumab), Erbitux (cetuximab), Vectibix (Panitumumab), Arzerra (Ofatumumab), Benlysta (belimumab), Yervoy (ipilimumab), Perjeta (Pertuzumab), Tremelimumab, Nivolumab, Dacetuzumab, Urelumab, MPDL3280A, Lambrolizumab, and Blinatumomab.

17. The compound of claim 15, wherein said targeting moiety comprises a Fab, Fab', F(ab')2, single domain antibody, T and Abs dimer, Fv, scFv, dsFv, ds-scFv, Fd, linear antibody, minibody, diabody, bispecific antibody fragment, bibody, tribody, sc-diabody, kappa (lamda) body, BiTE, DVD-Ig, SIP, SMIP, DART, or an antibody analogue comprising one or more CDRs.

18. The compound of claim 14, wherein said targeting moiety comprises a ATWLPPR polypeptide of VEGFR, Thrombospondin-1 mimetics, CDCRGDCFCG (cyclic) polypeptide, SCH 221153 fragment, NCNGRC (cyclic) polypeptide, CTTHWGFTLC polypeptide, CGNKRTRGC polypeptide (LyP-1), Octreotide, Vapreotide, Lanreotide, C-3940 polypeptide, Decapeptyl, Lupron, Zoladex, or Cetrorelix.

19. The compound of claim 14, wherein said targeting moiety comprises folic acid or a derivative thereof.

20. The compound of claim 14, wherein said targeting moiety comprises extracellular domains (ECD) or soluble form of PD-1, CTLA4, BTLA, KIR, TIM3, 4-1BB, LAG3, full length of partial of a surface ligand amphiregulin, betacellulin, EGF, ephrin, epigen, epiregulin, IGF, neuregulin, TGF, TRAIL, or VEGF.

21. The compound of claim 14, wherein said targeting moiety comprises a nanoparticle.

22. The compound of claim 14, wherein said targeting moiety comprises an aptamer.

23. The compound of any one of claims 1 to 22, wherein said activating moiety comprises: (a) single-stranded RNA (ssRNA), preferably ORN02, ORN06, ssPoly(U), ssRNA40, ssRNA41, ssRNA-DR, or Poly(dT); or (b) a receptor ligand analogs, preferably CL075, CL097, CL264, CL307, Gardiquimod, Loxoribine, Imiquimod, or Resiquimod.

24. The compound of claim 23, wherein said AM comprises Resiquimod (R848).

25. The compound of any one of claims 1 to 24, wherein said linker is selected from the group consisting of a hydrazine group, a polypeptide, a disulfide group, and a thioether group.

26. The compound of any one of claims 1 to 24, wherein said linker is enzymatic cleavable.

27. The compound of any one of claims 1 to 24, wherein said linker is not enzymatic cleavable.

28. A pharmaceutical composition comprising a compound as claimed in any one of claims 1 to 27, or a pharmaceutically acceptable salt thereof, and one or more pharmaceutically acceptable carriers.

29. The pharmaceutical composition of claim 28, further comprising a second chemotherapeutic agent.

30. The pharmaceutical composition of claim 29, wherein said chemotherapeutic agent is selected from the group consisting of tamoxifen, raloxifene, anastrozole, exemestane, letrozole, imatanib, paclitaxel, cyclophosphamide, lovastatin, minosine, gemcitabine, cytarabine, 5- fluorouracil, methotrexate, docetaxel, goserelin, vincristine, vinblastine,nocodazole, teniposide etoposide, gemcitabine, epothilone, vinorelbine, camptothecin, daunorubicin, actinomycin D, mitoxantrone, acridine, doxorubicin, epirubicin, or idarubicin.

31. A method for treating a disease condition in a subject that is in need of such treatment, comprising: administering to the subject a pharmaceutical composition comprising a therapeutically effective amount of the compound of any one of claims 1 to 27 or a pharmaceutically acceptable salt thereof, and a pharmaceutical acceptable carrier.

32. The method of claim 31, wherein said diseases condition is tumor.

33. The method of claim 31, wherein said disease condition comprises abnormal cell proliferation.

34. The method of claim 33, wherein said abnormal cell proliferation comprises a pre-cancerous lesion.

35. The method of claim 33, wherein, wherein said abnormal proliferation is of cancer cells.

36. The method of claim 35, wherein said cancer is selected from the group consisting of: breast cancer, colorectal cancer, diffuse large B-cell lymphoma, endometrial cancer, follicular lymphoma, gastric cancer, glioblastoma, head and neck cancer, hepatocellular cancer, lung cancer, melanoma, multiple myeloma, ovarian cancer, pancreatic cancer, prostate cancer, and renal cell carcinoma.

37. A compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety, Ln is a linker, and n is an integer selected from 0 and 1,

with the proviso that when TM comprises an antibody, AM does not comprise a CpG oligonucleotide or a therapeutic agent.

38. The compound of claim 37, wherein said activating moiety comprises a TLR ligand (TLRL), a Nod-Like Receptor ligand, a RIG-Like Receptor ligand, a CLR ligand, a CDS ligand, or a inflammasome inducers.

39. The compound of claim 38, wherein said activating moiety comprises a ligand of one or more TLRs selected from the group consisting of: TLR2, TLR3, TLR4, TLR5, TLR7, TLR8, TLR7/TLR8, TLR9, and TLR10.

40. The compound of claim 39, wherein said activating moiety comprises:

(i) a ligand of TLR2 selected from the group consisting of : (a) a heat killed bacteria product, preferably HKAL, HKEB, HKHP, HKLM, HKLP, HKLR, HKMF, HKPA, HKPG, or HKSA, HKSP, and (b) a cell-wall components product, preferably LAM, LM, LPS, LTA, LTA, PGN, FSL, Pam2CSK4, Pam3CSK4, or Zymosan;

(ii) a ligand of TLR3 selected from the group consisting of: Poly (I:C) and Poly (A:U);

(iii)a ligand of TLR4 selected from the group consisting of: LPS and MPLA;

(iv) a ligand of TLR5 selected from the group consisting of: FLA and Flagellin;

(v) a ligand of TLR7/8 selected from the group consisting of: ORN02, ORN06, ssPoly(U), ssRNA40, ssRNA41, ssRNA-DR, Poly(dT), CL075, CL097, CL264, CL307, Gardiquimod, Loxoribine, Imiquimod, and Resiquimod;

(vi) a ligand of TLR9 selected from the group consisting of: ODN1585, ODN1668, ODN1826, ODN2006, ODN2007, ODN2216, ODN2336, ODN2395, and ODN M362;

(vii) a ligand of TLR10;

(viii) a ligand of nucleotide-oligomerization domain (NOD)-like selected from the group consisting of: NOD1 agonist (C12-iE-DAP , iE-DAP, Tri-DAP), NOD2 agonist (L18-MDP, MDP, M-TriLYS, M-TriLYS-D-ASN, Murabutide, N-Glycolyl-MDP), and NOD1/NOD2 agonists (M-TriDAP, PGN);

(ix) a ligand of one or more RIG-I-Like receptors (RLR) selected from the group consisting of: 5'ppp-dsRNA, Poly (dA:dT), Poly(dG:dC), and Poly (I:C);

(x) a ligand of one or more C-type lectin receptors (CLR) selected from the group consisting of: Curdlan AL, HKCA, HKSC, WGP, Zymosan, and Trehalose-6,6-dibehenate;

(xi) a ligand of one or more Cytosolic DNA Sensors (CDS) selected from the group consisting of: c-GMP, c-G-AMP, c-G-GMP, c-A-AMP, c-di-AMP, c-di-IMP, c-di-GMP, c-di-UMP, HSV-60, ISD, pCpG, Poly (dA:dT), Poly(dG:dC), Poly (dA), and VACV-70.; or

(xii) an inflammasome inducer selected from the group consisting of: (a) NLRP3 inflammasome protein complex, preferably alum Crystals, ATP, CPPD Crystals, Hermozoin, MSU Crystals, Nano-SiO2, Nigericin, and (b) AIM2 inflammasome protein complex , preferably Poly (dA:dT).

41. The compound of claim 37, wherein said activating moiety comprises IMO2134, IMO205, MGN-1703, MGN-1704, Agatolimod, SD-101, QAX-935, DIMS0150, Pollinex Quattro, OM-174, Eritoran, TAK-242, NI-0101， Type I interferon, type II interferon, type III interferon, IL-12, IL-23, IL-18, IL-7 or IL-15.

WHAT IS CLAIMED IS:

1. A compound having the structure of Formula (I):

TM-Ln-AM (I),

wherein TM is a targeting moiety, AM is an activating moiety that is capable of activating a human dendritic cell, NK cell, macrophage, or tumor cell, or a combination thereof, Ln is a linker, and n is an integer selected from 0 and 1,

with the proviso that when TM comprises an antibody, AM does not comprise a CpG oligonucleotide.

2. The compound of claim 1, wherein said human dendritic cell is a plasmacytoid dendritic cell.

3. The compound of claim 1, wherein said human dendritic cell is a myeloid dendritic cell.

4. The compound of claim 1, wherein said AM is capable of binding specifically to human TLR7 and TLR8.5. The compound of any one of claims 1 to 4, wherein said targeting moiety is capable of binding to a tumor cell specifically or preferably in comparison to a non-tumor cell.

6. The compound of claim 5, wherein said the tumor cell is of a carcinoma, a sarcoma, a lymphoma, a myeloma, or a central nervous system cancer.

7. The compound of any one of claims 1 to 4, wherein said targeting moiety is capable of binding to a tumor antigen specifically or preferably in comparison to a non-tumor antigen.

8. The compound of claim 7, wherein said tumor antigen is selected from the group consisting of: CD2, CD19, CD20, CD22, CD27, CD33, CD37, CD38, CD40, CD44, CD47, CD52, CD56, CD70, CD79, and CD137.

9. The compound of claim 7, wherein said tumor antigen is selected from the group consisting of: 4-1BB, 5T4, AGS-5, AGS-16, Angiopoietin 2, B7.1, B7.2, B7DC, B7H1, B7H2, B7H3, BT-062, *BTLA,* CAIX, Carcinoembryonic antigen, CTLA4, Cripto, ED-B, ErbB1, ErbB2, ErbB3, ErbB4, EGFL7, EpCAM, EphA2, EphA3, EphB2, FAP, Fibronectin, Folate Receptor, Ganglioside GM3, GD2, glucocorticoid-induced tumor necrosis factor receptor (GITR), gp100, gpA33, GPNMB, ICOS, IGF1R, Integrin αv, Integrin αvβ , KIR, LAG-3, Lewis Y, Mesothelin, c-MET, MN Carbonic anhydrase IX, MUC1, MUC16, Nectin-4, NKGD2, NOTCH, OX40, OX40L, PD-1, PDL1, PSCA, PSMA, RANKL, ROR1, ROR2, SLC44A4, Syndecan-1, TACI, TAG-72, Tenascin, *TIM3,* TRAILR1, TRAILR2,VEGFR-1, VEGFR-2, VEGFR-3, and variants thereof.

10. The compound of any one of claims 1 to 9, wherein said targeting moiety comprises an immunoglobulin, a protein, a peptide, a small molecule, a nanoparticle, or a nucleic acid.

11. The compound of claim 10, wherein said targeting moiety comprises an antibody, or a functional fragment thereof.

12. The compound of claim 11, the antibody is selected from the group consisting of: Rituxan (rituximab), Herceptin (trastuzumab), Erbitux (cetuximab), Vectibix (Panitumumab), Arzerra (Ofatumumab), Benlysta (belimumab), Yervoy (ipilimumab), Perjeta (Pertuzumab), Tremelimumab, Nivolumab, Dacetuzumab, Urelumab, MPDL3280A, Lambrolizumab, and Blinatumomab.

13. The compound of claim 11, wherein said targeting moiety comprises a Fab, Fab', F(ab')2, single domain antibody, T and Abs dimer, Fv, scFv, dsFv, ds-scFv, Fd, linear antibody, minibody, diabody, bispecific antibody fragment, bibody, tribody, sc-diabody, kappa (lamda) body, BiTE, DVD-Ig, SIP, SMIP, DART, or an antibody analogue comprising one or more CDRs.

14. The compound of claim 10, wherein said targeting moiety comprises a ATWLPPR polypeptide of VEGFR, Thrombospondin-1 mimetics, CDCRGDCFCG (cyclic) polypeptide, SCH 221153 fragment, NCNGRC (cyclic) polypeptide, CTTHWGFTLC polypeptide, CGNKRTRGC polypeptide (LyP-1), Octreotide, Vapreotide, Lanreotide, C-3940 polypeptide, Decapeptyl, Lupron, Zoladex, or Cetrorelix.

15. The compound of claim 10, wherein said targeting moiety comprises folic acid or a derivative thereof.

16. The compound of claim 10, wherein said targeting moiety comprises *extracellular domains* (ECD) or soluble form of *PD-1, CTLA4, BTLA, KIR, TIM3, 4-1BB, LAG3, full length of partial of a surface ligand amphiregulin, betacellulin, EGF, ephrin, epigen, epiregulin,* IGF, *neuregulin, TGF,* TRAIL, or *VEGF.*

17. The compound of claim 10, wherein said targeting moiety comprises a nanoparticle.

18. The compound of claim 10, wherein said targeting moiety comprises an aptamer.

19. The compound of any one of claims 1 to 18, wherein said activating moiety comprises: (a) single-stranded RNA (ssRNA), preferably ORN02, ORN06, ssPoly(U), ssRNA40, ssRNA41, ssRNA-DR, or Poly(dT); or (b) a receptor ligand analogs, preferably CL075, CL097, CL264, CL307, Gardiquimod, Loxoribine, Imiquimod, or Resiquimod.

20. The compound of any one of claims 1 to 19, wherein said linker is selected from the group consisting of a hydrazine group, a polypeptide, a disulfide group, and a thioether group.

21. The compound of any one of claims 1 to 19, wherein said linker is enzymatic cleavable.

22. The compound of any one of claims 1 to 19, wherein said linker is not enzymatic cleavable.

23. A pharmaceutical composition comprising a compound as claimed in any one of claims 1 to 25, or a pharmaceutically acceptable salt thereof, and one or more pharmaceutically acceptable carriers.

24. The pharmaceutical composition of claim23, further comprising a second chemotherapeutic agent.

25. The pharmaceutical composition of claim 24, wherein said chemotherapeutic agent is selected from the group consisting of tamoxifen, raloxifene, anastrozole, exemestane, letrozole, imatanib, paclitaxel, cyclophosphamide, lovastatin, minosine, gemcitabine, cytarabine, 5- fluorouracil, methotrexate, docetaxel, goserelin, vincristine, vinblastine,nocodazole, teniposide etoposide, gemcitabine, epothilone, vinorelbine, camptothecin, daunorubicin, actinomycin D, mitoxantrone, acridine, doxorubicin, epirubicin, or idarubicin.

26. Use of a pharmaceutical composition comprising a therapeutically effective amount of the compound of any one of claims 1 to 22 or a pharmaceutically acceptable salt thereof, and a pharmaceutical acceptable carrier, in the manufacture of a medicament for treating a disease condition in a subject.

27. The use of claim 26, wherein said diseases condition is tumor.

28. The use of claim 26, wherein said disease condition comprises abnormal cell proliferation.

29. The use of claim 28, wherein said abnormal cell proliferation comprises a pre-cancerous lesion.

30. The use of claim 28, wherein, wherein said abnormal proliferation is of cancer cells.

31. The use of claim 30 wherein said cancer is selected from the group consisting of: breast cancer, colorectal cancer, diffuse large B-cell lymphoma, endometrial cancer, follicular lymphoma, gastric cancer, glioblastoma, head and neck cancer, hepatocellular cancer, lung cancer, melanoma, multiple myeloma, ovarian cancer, pancreatic cancer, prostate cancer, and renal cell carcinoma.

32. The compound of claim 1, wherein said activating moiety comprises a TLR ligand (TLRL), a Nod-Like Receptor ligand, a RIG-Like Receptor ligand, a CLR ligand, a CDS ligand, or a inflammasome inducers.

33. The compound of claim 32, wherein said activating moiety comprises a ligand of one or more TLRs selected from the group consisting of: TLR2, TLR3, TLR4, TLR5, TLR7, TLR8, TLR7/TLR8, TLR9, and TLR10.

34. The compound of claim 33, wherein said activating moiety comprises:

(i) a ligand of TLR2 selected from the group consisting of : (a) a heat killed bacteria product, preferably HKAL, HKEB, HKHP, HKLM, HKLP, HKLR, HKMF, HKPA, HKPG, or HKSA, HKSP, and (b) a cell-wall components product, preferably LAM, LM, LPS, LTA, LTA, PGN, FSL, Pam2CSK4, Pam3CSK4, or Zymosan;

(ii) a ligand of TLR3 selected from the group consisting of: Poly (I:C) and Poly (A:U);

(iii)a ligand of TLR4 selected from the group consisting of: LPS and MPLA;

(iv) a ligand of TLR5 selected from the group consisting of: FLA and Flagellin;

(v) a ligand of TLR7/8 selected from the group consisting of: ORN02, ORN06, ssPoly(U), ssRNA40, ssRNA41, ssRNA-DR, Poly(dT), CL075, CL097, CL264, CL307, Gardiquimod, Loxoribine, Imiquimod, and Resiquimod;

(vi) a ligand of TLR9 selected from the group consisting of: ODN1585, ODN1668, ODN1826, ODN2006, ODN2007, ODN2216, ODN2336, ODN2395, and ODN M362;

(vii) a ligand of TLR10;

(viii) a ligand of nucleotide-oligomerization domain (NOD)-like selected from the group consisting of: NOD1 agonist (C12-iE-DAP , iE-DAP, Tri-DAP), NOD2 agonist (L18-MDP, MDP, M-TriLYS, M-TriLYS-D-ASN, Murabutide, N-Glycolyl-MDP), and NOD1/NOD2 agonists (M-TriDAP, PGN);

(ix) a ligand of one or more RIG-I-Like receptors (RLR) selected from the group consisting of: 5'ppp-dsRNA, Poly (dA:dT), Poly(dG:dC), and Poly (I:C);

(x) a ligand of one or more C-type lectin receptors (CLR) selected from the group consisting of: Curdlan AL, HKCA, HKSC, WGP, Zymosan, and Trehalose-6,6-dibehenate;

(xi) a ligand of one or more Cytosolic DNA Sensors (CDS) selected from the group consisting of: c-GMP, HSV-60, ISD, pCpG, Poly (dA:dT), Poly(dG:dC), Poly (dA), and VACV-70.; or

(xii) an inflammasome inducer selected from the group consisting of: (a) NLRP3 inflammasome protein complex, preferably alum Crystals, ATP, CPPD Crystals, Hermozoin, MSU Crystals, Nano-SiO2, Nigericin, and (b) AIM2 inflammasome protein complex , preferably Poly (dA:dT).

35. The compound of claim 34, wherein said activating moiety comprises IMO2134, IMO205, MGN-1703, MGN-1704, Agatolimod, SD-101, QAX-935, DIMS0150, Pollinex Quattro, OM-174, Eritoran, TAK-242, NI-0101， Type I interferon, type II interferon, type III interferon, IL-12, IL-23, IL-18, IL-7 or IL-15.