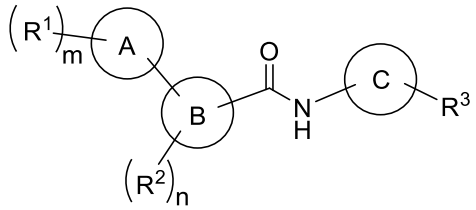
What is Claimed:

1. A combination comprising a PolQ inhibitor and a second anti-cancer therapeutic agent, wherein:

the PolQ inhibitor is represented by compounds of Formula (I), or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof, wherein:



(I);

ring A is selected from C_6-C_{14} aryl or 5-14 membered heteroaryl;

ring B is selected from partially unsaturated 5-14 membered heterocycloalkyl, C_6-C_{14} aryl or 5-14 membered heteroaryl;

ring C is selected from partially unsaturated 5-10 membered heterocycloalkyl or 5-10 membered heteroaryl; each is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from R^6;

m is 1, 2, 3, 4 or 5;

n is 1, 2, 3, 4 or 5;

each R^1 is independently selected from H, D, halogen, -CN, $-NO_2$, N_3, $-SF_5$, oxo, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl, $-NR^CR^D$, $-OR^A$, $-SR^A$, $-NR^COR^A$, $-C(O)R^B$, $-C(O)NR^CR^D$, $-C(O)OR^A$, $-OC(O)R^B$, $-NR^CC(O)R^B$, $-S(O)R^B$, $-S(O)_2R^B$, $-S(O)NR^CR^D$, $-NR^CS(O)_2R^D$, $-S(O)_2NR^CR^D$, $-NR^CS(O)_2NR^CR^D$, $-NR^CS(O)(=NR^B)R^B$, $SiR^GR^HR^I$, $B(OR^C)(OR^D)$, $-P(O)R^ER^F$, $-P(O)OR^EOR^F$, $-OP(O)OR^EOR^F$; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from R^{1A}; or

two R^1 together with the atoms to which they are attached form oxo, C_3-C_7 cycloalkyl or 4-7 membered heterocycloalkyl; wherein, the C_3-C_7 cycloalkyl or 4-7 membered heterocycloalkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from R^{1A};

each R^{1A} is independently selected from D, halogen, CN, $-NO_2$, N_3, oxo, OR^a, NR^cR^d, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_6 cycloalkyl or 4-6 membered heterocycloalkyl is optionally substituted with D, halogen, CN, OH, NH_2, oxo, NR^cR^d, OR^a, SR^a, C_1-C_6 alkyl, C_1-C_6 haloalkyl;

each R^2 is independently selected from H, D, CN, NO_2, N_3, oxo, SF_5, halogen, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, $-NR^CR^D$, $-OR^A$, $-SR^A$, $-NR^COR^A$, $-C(O)R^B$, $-C(O)NR^CR^D$, $-C(O)OR^A$, $-OC(O)R^B$, $-NR^CC(O)R^B$, $-S(O)R^B$, $-S(O)_2R^B$, $-S(O)NR^CR^D$, $-NR^CS(O)_2R^D$, $-S(O)_2NR^CR^D$, $-NR^CS(O)_2NR^CR^D$, $-NR^CS(O)(=NR^B)R^B$, $SiR^GR^HR^I$, $B(OR^C)(OR^D)$, $-P(O)R^ER^F$, $-P(O)OR^EOR^F$, $-OP(O)OR^EOR^F$; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10}

cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from R^{2A}; or

two R^2 together with the atoms to which they are attached form oxo, C_3-C_7 cycloalkyl, 4-7 membered heterocycloalkyl; wherein, the C_3-C_7 cycloalkyl, 4-7 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl is optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^{2A};

each R^{2A} is independently selected from D, halogen, CN, OH, NH_2, NO_2, SF_5, oxo, C_1-C_4 alkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl, phenyl, 5-6 membered heteroaryl, NR^cR^d, OR^a, SR^a, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $S(O)(=NR^b)R^b$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^d$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, or $NR^cS(O)(=NR^b)R^b$; wherein, the C_1-C_4 alkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl is optionally substituted with D, halogen, CN, OH, NH_2, oxo, $NR^{c1}R^{d1}$, OR^{a1}, SR^{a1}, C_1-C_6 alkyl, C_1-C_6 haloalkyl;

R^3 is selected from H, D, halo, CN, oxo, NO_2, SF_5, C_1-C_{10} alkyl, C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, C_3-C_{14} cycloalkyl, 4-14 membered heterocycloalkyl, C_6-C_{14} aryl, 5-14 membered heteroaryl, OR^A, SR^A, NR^COR^A, NR^CR^D, $C(O)R^B$, $C(O)NR^CR^D$, $NR^CC(O)R^B$, $NR^CC(O)OR^A$, $NR^CS(O)_2R^D$, $NR^CS(O)_2NR^CR^D$, $S(O)R^B$, $S(O)_2R^B$; wherein, the C_1-C_{10} alkyl, C_2-C_{10} alkenyl, C_2-C_{10} alkynyl, C_3-C_{14} cycloalkyl, 4-14 membered heterocycloalkyl, C_6-C_{10} aryl, 5-14 membered heteroaryl is optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4;

each R^4 is independently selected from D, halo, CN, NO_2, N_3, oxo, NR^CR^D, OR^A, SR^A, NR^COR^A, $C(O)R^B$, $C(O)NR^CR^D$, $C(O)OR^A$, $OC(O)R^B$, $OC(O)NR^CR^D$, $NR^CC(O)R^B$, $NR^CC(O)NR^CR^D$, $NR^CC(O)OR^A$, $S(O)R^B$, $S(O)_2R^B$, $S(O)NR^CR^D$, $NR^CS(O)_2R^D$, $S(O)_2NR^CR^D$, $NR^CS(O)_2NR^CR^D$, $NR^CS(O)(=NR^B)R^B$, $SiR^GR^HR^I$, $B(OR^C)(OR^D)$, $-P(O)R^ER^F$, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_6-C_{10} aryl, C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl, or 4-10 membered heterocycloalkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_6-C_{10} aryl, C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl, or 4-10 membered heterocycloalkyl is optionally substituted with 1, 2, 3, 4, or 5 substituents independently selected from R^5;

each R^5 is independently selected from D, CN, halo, NO_2, SF_5, oxo, optionally substituted C_1-C_6 alkyl, optionally substituted C_2-C_6 alkenyl, optionally substituted C_2-C_6 alkynyl, optionally substituted C_3-C_6 cycloalkyl, optionally substituted 4-6 membered heterocycloalkyl, OR^a, SR^a, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $S(O)(=NR^b)R^b$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^d$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, or $NR^cS(O)(=NR^b)R^b$;

each R^6 is independently selected from D, halo, CN, NO_2, $-N_3$, oxo, SF_5, NR^CR^D, OR^A, SR^A, $SiR^GR^HR^I$, $B(OR^C)(OR^D)$, $-P(O)R^ER^F$, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, phenyl, C_3-C_7 cycloalkyl, 5-6 membered heteroaryl, or 4-7 membered heterocycloalkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, phenyl, C_3-C_7 cycloalkyl, 5-6 membered heteroaryl, or 4-7 membered heterocycloalkyl is optionally substituted by 1, 2, 3, 4 or 5 substituents

independently selected from R^{6A};

two R^6 on the same ring carbon atom form oxo, C_3-C_7 cycloalkyl, 4-7 membered heterocycloalkyl; wherein, the C_3-C_7 cycloalkyl, 4-7 membered heterocycloalkyl is optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^{6A};

two adjacent R^6 together with the atoms to which they are attached form C_3-C_7 cycloalkyl, 4-7 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl; wherein, the C_3-C_7 cycloalkyl, 4-7 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl is optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^{6A};

each R^{6A} is independently selected from D, halogen, CN, OH, NH_2, NO_2, SF_5, oxo, C_1-C_4 alkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl, phenyl, 5-6 membered heteroaryl, NR^cR^d, OR^a, SR^a, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $S(O)(=NR^b)R^b$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^d$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, or $NR^cS(O)(=NR^b)R^b$; wherein, the C_1-C_4 alkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl is optionally substituted with D, halogen, CN, OH, NH_2, oxo, $NR^{c1}R^{d1}$, OR^{a1}, SR^{a1}, C_1-C_6 alkyl, C_1-C_6 haloalkyl;

each R^A is independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocyclalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkyl-OH, C_1-C_4 alkyl-CN, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, NO_2, oxo, OR^a, SR^a, SF_5, $NHOR^a$, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $B(OR^c)(OR^d)$, $C(=NR^c)NR^cR^d$, $NR^dC(=NR^c)NR^cR^d$, $NR^dC(=NR^c)R^b$, $P(O)R^eR^f$, $P(O)OR^eOR^f$, $OP(O)OR^eOR^f$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, $NR^cS(O)(=NR^b)R^b$ or $SiR^gR^hR^i$;

each R^B is independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, oxo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 cyanoalkyl, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, SF_5, OR^a, $C(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $S(O)R^b$,

$S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, or $B(OR^c)(OR^d)$;

R^C and R^D are each independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, oxo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 cyanoalkyl, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, SF_5, OR^a, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$ or $B(OR^c)(OR^d)$;

or R^C and R^D together with the N atom to which they are attached form 4-7 membered heterocycloalkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, OH, oxo, CN, $-NH_2$, $-NH(C_1$-C_4 alkyl), $-N(C_1$-C_4 alkyl)$_2$, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 cyanoalkyl, OC_1-C_4 alkyl, or OC_1-C_4 haloalkyl;

R^a and R^{a1} are each independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; wherein the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, halo, OH, CN, $-NH_2$, $-NH(C_1$-C_4 alkyl), $-N(C_1$-C_4 alkyl)$_2$, C_1-C_4 alkyl, OC_1-C_4 alkyl, C_1-C_4 haloalkyl, or OC_1-C_4 haloalkyl;

R^b and R^{b1} are each independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, OH, CN, $-NH_2$, $-NH(C_1$-C_4 alkyl), $-N(C_1$-C_4 alkyl)$_2$, halo, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_6-C_{10} aryl, C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl, or 4-10 membered heterocycloalkyl;

R^c, R^d, R^{c1}, R^{d1} are each independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, 4-10 membered heterocycloalkyl-C_1-C_6 alkyl, C_6-C_{10} aryl-C_3-C_{10} cycloalkyl, C_6-C_{10} aryl-4-10 membered heterocycloalkyl, C_6-C_{10} aryl-heteroaryl, bi(C_6-C_{10} aryl), 5-10 membered

heteroaryl-C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl-4-10 membered heterocycloalkyl, 5-10 membered heteroaryl-C_6-C_{10} aryl, or bi(5-10 membered heteroaryl); wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, 4-10 membered heterocycloalkyl-C_1-C_6 alkyl, C_6-C_{10} aryl-C_3-C_{10} cycloalkyl, C_6-C_{10} aryl-4-10 membered heterocycloalkyl, C_6-C_{10} aryl-heteroaryl, bi(C_6-C_{10} aryl), 5-10 membered heteroaryl-C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl-4-10 membered heterocycloalkyl, 5-10 membered heteroaryl-C_6-C_{10} aryl, or bi(5-10 membered heteroaryl) is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, OH, CN, -NH_2, -NH(C_1-C_4 alkyl), -N(C_1-C_4 alkyl)$_2$, halo, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 hydroxyalkyl, C_1-C_4 cyanoalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C(O)OR^{a1}, C(O)R^{b1}, S(O)$_2R^{b1}$, C_1-C_4 alkyl-O-C_1-C_4 alkyl or C_1-C_4 alkyl-O-C_1-C_4 alkyl-O-;

or R^c and R^d together with the N atom to which they are attached form a 4-7 membered heterocycloalkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, OH, CN, -NH_2, -NH(C_1-C_4 alkyl), -N(C_1-C_4 alkyl)$_2$, halo, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 hydroxyalkyl, C_1-C_4 cyanoalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_1-C_4 alkoxy-C_1-C_4 alkyl or C_1-C_4 alkoxy-C_1-C_4 alkoxy;

or R^{c1} and R^{d1} together with the N atom to which they are attached form a 4-7 membered heterocycloalkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, OH, CN, -NH_2, -NH(C_1-C_4 alkyl), -N(C_1-C_4 alkyl)$_2$, halo, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 haloalkyl, C_1-C_4 haloalkoxy, C_1-C_4 hydroxyalkyl, C_1-C_4 cyanoalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_1-C_4 alkoxy-C_1-C_4 alkyl or C_1-C_4 alkoxy-C_1-C_4 alkoxy;

R^E and R^e are each independently selected from H, D, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_2-C_4 alkenyl, (C_1-C_4 alkoxy)-C_1-C_4 alkyl, C_2-C_4 alkynyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl-C_1-C_4 alkyl, C_3-C_{10} cycloalkyl-C_1-C_4 alkyl, 5-10 membered heteroaryl-C_1-C_4 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_4 alkyl;

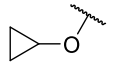
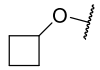
R^F and R^f are each independently selected from H, D, C_1-C_4 alkyl, C_2-C_4 alkenyl, C_2-C_4 alkynyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_3-C_{10} cycloalkyl, or 4-10 membered heterocycloalkyl;

R^G, R^H and R^I, R^g, R^h and R^i are each independently selected from optional substituted C_1-C_4 alkyl or optional substituted phenyl;

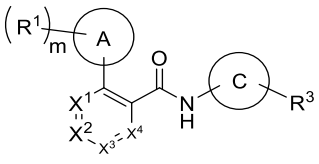
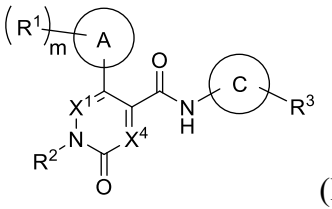
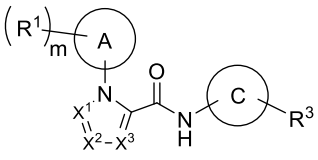
the second anti-cancer therapeutic agent is PARP inhibitor, PolQ inhibitor, chemotherapy, ionizing radiation or immune oncology medicine.

2. The compound of claim 1, wherein, each R^1 is independently selected from H, D, halogen, -CN, -NO_2, N_3, -SF_5, oxo, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl, -NR^CR^D, -OR^A, -SR^A, -NR^COR^A, -C(O)R^B, -C(O)NR^CR^D, -C(O)OR^A, -OC(O)R^B, -$NR^CC(O)R^B$, -S(O)R^B, -S(O)$_2R^B$, -S(O)NR^CR^D, -$NR^CS(O)_2R^D$, -S(O)$_2NR^CR^D$, -$NR^CS(O)_2NR^CR^D$, -$NR^CS(O)(=NR^B)R^B$, $SiR^GR^HR^I$,

$B(OR^C)(OR^D)$, $-P(O)R^ER^F$, $-P(O)OR^EOR^F$, $-OP(O)OR^EOR^F$; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_6 cycloalkyl, 4-6 membered heterocycloalkyl, phenyl or 5-6 membered heteroaryl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from R^{1A}; preferably, each R^1 is independently selected from H, D, F, Cl, Br, -CN, $-NO_2$, N_3, $-SF_5$, CD_3, CH_3, CH_2CH_3, n-propyl, i-propyl, n-butyl, i-butyl, t-butyl, CH_2F, CHF_2, CF_3, CH_2CH_2F, CH_2CHF_2, CH_2CF_3, CH_2OH, $-CH(OH)CH_3$, CH_2CH_2OH, $-CH_2OCH_3$, $-CH_2OCHF_2$, $-CH_2OCH_2F$, $-CH_2OCF_3$, $-CH(OCH_3)CH_3$, $CH_2CH_2NH_2$, $-CH(NH_2)CH_3$, $CH_2N(CH_3)_2$, $CH_2CH_2N(CH_3)_2$, CH_2CN, NH_2, $NHCH_3$, $NHCH(CH_3)_2$, $NHCH_3$, $N(CH_3)_2$, $N(CH_2CH_3)_2$, OH, OCH_3, OCH_2CH_3, $OCH_2CH_2CH_3$, $OCH(CH_3)_2$, OCH_2F, $OCHF_2$, OCF_3, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3, $-CH(OH)CH_3$, OCH_2CN or OCH_2CONH_2; and/or

each R^2 is independently selected from H, D, CN, NO_2, N_3, oxo, SF_5, halogen, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, $-NR^CR^D$, $-OR^A$, $-SR^A$, $-NR^COR^A$, $-C(O)R^B$, $-C(O)NR^CR^D$, $-C(O)OR^A$, $-OC(O)R^B$, $-NR^CC(O)R^B$, $-S(O)R^B$, $-S(O)_2R^B$, $-S(O)NR^CR^D$, $-NR^CS(O)_2R^D$, $-S(O)_2NR^CR^D$, $-NR^CS(O)_2NR^CR^D$, $-NR^CS(O)(=NR^B)R^B$, $SiR^GR^HR^I$, $B(OR^C)(OR^D)$, $-P(O)R^ER^F$, $-P(O)OR^EOR^F$, $-OP(O)OR^EOR^F$; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from R^{2A}; preferably, each R^2 is independently selected from H, D, CN, NO_2, N_3, oxo, SF_5, halogen, CH_3, CD_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH(CH_3)_2$, CH_2F, CHF_2, CF_3, CH_2OH, CH_2CH_2OH, CH_2CN, NH_2, $NHCH_3$, $N(CH_3)_2$, $NHCH_2CH_3$, $N(CH_2CH_3)_2$, $NHCH_2CH_2CH_3$, $N(CH_2CH_2CH_3)_2$, $NHCH(CH_3)_2$, $NHCH_2CH_2OH$, OH, OCH_3, OCH_2CH_3, $OCH_2CH_2CH_3$, $OCH(CH_3)_2$, OCH_2F, $OCHF_2$, OCF_3, , , optionally substituted pyrrolyl or optionally substituted imidazolyl.

3. The combination of anyone of claim 1-2, wherein, the compounds of Formula (I) are represented by compounds of Formula (IIa), (IIb) or (IIc):

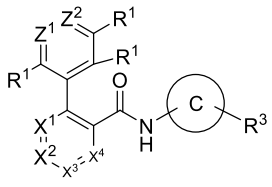
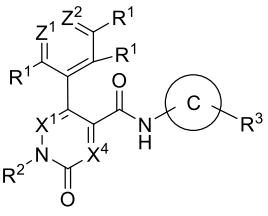
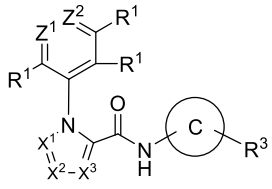

(IIa),

(IIb),

(IIc);

or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof;

X^1, X^2, X^3, X^4 are each independently selected from N or CR^2;

wherein, ring A, ring C, R^1, R^2, R^3 and m are defined with respect to Formula (I);

preferably, the compounds of Formula (I) are represented by compounds of Formula (IIIa), (IIIb) or (IIIc):

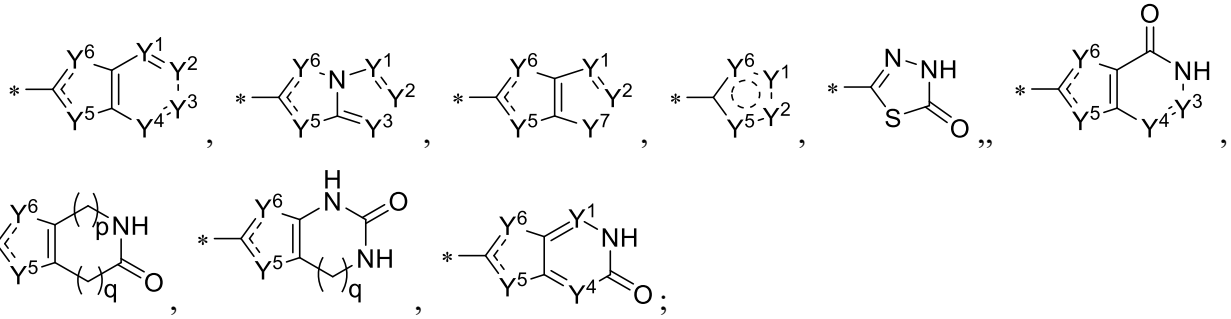

(IIIa),

(IIIb),

(IIIc);

or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof;

Z^1 and Z^2 are each independently selected from N or CR^1;

wherein, ring C, X^1, X^2, X^3, X^4, R^1, R^3 and m are defined with respect to Formula (I).

4. The combination of anyone of claim 1-3, wherein, ring C is selected from:



wherein, ---- is a single bond or double bond;

Y^1, Y^2, Y^3, Y^4 is same or different, and independently N or CH;

Y^5 is N, or S;

Y^6 is N, or S;

Y^7 is NH, O, or S;

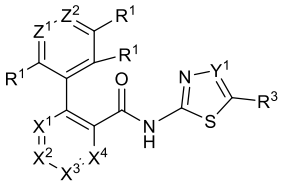
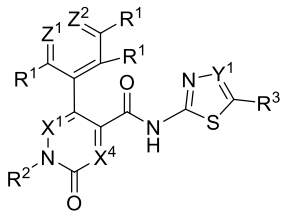
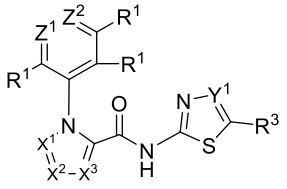
p and q are each independently selected from 0, 1 or 2;

the position * is attached to -NHC(=O)-;

R^3 is attached to any possible position on the ring C and one hydrogen atom of ring C replaced with R^3;

and one or more hydrogen atoms of ring C are optionally preplaced with 1, 2, 3, 4 or 5 substituents independently selected from R^6.

5. The combination of anyone of claim 1-4, wherein, the compounds of Formula (I) are represented by compounds of Formula (IVa), (IVb) or (IVc):


(IVa),

(IVb),

(IVc);

or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof;

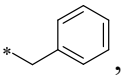
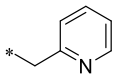
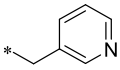
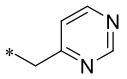
Y^1 is N or CR^6;

wherein, X^1, X^2, X^3, X^4, Z^1, Z^2, R^1, R^3 and m are defined with respect to Formula (I);

preferably, Y^1 is N; or

Y^1 is CR^6 and R^6 is H.

6. The combination of claim 5, wherein, R^3 is OR^A and R^A is C_1-C_6 alkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkyl-OH, C_1-C_4 alkyl-CN, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, NO_2, oxo, OR^a, SR^a, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $B(OR^c)(OR^d)$, $P(O)R^eR^f$, $P(O)OR^eOR^f$, $OP(O)OR^eOR^f$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, $NR^cS(O)(=NR^b)R^b$ or $SiR^gR^hR^i$; preferably, R^3 is OH, OCH_3, OCH_2CH_3, $OCH_2CH_2CH_3$, $OCH(CH_3)_2$, OCH_2F, $OCHF_2$, OCF_3, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3, OCF_2CF_3, OCH_2CH_2OH, $OCH_2CH(OH)_2$, $OCH_2CH_2OCH_3$, $OCH(CH_3)CH_2OH$, $OCH(CH_3)CH_2OCH_3$, $OCH_2CH(CH_3)OH$, $OCH_2CH(CH_3)OCH_3$, $OCH_2Si(CH_3)_3$, $OCH_2CH_2Si(CH_3)_3$, $OCH_2CH_2B(OH)_2$; or

R^3 is OR^A and R^A is C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; preferably, R^A is , , , , -CH_2-cyclopropyl, -CH_2-cyclobutyl, -CH_2-cyclopentyl, -CH_2-cyclohexyl, -CH_2-cycloheptyl, -CH_2-azetidinyl, -CH_2-pyrrolidinyl, -CH_2-piperidinyl, -CH_2-dioxanyl, -CH_2-piperazinyl, -CH_2-morpholinyl, -CH_2-azepanyl, -CH_2-diazocanyl, -CH_2-2,6-diazaspiro[3.3]heptanyl, -CH_2-octahydropyrrolo[3,4-c]pyrrolyl, -CH_2-2-azabicyclo[2.2.2]octanyl, -CH_2-4,5,6,7-tetrahydropyrrolo[2,3-b]pyridinyl; each R^A is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkyl-OH, C_1-C_4 alkyl-CN, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, NO_2, oxo, OR^a, SR^a, SF_5, $NHOR^a$, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $B(OR^c)(OR^d)$, $C(=NR^c)NR^cR^d$, $NR^dC(=NR^c)NR^cR^d$, $NR^dC(=NR^c)R^b$, $P(O)R^eR^f$, $P(O)OR^eOR^f$, $OP(O)OR^eOR^f$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, or $NR^cS(O)(=NR^b)R^b$; or

R^3 is SR^A, and R^A is C_1-C_6 alkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkyl-OH, C_1-C_4 alkyl-CN, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, NO_2, oxo, OR^a, SR^a, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $B(OR^c)(OR^d)$, $P(O)R^eR^f$, $P(O)OR^eOR^f$, $OP(O)OR^eOR^f$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, $NR^cS(O)(=NR^b)R^b$ or $SiR^gR^hR^i$; preferably, R^3 is SCH_3, SCH_2CH_3, $SCH_2CH_2CH_3$, $SCH(CH_3)_2$, SCH_2CF_3, SCH_2CH_2CN, $SCH_2CH_2CH_2CN$, SCH_2CH_2OH, $SCH_2CH_2OCH_3$, $SCH_2CH_2OCH_2CH_3$, $SCH(CH_3)CH_2OCH_3$, $SCH_2CH(CH_3)OCH_3$, $SCH_2C(CH_3)_2OCH_3$, $SCH(CH_3)CH_2OH$, $SCH_2CH(CH_3)OH$, $SCH_2C(CH_3)_2OH$; or

R^3 is NR^CR^D; wherein, R^C is selected from H, D, C_1-C_6 alkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, oxo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 cyanoalkyl, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, SF_5, OR^a, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$ or $B(OR^c)(OR^d)$, and R^D is independently selected from H, D, C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered

heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl; wherein, the C_1-C_6 alkyl, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_{10} cycloalkyl, 4-10 membered heterocycloalkyl, C_6-C_{10} aryl, 5-10 membered heteroaryl, C_6-C_{10} aryl-C_1-C_6 alkyl, 5-10 membered heteroaryl-C_1-C_6 alkyl, C_3-C_{10} cycloalkyl-C_1-C_6 alkyl, or 4-10 membered heterocycloalkyl-C_1-C_6 alkyl is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, oxo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 cyanoalkyl, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, SF_5, OR^a, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$ or $B(OR^c)(OR^d)$; preferably, R^3 is NR^CR^D; R^C is H, D, CH_3, CH_2CH_3; and R^D is CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH_2(CH_3)_2$, $CH_2CH_2CH_2CH_3$, $CH_2CH_2(CH_3)_2$, $CH(CH_3)_3$, CH_2CF_3, CH_2CH_2OH, $CH_2CH_2OCH_3$, CH_2CH_2CN, $CH_2CH_2N(CH_3)C(O)CH_3$, $CH_2CH_2N(CH_3)S(O)_2CH_3$, $CH_2CH_2N(CH_3)S(O)_2N(CH_3)_2$; or

R^3 is $S(O)_2R^B$.

7. The combination of claim 5, wherein, R^3 is C_1-C_{10} alkyl optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4; and each R^4 is independently selected from D, halo, CN, NO_2, N_3, oxo, NR^CR^D, OR^A, SR^A, $C(O)R^B$, $C(O)NR^CR^D$, $C(O)OR^A$, $S(O)_2R^B$, $S(O)_2NR^CR^D$, $C(O)NR^CS(O)_2R^B$; preferably, R^3 is CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH(CH_3)_2$, $CH_2CH_2CH_2CH_3$, $CH_2CH(CH_3)_2$, $C(CH_3)_3$, CH_2F, CHF_2, CF_3, CH_2CH_2F, CH_2CHF_2, CH_2CF_3, CF_2CH_3, CF_2CF_3, $CF_2CH_2CH_3$, CH_2OH, CH_2CH_2OH, $CH(OH)CH_3$, $CH_2CH_2CH_2OH$, $CH(OH)CH_2CH_2OH$, CH_2OCH_3, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$, $CH(OH)CH_2CH_2OCH_3$, CH_2CN, CH_2CH_2CN, $CH_2CH_2CH_2CN$;

preferably, R^3 is C_1-C_2 alkyl optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^4; and one of R^4 is OR^A, $C(O)R^B$, $C(O)NR^CR^D$, $C(O)OR^A$, $S(O)_2R^B$, $S(O)_2NR^CR^D$ or $C(O)NR^CS(O)_2R^B$; or

R^3 is C_1-C_2 alkyl optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^4; and one of R^4 is OR^A; preferably, R^A is H, CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH(CH_3)_2$, CH_2F, CHF_2, CF_3, CH_2CH_2F, CH_2CHF_2, CH_2CF_3, CF_2CF_3, CH_2CH_2OH, $CH_2CH_2OCH_3$, phenyl, pyrrolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, indolyl, pyrrolidinyl, tetrahydrofuranyl, piperidinyl, dioxanyl, tetrahydropyranyl, tetrahydrothiopyranyl, piperazinyl, morpholinyl, azepanyl, 2-oxa-6-azaspiro[3.3]heptanyl, octahydropyrrolo[3,2-b]pyridinyl, 2-azabicyclo[2.2.2]octanyl, 2,3,4,6-tetrahydropyrrolo[3,4-b]pyrazinyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, bicyclo[2.2.1]heptyl, bicyclo[3.2.0]heptanyl; and each is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkyl-OH, C_1-C_4 alkyl-CN, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, NO_2, oxo, OR^a, SR^a, SF_5, $NHOR^a$, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $B(OR^c)(OR^d)$, $C(=NR^c)NR^cR^d$, $NR^dC(=NR^c)NR^cR^d$, $NR^dC(=NR^c)R^b$, $P(O)R^eR^f$, $P(O)OR^eOR^f$, $OP(O)OR^eOR^f$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, $NR^cS(O)(=NR^b)R^b$ or $SiR^gR^hR^i$; or

R^3 is C_1-C_2 alkyl optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^4; and one of R^4 is $C(O)R^B$; preferably, R^B is azetidinyl, pyrrolidinyl, piperidinyl, dioxanyl,

piperazinyl, morpholinyl, azepanyl; each is optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, oxo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 cyanoalkyl, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, SF_5, OR^a, $C(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, or $B(OR^c)(OR^d)$; or

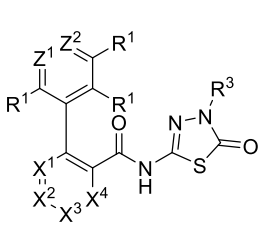
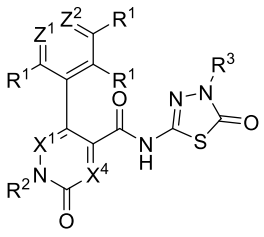
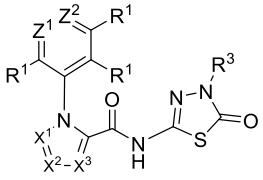
R^3 is C_1-C_2 alkyl optionally substituted by 1, 2, 3 or 4 substituents independently selected from R^4; and one of R^4 is $C(O)NR^CR^D$; preferably, R^C is H, D, CH_3, CH_2CH_3; and R^D is CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH_2(CH_3)_2$, $CH_2CH_2CH_2CH_3$, $CH_2CH_2(CH_3)_2$, $CH(CH_3)_3$, CH_2CF_3, CH_2CH_2OH, $CH_2CH_2OCH_3$, CH_2CH_2CN, $CH_2CH_2N(CH_3)C(O)CH_3$, $CH_2CH_2N(CH_3)S(O)_2CH_3$, $CH_2CH_2N(CH_3)S(O)_2N(CH_3)_2$.

8. The combination of claim 5, wherein, R^3 is C_2-C_{10} alkenyl optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4; or

R^3 is C_2 alkynyl optionally substituted by R^4; and R^4 is C_1-C_6 alkyl, C_6-C_{10} aryl, C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl, 4-10 membered heterocycloalkyl; wherein, the C_1-C_6 alkyl, C_6-C_{10} aryl, C_3-C_{10} cycloalkyl, 5-10 membered heteroaryl, 4-10 membered heterocycloalkyl is optionally substituted with 1, 2, 3, 4, or 5 substituents independently selected from R^5; or

R^3 is cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, spiro[3.4]octanyl, bicyclo[3.1.1]heptyl, octahydropentalenyl, cyclopentenyl, cyclopentadienyl, azetidinyl, oxetanyl, pyrrolidinyl, piperidinyl, dioxanyl, tetrahydropyranyl, tetrahydrothiopyranyl, piperazinyl, morpholinyl, azepanyl, 2,7-diazaspiro[4.4]nonanyl, 3,9-diazaspiro[5.5]undecanyl, octahydropyrano[3,2-b]pyrrolyl, octahydropyrrolo[3,2-b]pyridinyl, 3-azabicyclo[3.2.1]octanyl, 3-azabicyclo[3.3.1]nonanyl, 1,2,3,4-tetrahydropyrrolo[1,2-a]pyrimidinyl, 2,3,4,6-tetrahydropyrrolo[3,4-b]pyrazinyl, phenyl, naphthalenyl, pyrrolyl, furanyl, thiophenyl, imidazolyl, oxazolyl, thiazolyl, tetrazolyl, pyrazolyl, triazolyl, thiadiazolyl, oxadiazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, indolyl, imidazo[4,5-c]pyridinyl, imidazo[4,5-c]pyridinyl, imidazo[4,5-b]pyridinyl, pyrrolo[3,2-c]pyridazinyl, pyrrolo[3,2-d]pyrimidinyl, pyrrolo[2,3-b]pyrazinyl, pyrrolo[2,3-d]pyridazinyl, pyrrolo[2,3-d]pyrimidinyl, pyrrolo[2,3-c]pyridazinyl, pyrrolo[3,4-c]pyridazinyl; each is optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4.

9. The combination of anyone of claim 1-3, wherein, the compounds of Formula (I) are represented by compounds of Formula (Va), (Vb) or (Vc):


(Va),

(Vb),

(Vc);

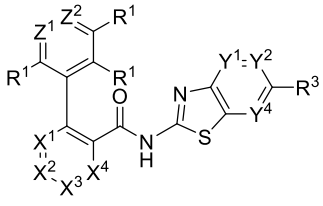
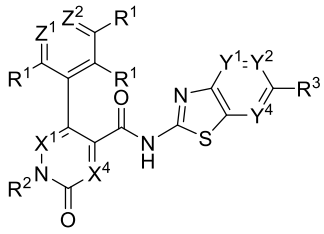
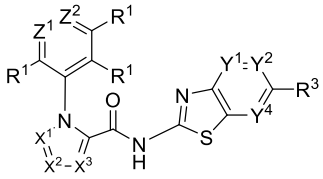
or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof;

wherein, X^1, X^2, X^3, X^4, Z^1, Z^2, R^1, R^3 and m are defined with respect to Formula (I);

preferably, R^3 is C_1-C_{10} alkyl optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4; preferably, R^3 is selected from CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH(CH_3)_2$,

$CH_2CH_2CH_2CH_3$, $CH_2CH(CH_3)_2$, $C(CH_3)_3$, CH_2F, CHF_2, CF_3, CH_2CH_2F, CH_2CHF_2, CH_2CF_3, CF_2CH_3, CF_2CF_3, $CF_2CH_2CH_3$, CH_2OH, CH_2CH_2OH, $CH(OH)CH_3$, $CH_2CH_2CH_2OH$, $CH(OH)CH_2CH_2OH$, CH_2OCH_3, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$, $CH(OH)CH_2CH_2OCH_3$, CH_2CN, CH_2CH_2CN, $CH_2CH_2CH_2CN$.

10. The combination of anyone of claim 1-3, wherein, the compounds of Formula (I) are represented by compounds of Formula (VIa), (VIb) or (VIc):


(VIa),

(VIb),

(VIc);

or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof;

Y^1, Y^2, Y^4 are each independently selected from N or CR^6;

wherein, X^1, X^2, X^3, X^4, Z^1, Z^2, R^1, R^3 and m are defined with respect to Formula (I);

preferably, Y^1 is CR^6, Y^2 is CR^6, and Y^4 is CR^6; or

Y^1 is CR^6, Y^2 is CR^6, and Y^4 is N; or

Y^1 is CR^6, Y^2 is N, and Y^4 is N; or

Y^1 is N, Y^2 is CR^6, and Y^4 is N.

11. The combination of claim 10, wherein, R^3 is OR^A, and R^A is C_1-C_6 alkyl optionally substituted with 1, 2, 3, 4 or 5 substituents independently selected from D, CN, halo, C_1-C_4 alkyl, C_1-C_4 haloalkyl, C_1-C_4 alkyl-OH, C_1-C_4 alkyl-CN, C_1-C_4 alkyl-O-C_1-C_4 alkyl, C_1-C_4 alkyl-O-C_1-C_4 haloalkyl, NO_2, oxo, OR^a, SR^a, $C(O)R^b$, $C(O)NR^cR^d$, $C(O)OR^a$, $OC(O)R^b$, $OC(O)NR^cR^d$, NR^cR^d, $NR^cC(O)R^b$, $NR^cC(O)NR^cR^d$, $NR^cC(O)OR^a$, $B(OR^c)(OR^d)$, $P(O)R^eR^f$, $P(O)OR^eOR^f$, $OP(O)OR^eOR^f$, $S(O)R^b$, $S(O)NR^cR^d$, $S(O)_2R^b$, $NR^cS(O)_2R^b$, $S(O)_2NR^cR^d$, $NR^cS(O)_2NR^cR^d$, $NR^cS(O)(=NR^b)R^b$ or $SiR^gR^hR^i$; preferably, R^3 is OH, OCH_3, OCH_2CH_3, $OCH_2CH_2CH_3$, $OCH(CH_3)_2$, OCH_2F, $OCHF_2$, OCF_3, OCH_2CH_2F, OCH_2CHF_2, OCH_2CF_3, OCF_2CF_3, OCH_2CH_2OH, $OCH_2CH_2OCH_3$, $OCH(CH_3)CH_2OH$, $OCH(CH_3)CH_2OCH_3$, $OCH_2CH(CH_3)OH$, $OCH_2CH(CH_3)OCH_3$, $OCH_2Si(CH_3)_3$, $OCH_2CH_2Si(CH_3)_3$; or

R^3 is C_1-C_{10} alkyl optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4; preferably, R^3 is selected from CH_3, CH_2CH_3, $CH_2CH_2CH_3$, $CH(CH_3)_2$, $CH_2CH_2CH_2CH_3$, $CH_2CH(CH_3)_2$, $C(CH_3)_3$, CH_2F, CHF_2, CF_3, CH_2CH_2F, CH_2CHF_2, CH_2CF_3, CF_2CH_3, CF_2CF_3, $CF_2CH_2CH_3$, CH_2OH, CH_2CH_2OH, $CH(OH)CH_3$, $CH_2CH_2CH_2OH$, $CH(OH)CH_2CH_2OH$, CH_2OCH_3, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$, $CH(OH)CH_2CH_2OCH_3$, CH_2CN, CH_2CH_2CN, $CH_2CH_2CH_2CN$; or

R^3 is C_3-C_{14} cycloalkyl, 4-14 membered heterocycloalkyl, C_6-C_{14} aryl, 5-14 membered heteroaryl; wherein, the C_3-C_{14} cycloalkyl, 4-14 membered heterocycloalkyl, C_6-C_{10} aryl, 5-14 membered heteroaryl is optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4; preferably, R^3 is cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, spiro[3.4]octanyl, bicyclo[3.1.1]heptyl, octahydropentalenyl, cyclopentenyl, cyclopentadienyl, azetidinyl, oxetanyl,

pyrrolidinyl, piperidinyl, dioxanyl, tetrahydropyranyl, tetrahydrothiopyranyl, piperazinyl, morpholinyl, azepanyl, 2,7-diazaspiro[4.4]nonanyl, 3,9-diazaspiro[5.5]undecanyl, octahydropyrano[3,2-b]pyrrolyl, octahydropyrrolo[3,2-b]pyridinyl, 3-azabicyclo[3.2.1]octanyl, 3-azabicyclo[3.3.1]nonanyl, 1,2,3,4-tetrahydropyrrolo[1,2-a]pyrimidinyl, 2,3,4,6-tetrahydropyrrolo[3,4-b]pyrazinyl, phenyl, naphthalenyl, anthracenyl, phenanthrenyl, pyrrolyl, furanyl, thiophenyl, imidazolyl, oxazolyl, thiazolyl, tetrazolyl, pyrazolyl, triazolyl, thiadiazolyl, oxadiazolyl, pyridinyl, pyrimidinyl, pyrazinyl, pyridazinyl, indolyl, imidazo[4,5-c]pyridinyl, imidazo[4,5-c]pyridinyl, imidazo[4,5-b]pyridinyl, pyrrolo[3,2-c]pyridazinyl, pyrrolo[3,2-d]pyrimidinyl, pyrrolo[2,3-b]pyrazinyl, pyrrolo[2,3-d]pyridazinyl, pyrrolo[2,3-d]pyrimidinyl, pyrrolo[2,3-c]pyridazinyl, pyrrolo[3,4-c]pyridazinyl; each is optionally substituted by 1, 2, 3, 4 or 5 substituents independently selected from R^4.

12. The combination of anyone of claim 1-11, wherein, the compounds of Formula (I) is:

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-((4-chlorophenoxy)methyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

N-(5-((4-cyanophenoxy)methyl)-1,3,4-thiadiazol-2-yl)-4-(2-fluoro-6-methoxy-3-(trifluoromethyl)phenyl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(1,1-difluoroethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-((2-methoxyethyl)thio)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(2-(dimethylamino)-1,1-difluoro-2-oxoethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(6-(2-methoxyethoxy)thiazolo[4,5-b]pyrazin-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(2-methoxyethoxy)thiazolo[5,4-d]pyrimidin-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(1,1-difluoro-2-(methylamino)-2-oxoethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-6-methyl-N-(5-((trimethylsilyl)methoxy)-1,3,4-thiadiazol-2-yl)nicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(1-fluorocyclopropyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(1,1-difluoro-2-hydroxyethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(1,1-difluoro-2-hydroxyethyl-2,2-d2)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(4-(3-hydroxypropyl)-5-oxo-4,5-dihydro-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(1,1-difluoro-2-(4-methylpiperazin-1-yl)-2-oxoethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(2-(4-cyanopiperidin-1-yl)-1,1-difluoro-2-oxoethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(2-(4-ethylpiperazin-1-yl)-1,1-difluoro-2-oxoethyl)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

4-(3-chloro-2-fluoro-6-methoxyphenyl)-N-(5-(2-hydroxyethoxy)thiazolo[5,4-d]pyrimidin-2-yl)-6-methylnicotinamide;

4-(2-fluoro-6-methoxyphenyl)-N-(5-(2-methoxypropoxy)-1,3,4-thiadiazol-2-yl)-6-methylnicotinamide;

N-(5-((4-chlorobenzyl)oxy)-1,3,4-thiadiazol-2-yl)-4-(2-fluoro-6-methoxyphenyl)-6-methylnicotinamide;

2'-chloro-N-(6-(1,4-dimethyl-1H-1,2,3-triazol-5-yl)-7-fluorothiazolo[4,5-c]pyridin-2-yl)-3'-fluoro-5'-methoxy-6-methyl-[4,4'-bipyridine]-3-carboxamide;

2'-chloro-N-(6-(1,4-dimethyl-1H-1,2,3-triazol-5-yl)-7-fluorothiazolo[4,5-c]pyridin-2-yl)-5'-methoxy-6-methyl-[4,4'-bipyridine]-3-carboxamide;

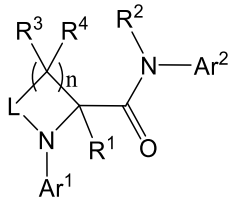
or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof; or

the second anti-cancer therapeutic agent is PARP inhibitor or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof; preferably, the PARP inhibitor is selected from Olaparib, Rucaparib, Niraparib, Talazoparib, Fluzoparib, Pamiparib, Veliparib, Senaparib, Saruparib, AZD9574, TQB3823, HTMC0435, SC10914, TSL-1502, WXFL10040340, RP12146, IMP1734, HRS-1167, NMS-293, NMS-P515, HS-10502, SNV-001 or a pharmaceutically acceptable salt, solvate, hydrate, tautomeric, stereoisomer, atropisomer, isotopic variants, prodrugs, N-oxide or deuterated compound thereof; preferably, the PARP inhibitor is selected from Olaparib, Rucaparib, Niraparib, Talazoparib, Fluzoparib, Pamiparib, Veliparib, Senaparib, Saruparib, or AZD9574; preferably, the PARP inhibitor is Olaparib; preferably, PARP inhibitor is Niraparib or Niraparib tosylate monohrdrate; preferably, PARP inhibitor is Saruparib; preferably, PARP inhibitor is AZD9574; or

the second anti-cancer therapeutic agent is chemotherapies; preferably, chemotherapy is Bleomycin or Irinotecan; preferably, the chemotherapy is Bleomycin; preferably, the chemotherapy is Irinotecan; or

the second anti-cancer therapeutic agent is another PolQ inhibitor; or

another PolQ inhibitor is represented by the compound of formula (Ia):

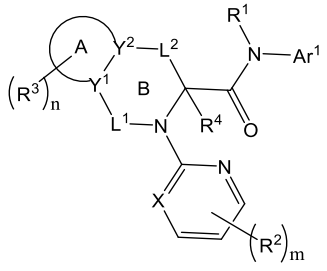


(Ia);

or pharmaceutically acceptable salt, stereoisomer, solvate, hydrate, tautomeric, isotopic variants, prodrugs, N-oxide or deuterated compound thereof;

wherein each of the variables Ar^1, Ar^2, L, R^1, R^2, R^3, R^4 and n is as defined and described in PCT/CN2023/095706, filing date: May 23, 2023; or

another PolQ inhibitor is represented by the compound of formula compound of formula (Ib):



(Ib);

or pharmaceutically acceptable salt, stereoisomer, solvate, hydrate, tautomeric, isotopic variants, prodrugs, N-oxide or deuterated compound thereof, wherein:

wherein each of the variables Ar^1, L^1, L^2, Y^1, Y^2, R^1, R^2, R^3, R^4, m and n is as defined and described in PCT/CN2023/095881, filing date: May 23, 2023; or

the compound of Formula (Ia) is:

(S)-N-(4-chloro-3-methylphenyl)-N,5-dimethyl-2-(6-methyl-4-(trifluoromethyl)pyridin-2-yl)-1,2,5-thiadiazolidine-3-carboxamide 1,1-dioxide;

or pharmaceutically acceptable salt, stereoisomer, solvate, hydrate, tautomeric, isotopic variants, prodrugs, N-oxide or deuterated compound thereof.

13. A method of treating and/or preventing a cancer in a subject, wherein the cancer is characterized by increased dependence upon MMEJ DSB repair; the cancer is characterized by HR-deficiency, a reduction or absence of expression of HR-associated genes; the cancer is lack of 53BP1/Shieldin complex in a patient; the cancer is characterized by NHEJ deficiency, a reduction or absence of expression of NHEJ-associated genes; or the cancer is characterized by a reduction or absence of BRCA gene expression, the absence of the BRCA gene, absence of BRCA protein, or reduced function of BRCA protein, comprising administering to a subject a therapeutically effective amount of a combination of anyone of claim 1-12; preferably, the cancer is selected from the group consisting of endometrial cancer, pancreatic cancer, breast cancer, ovarian cancer (ovary cancer), prostate cancer, lymphoma, rhabdoid tumor, multiple myloma, uterine cancer, gastric cancer, peripheral nervous system cancer, rhabdomyosarcoma, bone cancer, colorectal cancer, mesothelioma, lung cancer, fibroblast cancer, central nervous system cancer, urinary tract cancer, upper aerodigestive cancer, leukemia, kidney cancer, skin cancer, and esophageal cancer.

14. The combination of anyone of claim 1-12 for use in the treatment of a cancer in a subject, wherein the cancer is characterized by increased dependence upon MMEJ DSB repair; the cancer is characterized by HR-deficiency, a reduction or absence of expression of HR-associated genes; the cancer is lack of 53BP1/Shieldin complex in a patient; the cancer is characterized by NHEJ deficiency, a reduction or absence of expression of NHEJ-associated genes; or the cancer is characterized by a reduction or absence of BRCA gene expression, the absence of the BRCA gene, absence of BRCA protein, or reduced function of BRCA protein;

preferably, the cancer is selected from the group consisting of endometrial cancer, pancreatic cancer, breast cancer, ovarian cancer (ovary cancer), prostate cancer, lymphoma, rhabdoid tumor, multiple myloma, uterine cancer, gastric cancer, peripheral nervous system cancer, rhabdomyosarcoma, bone cancer, colorectal cancer, mesothelioma, lung cancer, fibroblast cancer,

central nervous system cancer, urinary tract cancer, upper aerodigestive cancer, leukemia, kidney cancer, skin cancer, and esophageal cancer.

15. Use of a combination of anyone of claim 1-39 in the treatment of a cancer in a subject, wherein the cancer is characterized by increased dependence upon MMEJ DSB repair; the cancer is characterized by HR-deficiency, a reduction or absence of expression of HR-associated genes; the cancer is lack of 53BP1/Shieldin complex in a patient; the cancer is characterized by NHEJ deficiency, a reduction or absence of expression of NHEJ-associated genes; or the cancer is characterized by a reduction or absence of BRCA gene expression, the absence of the BRCA gene, absence of BRCA protein, or reduced function of BRCA protein; preferably, the cancer is selected from the group consisting of endometrial cancer, pancreatic cancer, breast cancer, ovarian cancer (ovary cancer), prostate cancer, lymphoma, rhabdoid tumor, multiple myloma, uterine cancer, gastric cancer, peripheral nervous system cancer, rhabdomyosarcoma, bone cancer, colorectal cancer, mesothelioma, lung cancer, fibroblast cancer, central nervous system cancer, urinary tract cancer, upper aerodigestive cancer, leukemia, kidney cancer, skin cancer, and esophageal cancer.

16. Use of a combination of anyone of claim 1-12 in the preparation of a medicament for the treatment of a cancer in a subject, wherein the cancer is characterized by increased dependence upon MMEJ DSB repair; the cancer is characterized by HR-deficiency, a reduction or absence of expression of HR-associated genes; the cancer is lack of 53BP1/Shieldin complex in a patient; the cancer is characterized by NHEJ deficiency, a reduction or absence of expression of NHEJ-associated genes; or the cancer is characterized by a reduction or absence of BRCA gene expression, the absence of the BRCA gene, absence of BRCA protein, or reduced function of BRCA protein; preferably, the cancer is selected from the group consisting of endometrial cancer, pancreatic cancer, breast cancer, ovarian cancer (ovary cancer), prostate cancer, lymphoma, rhabdoid tumor, multiple myloma, uterine cancer, gastric cancer, peripheral nervous system cancer, rhabdomyosarcoma, bone cancer, colorectal cancer, mesothelioma, lung cancer, fibroblast cancer, central nervous system cancer, urinary tract cancer, upper aerodigestive cancer, leukemia, kidney cancer, skin cancer, and esophageal cancer.

17. Use of a combination of anyone of claim 1-12 in the manufacture of a medicament for treating a disease characterized by overexpression of PolQ in a patient.

18. A kit comprising a combination of anyone of claim 1-12, in which optionally both or either of the PolQ inhibitor and the second anti-cancer therapeutic agent in the form of a pharmaceutical formulation which is ready for use to be administered simultaneously, concurrently, separately or sequentially.