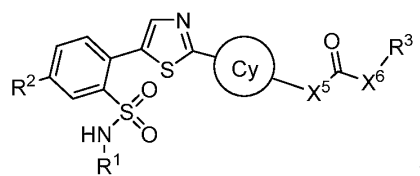


CLAIMS

What is claimed is:

1. A method of treating pancreatic cancer, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

the thiazole ring is optionally substituted with -F or -Cl;

Cy is -(C₃-C₇)cycloalkyl, bridged (C₆-C₁₂) cycloalkyl, or a 4-10 membered heterocyclic ring, each of which is optionally substituted with one or more groups selected from the group consisting of halogen, -OH, (C₁-C₄)alkyl, and (C₁-C₄)alkoxy;

when X⁵ is connected with a nitrogen ring atom of Cy, X⁵ is absent;

when X⁵ is connected with a carbon ring atom of Cy, X⁵ is NR^a or O;

X⁶ is NR^a or O;

R¹ is (C₁-C₅)alkyl optionally substituted with -OH;

R³ is (C₁-C₅)alkyl, -CH₂-phenyl, -(C₃-C₇)cycloalkyl, -CH₂-(C₃-C₇)cycloalkyl, -CH₂-monocyclic 3-7 membered heterocyclic ring, or monocyclic 3-7 membered heterocyclic ring, wherein the (C₁-C₅)alkyl, -(C₃-C₇)cycloalkyl, phenyl or monocyclic 3-7 membered heterocyclic ring represented by R³ or in the group represented by R³ is optionally substituted with one or more groups selected from the group consisting of halogen, -OH, (C₁-C₄)alkyl, halomethyl, halomethoxy, -CN, and (C₁-C₄)alkoxy;

R² is -NR^aC(O)O(C₁-C₄)alkyl; -NR^aC(O)NR^a(C₁-C₄)alkyl; -NR^aC(O)O(C₂-C₄)alkenyl; -NR^aC(O)NR^a(C₂-C₄)alkenyl; -NR^aC(O)O-(C₃-C₆)cycloalkyl; -NR^aC(O)NR^a-(C₃-C₇)cycloalkyl; -NR^aC(O)O-phenyl; -NR^aC(O)NR^a-phenyl; -NR^aC(O)O-monocyclic 3-7 membered heterocyclic ring; -NR^aC(O)NR^a-monocyclic 3-7 membered heterocyclic ring; -NR^aC(O)O-monocyclic 5-6 membered heteroaromatic ring; -NR^aC(O)NR^a-monocyclic 5-6 membered heteroaromatic ring;

wherein the (C₁-C₄)alkyl and the (C₂-C₄)alkenyl in the group represented by R² are each optionally and independently substituted with one or more groups selected from the

group consisting of halogen, N₃, -OR^a, -NR^aR^a, -(C₃-C₆)cycloalkyl, phenyl, a monocyclic 3-7 membered heterocyclic ring, and a monocyclic 5-6 membered heteroaromatic ring;

wherein the (C₃-C₇)cycloalkyl in the group represented by R² is optionally substituted with one or more groups selected from the group consisting of halogen, -CH₃, =O, -OR^a and -NR^aR^a;

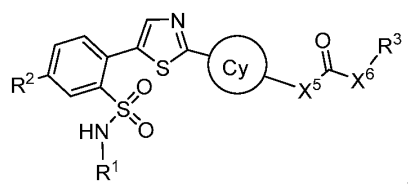
wherein the phenyl in the group represented by R² is optionally substituted with one or more groups selected from the group consisting of halogen, -CH₃, halomethyl, halomethoxy, -CN, -OR^a, and -N₃;

wherein the heterocyclic ring in the group represented by R² is optionally substituted with one or more groups selected from the group consisting of =O, halogen, -OR^a, -CH₃, halomethyl, and halomethoxy;

wherein the heteroaromatic ring in the group represented by R² is optionally substituted with one or more groups selected from the group consisting of halogen, -CN, -CH₃, halomethyl, halomethoxy, -OR^a and -NR^aR^a; and

each R^a is independently -H or -CH₃.

2. A method of treating pancreatic cancer, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

the thiazole ring is optionally substituted with -F or -Cl;

Cy is cyclohexyl or a 6-membered monocyclic heterocyclic ring;

X⁵ and X⁶ are each independently NR^a or O;

R¹ is (C₁-C₅)alkyl;

R³ is (C₁-C₅)alkyl or monocyclic 3-7-membered heterocyclic ring;

R² is -NR^aC(O)O(C₁-C₄)alkyl; -NR^aC(O)NR^a(C₁-C₄)alkyl; -NR^aC(O)O(C₂-C₄)alkenyl; -NR^aC(O)NR^a(C₂-C₄)alkenyl; -NR^aC(O)-O(C₃-C₆)cycloalkyl; -NR^aC(O)NR^a-(C₃-C₆)cycloalkyl; -NR^aC(O)O-phenyl; -NR^aC(O)NR^a-phenyl; -NR^aC(O)O-monocyclic 3-7 membered heterocyclic ring; -NR^aC(O)NR^a-monocyclic 3-7

membered heterocyclic ring; -NR^aC(O)O-monocyclic 5-6 membered heteroaromatic ring; -NR^aC(O)NR^a-monocyclic 5-6 membered heteroaromatic ring;

wherein the (C₁-C₄)alkyl and the (C₂-C₄)alkenyl in the group represented by R² are each optionally and independently substituted with one or more halogen, N₃, -OR^a, -NR^aR^a, -(C₃-C₆)cycloalkyl, phenyl, monocyclic 3-7-membered heterocyclic ring, or monocyclic 5-6-membered heteroaromatic ring;

wherein the -(C₃-C₆)cycloalkyl in the group represented by R² is optionally substituted with one or more halogen, -CH₃, -OR^a or -NR^aR^a;

wherein the phenyl in the group represented by R² is optionally substituted with one or more halogen, -CH₃, halomethyl, halomethoxy, -OR^a, or -N₃;

wherein the heterocyclic ring in the group represented by R² is optionally substituted with one or more =O, halogen, -CH₃, halomethyl, or halomethoxy;

wherein the heteroaromatic ring in the group represented by R² is optionally substituted with one or more halogen, -CH₃, halomethyl, halomethoxy, -OR^a or -NR^aR^a; and

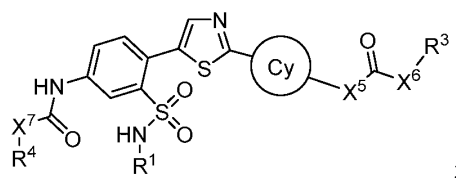
each R^a is independently -H or -CH₃.

3. The method of claim 1, wherein Cy is
 - cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl;
 - azetidiny, azepanyl, diazaspiro[4.4]nonyl, diazaspiro[3.5]nonyl, diazepanyl,
 - dihydroimidazole, dihydrofuranyl, dihydropyranyl, dihydropyridinyl, dihydropyrimidinyl,
 - dihydrothienyl, dihydrothiophenyl, dihydrothiopyranyl, hexahydropyridazinyl,
 - hexahydropyrimidinyl, hydantoinyl, indolyl, isoindolyl, morpholyl, oxiranyl, oxetanyl,
 - piperidinyl, piperazinyl, pyrrolidinonyl, pyrrolidinyl, tetrahydrofuranyl, tetrahydroimidazole,
 - tetrahydroindolyl, tetrahydropyranyl, tetrahydrothienyl, tetrahydropyridinyl,
 - tetrahydropyrimidinyl, tetrahydrothiophenyl, tetrahydrothiopyranyl, thiomorpholyl,
 - tropanyl, valerolactamyl;
 - bicyclo[2.1.1]hexyl, bicyclo[2.2.1]heptyl, bicyclo[2.2.2]octyl, bicyclo[3.2.1]octyl,
 - bicyclo[4.3.1]decyl, bicyclo[3.3.1]nonyl, bornyl, bornenyl, norbornyl, norbornenyl, 6,6-
 - dimethylbicyclo [3.1.1]heptyl, tricyclobutyl, adamantly;
 - azanorbornyl, quinuclidinyl, isoquinuclidinyl, tropanyl, azabicyclo[2.2.1]heptanyl, 2-
 - azabicyclo[3.2.1]octanyl, azabicyclo[3.2.1]octanyl, azabicyclo[3.2.2]nonanyl,
 - azabicyclo[3.3.0]nonanyl, azabicyclo [3.3.1]nonanyl, diazabicyclo[2.2.1]heptanyl,

diazabicyclo[3.2.1]octanyl, octahydropyrrolo[3,4-b]pyrrolyl, octahydropyrrolo[3,4-c]pyrrolyl.

4. The method of any one of claims 1-3, wherein Cy is cyclohexyl, morpholinyl, thiomorpholinyl, piperidinyl, piperazinyl, hexahydropyridazinyl, hexahydropyrimidinyl, valerolactamyl, dihydropyranyl, dihydropyridinyl, dihydropyrimidinyl, dihydrothiopyranyl, tetrahydropyranyl, tetrahydropyridinyl, tetrahydropyrimidinyl, or tetrahydrothiopyranyl.

5. The method of any one of claims 1-4, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



or a pharmaceutically acceptable salt thereof, wherein:

X⁷ is NH or O;

R⁴ is (C₁-C₄)alkyl, (C₃-C₆)cycloalkyl, or a monocyclic 3-7 membered heterocyclic ring;

wherein the (C₁-C₄)alkyl represented by R⁴ is optionally substituted with one or more groups selected from the group consisting of halogen, N₃, -OR^a, -NR^aR^a, -(C₃-C₆)cycloalkyl, phenyl, a monocyclic 3-7 membered heterocyclic ring, and a monocyclic 5-6 membered heteroaromatic ring,

wherein the (C₃-C₆)cycloalkyl or the monocyclic 3-7 membered heterocyclic ring represented by R⁴, the (C₃-C₆)cycloalkyl or the monocyclic 3-7 membered heterocyclic ring in the group represented by R⁴ is optionally substituted with one or more groups selected from the group consisting of halogen, -OR^a, =O, and -CH₃,

wherein the phenyl in the group represented by R⁴ is optionally substituted with one or more groups selected from the group consisting of halogen, -CH₃, halomethyl, halomethoxy, -OR^a, and -N₃;

wherein the heteroaromatic ring in the group represented by R⁴ is optionally substituted with one or more groups selected from the group consisting of halogen and -CH₃.

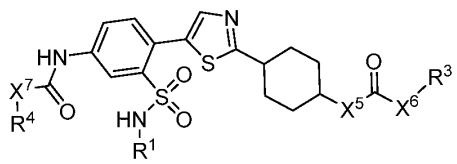
6. The method of claim 5, wherein

X^7 is NH or O;

R^3 is (C₁–C₅)alkyl; and

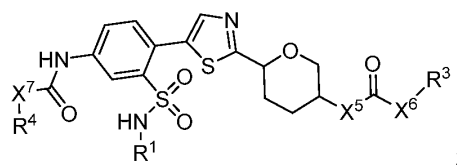
R^4 is (C₁–C₄)alkyl wherein the (C₁–C₄)alkyl represented by R^4 is optionally substituted with one or more halogen, $-OR^a$, $-NR^aR^a$, $-(C_3-C_6)$ cycloalkyl, phenyl (optionally substituted by one or more halogen, $-CH_3$, halomethyl, halomethoxy, OR^a or N_3), monocyclic 3–7-membered heterocyclic ring (optionally substituted by $=O$, halogen or $-CH_3$), or monocyclic 5–6-membered heteroaromatic ring (optionally substituted by halogen or $-CH_3$).

7. The method of any one of claims 1-6, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



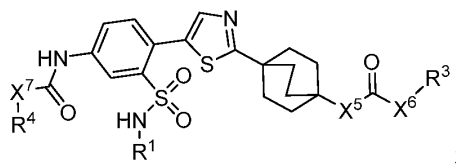
or a pharmaceutically acceptable salt thereof.

8. The method of any one of claims 1-6, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



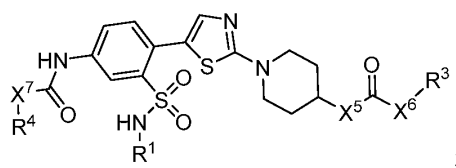
or a pharmaceutically acceptable salt thereof.

9. The method of any one of claims 1-6, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



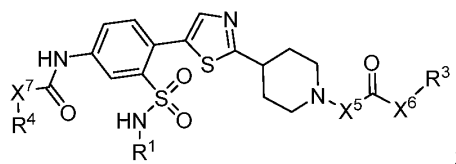
or a pharmaceutically acceptable salt thereof.

10. The method of any one of claims 1-6, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



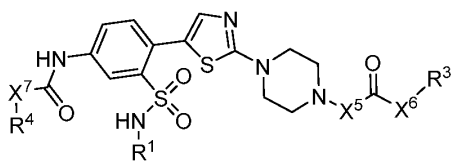
or a pharmaceutically acceptable salt thereof.

11. The method of any one of claims 1-6, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



or a pharmaceutically acceptable salt thereof.

12. The method of any one of claims 1-6, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:

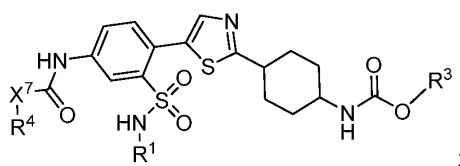


or a pharmaceutically acceptable salt thereof.

13. The method of any one of claims 1-6, wherein Cy is azetidiny1 or pyrrolidinyl, and the nitrogen ring atom is connected with the thiazole ring.
14. The method of any one of claims 1-6, wherein Cy is 1,7-diazaspiro[4.4]nonyl, 2,7-diazaspiro[4.4]nonyl, 2,7-diazaspiro[3.5]nonyl, 1,4-diazepany1, 2,5-diazabicyclo[2.2.1]heptany1, 3,8-diazabicyclo[3.2.1]octany1, octahydropyrrolo[3,4-b]pyrroly1, or octahydropyrrolo[3,4-c]pyrroly1, and the two nitrogen ring atoms are connected with the thiazole ring and the $-X^5C(O)X^6R^3$ moiety, respectively.
15. The method of any one of claims 5 and 7-14, wherein R^4 is $-(C_1-C_3)$ alkyl, (C_3-C_6) cycloalkyl, or a monocyclic 3-7 membered heterocyclic ring, wherein the $-(C_1-C_3)$ alkyl is optionally substituted with (i) phenyl optionally substituted by one or more halogen or $-CH_3$; (ii) a monocyclic 5-6 membered heteroaromatic ring optionally substituted by one or more halogen or $-CH_3$; or (iii) a monocyclic 3-7 membered heterocyclic ring optionally substituted by one or more groups selected from the group consisting of halogen and $-CH_3$.
16. The method of any one of claims 5 and 7-14, wherein R^4 is $-(C_1-C_3)$ alkyl, $-CHR^a$ -phenyl, $-CHR^a$ -5-6 membered heteroaromatic ring, or $-CHR^a$ -3-7 membered monocyclic heterocyclic ring, wherein the phenyl, 5-6 membered heteroaromatic ring or 3-7 membered monocyclic heterocyclic ring in the group represented by R^4 is optionally substituted one or more groups selected from the group consisting of halogen and $-CH_3$.
17. The method of any one of claims 5-14, wherein R^4 is $-(C_1-C_3)$ alkyl, optionally substituted with (i) phenyl optionally substituted by one or more halogen, $-CH_3$, halomethyl, halomethoxy, OR^a , or N_3 ; (ii) a monocyclic 5-6-membered heteroaromatic ring optionally substituted by one or more halogen or $-CH_3$; or (iii) a monocyclic 3-7-membered heterocyclic ring optionally substituted by one or more $=O$ or $-CH_3$.
18. The method of claim 17, wherein R^4 is (i) $-(C_1-C_3)$ alkyl; (ii) $-CH_2$ -phenyl optionally substituted by halogen, $-CH_3$, halomethyl, halomethoxy, OR^a , or N_3 ; (iii) $-CH(CH_3)$ -phenyl optionally substituted by halogen, $-CH_3$, halomethyl, halomethoxy, OR^a , or N_3 ; (iv) $-CH_2$ -5-6-membered heteroaromatic ring optionally substituted by halogen or $-CH_3$; or (v) $-CH_2$ -3-7-membered monocyclic heterocyclic ring optionally substituted by $=O$ or $-CH_3$.

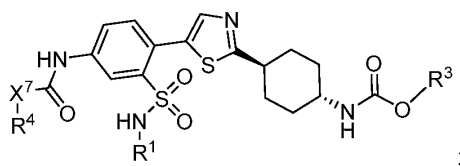
19. The method of any one of claims 1, 3-5, and 7-18, wherein R^3 is (C1-C4)alkyl, - (C4-C6)cycloalkyl, -CH₂-phenyl, -CH₂-monocyclic 4-6 membered heterocyclic ring, or monocyclic 4-6 membered heterocyclic ring, wherein the phenyl or monocyclic 4-6 membered heterocyclic ring represented by R^3 or in the group represented by R^3 is optionally substituted with one or more groups selected from the group consisting of halogen, -OR^a, and -CH₃.

20. The method of any one of claims 1-7 and 15-19, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



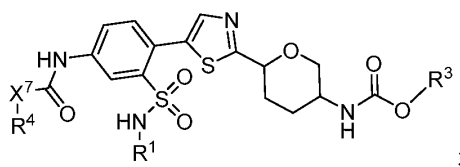
or a pharmaceutically acceptable salt thereof.

21. The method of claim 20, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



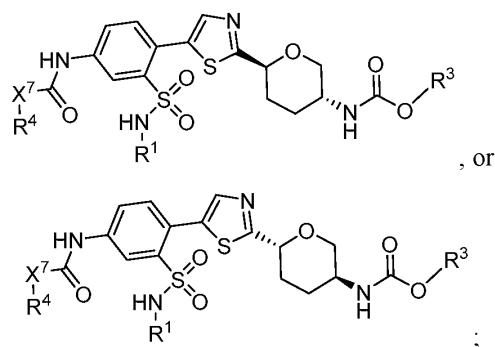
or a pharmaceutically acceptable salt thereof.

22. The method of any one of claims 1-6, 8, and 15-19, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



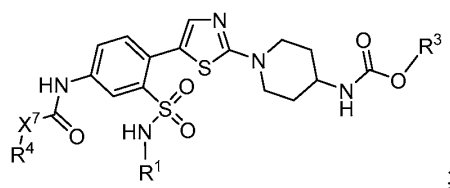
or a pharmaceutically acceptable salt thereof.

23. The method of claim 22, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



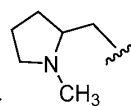
or a pharmaceutically acceptable salt thereof.

24. The method of any one of claims 1-6, 10, and 15-19, the method comprising administering to a subject in need thereof an effective amount of a compound represented by the following structural formula:



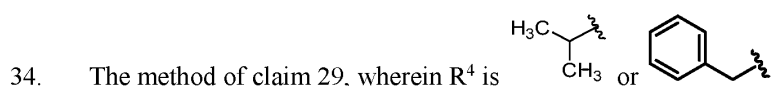
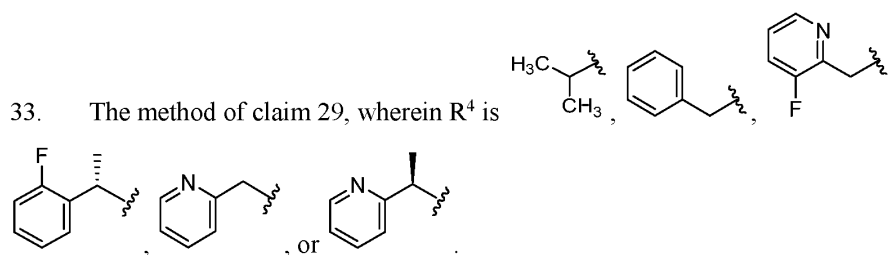
or a pharmaceutically acceptable salt thereof.

25. The method of any one of claims 1-24, wherein R³ is isopropyl, *tert*-butyl, cyclobutyl,



cyclopentyl, benzyl, oxetanyl, tetrahydro-2H-pyran-yl, or

26. The method of any one of claims 1-25, wherein R¹ is *tert*-butyl.
27. The method of any one of claims 1-26, wherein R³ is isopropyl or oxetanyl.
28. The method of claim 27, wherein R³ is isopropyl.



35. The method of any one of claims 1-34, further comprising the step of co-administering to the subject an effective amount of a DNA repair inhibitor, a DNA damage response (DDR) inhibitor, a DNA damaging agent or an immunomodulatory agent.

36. The method of claim 35, wherein the DNA damaging agent is selected from the group consisting of: exposure to a DNA damaging chemical; exposure to a chemotherapeutic agent; exposure to a radiochemotherapy, and exposure to ionizing or ultraviolet radiation.

37. The method of any one of claims 35-36, wherein the subject is determined to have an increased level and/or activity of a DNA damage process or DNA editing enzyme.

38. The method of claim 37, wherein the immunomodulatory agent is selected from the group consisting of immune checkpoint modulators, Toll-like receptor (TLR) agonists, cell-based therapies, cytokines and cancer vaccines.

39. The method of claim 37, wherein the DNA editing enzyme is selected from the group consisting of activation induced cytidine deaminase (AID or AICDA), APOBEC2, APOBEC3A, APOBEC3C, APOBEC3D, APOBEC3F, APOBEC3G, APOBEC3H, APOBEC4, a Type 1 Topoisomerase, a Type 2 Topoisomerase, Recombination Activating Gene 1 (RAG 1), and Recombination Activating Gene 2 (RAG2).

40. The method of any one of claims 1-39, wherein the subject is a mammal.

41. The method of any one of claims 1-40, wherein the subject is a human.

42. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage ranging from about 1 mg/m² to about 500 mg/m².

43. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage of about 3±2 mg/m², 3±1.8 mg/m², 3±1.6 mg/m², 3±1.5 mg/m², 3±1.4 mg/m², 3±1.3 mg/m², 3±1.2 mg/m², 3±1.1 mg/m², 3±1 mg/m², 3±0.9 mg/m², 3±0.8 mg/m², 3±0.7 mg/m², 3±0.6 mg/m², 3±0.5 mg/m², 3±0.4 mg/m², 3±0.3 mg/m², 3±0.2 mg/m², or 3±0.1 mg/m².

44. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage of about 3 mg/m².

45. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage of about 120±100 mg/m², 120±90 mg/m², 120±80 mg/m², 120±70 mg/m², 120±60 mg/m², 120±50 mg/m², 120±45 mg/m², 120±40 mg/m², 120±35 mg/m², 120±30 mg/m², 120±25 mg/m², 120±20 mg/m², 120±15 mg/m², 120±10 mg/m², 120±9 mg/m², 120±8 mg/m², 120±7 mg/m², 120±6 mg/m², 120±5 mg/m², 120±4 mg/m², 120±3 mg/m², 120±2 mg/m², or 120±1 mg/m².

46. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage of about 120 mg/m².

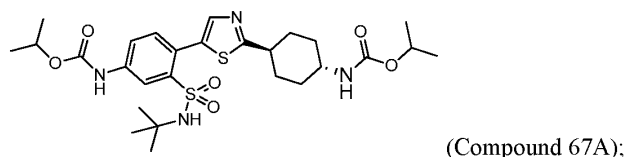
47. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage of about 240±100 mg/m², 240±90 mg/m², 240±80 mg/m², 240±70 mg/m², 240±60 mg/m², 240±50 mg/m², 240±45 mg/m², 240±40 mg/m², 240±35 mg/m², 240±30 mg/m², 240±25 mg/m², 240±20 mg/m², 240±15 mg/m², 240±10 mg/m², 240±9 mg/m², 240±8 mg/m², 240±7 mg/m², 240±6 mg/m², 240±5 mg/m², 240±4 mg/m², 240±3 mg/m², 240±2 mg/m², or 240±1 mg/m².

48. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage of about 240 mg/m².

49. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered followed by a 14-day dosing holiday.
50. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered followed by a 21-day dosing holiday.
51. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at about 240 mg/m² followed by a 14-day dosing holiday.
52. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at about 240 mg/m² followed by a 21-day dosing holiday.
53. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at about 120 mg/m² followed by a 14-day dosing holiday.
54. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at about 120 mg/m² followed by a 21-day dosing holiday.
55. The method of any one of claims 1-41, wherein the RAD51 inhibitor is Compound 67A or the pharmaceutically acceptable salt thereof.
56. The method of any one of claims 1-41, wherein the RAD51 inhibitor is administered at a dosage ranging from about 50 mg/day to about 500 mg/day.
57. The method of any one of claims 1-56, wherein the RAD51 inhibitor is administered once daily.
58. The method of any one of claims 1-56, wherein the RAD51 inhibitor is administered once every other day.
59. The method of any one of claims 1-57, wherein the RAD51 inhibitor is administered once daily for four weeks.

60. The method of any one of claims 1-57, wherein the RAD51 inhibitor is administered once daily for four weeks followed by a dosing holiday.

61. The method of any one of claims 1-60, wherein the RAD51 inhibitor is Compound 67A:



or a pharmaceutically acceptable salt thereof.

62. A composition comprising Compound 67A, or a pharmaceutically acceptable salt thereof, for use in treating pancreatic cancer in a subject in need thereof.

63. Compound 67A, or a pharmaceutically acceptable salt thereof, for use in treating pancreatic cancer in a subject in need thereof.

64. Use of a composition comprising Compound 67A, or a pharmaceutically acceptable salt thereof, for the treatment of pancreatic cancer in a subject in need thereof.

65. Use of Compound 67A, or a pharmaceutically acceptable salt thereof, for the treatment of pancreatic cancer in a subject in need thereof.

66. Use of a composition comprising Compound 67A, or a pharmaceutically acceptable salt thereof, for the manufacture of a medicament for the treatment of pancreatic cancer in a subject in need thereof.

67. Use of Compound 67A, or a pharmaceutically acceptable salt thereof, for the manufacture of a medicament for the treatment of pancreatic cancer in a subject in need thereof.