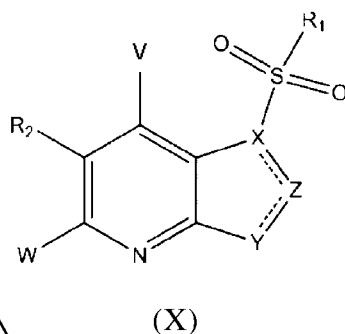


CLAIMS

What is claimed is:

1. A 5-member-heterocycle-fused pyridine compound having a structure of Formula (X), pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof,



wherein, X, Y and Z are each independently N or C, and at least one of X, Y and Z is N, and when X is N, Z is N;

W and V are each independently selected from H, halogen, unsubstituted or halogen-substituted C₁-C₄ alkyl, unsubstituted or halogen-substituted C₁-C₄ alkoxy, nitro, cyano;

R₁ is substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, hydroxyl; unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylcarbonyl, C₁-C₆ alkoxy carbonyl, -NR_aR_b, -C(O)(NR_aR_b), -OC(O)-R_f, unsubstituted phenyl or phenyl substituted by 1-4 of R₃, or unsubstituted 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S or 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S substituted by 1-4 of R₄;

R₂ is cyano; C₁-C₄ alkoxy carbonyl; -NR_cR_d; -NHC(O)-R_e; substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from N, O, and

S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl or C₃-C₆ cycloalkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, morpholinylmethyl, or unsubstituted or R''-substituted piperidinyl;

5 wherein, R₃ is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or morpholinyl;

10 R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or unsubstituted or C₁-C₆ alkoxy-carbonyl-substituted piperidinyl;

 R' is C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heterocyclyl;

15 R'' is C₁-C₆ alkyl; C₃-C₆ cycloalkyl; C₁-C₆ alkylcarbonyl; C₁-C₆ alkoxy-carbonyl; C₃-C₆ cycloalkylcarbonyl; or unsubstituted benzoyl or benzoyl substituted by substituent(s) selected from halogen, C₁-C₆ alkyl, halogen-substituted C₁-C₆ alkyl ;

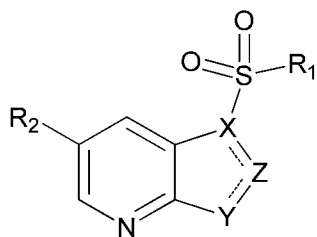
 R_a and R_b are each independently H, C₁-C₆ alkyl or C₁-C₆ alkylcarbonyl;

 R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl;

20 R_e is unsubstituted or C₁-C₆ alkyl- or halogen- or C₁-C₆ alkoxy-substituted C₆-C₂₀ aryl, unsubstituted or halogen-substituted C₁-C₆ alkyl;

 R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl.

25 2. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1, wherein, the compound has a structure of Formula (I),



I

wherein,

X, Y and Z are each independently N or C, and at least one of X, Y and X is N;

----- represents single bond or double bond;

5 R_1 is substituted or unsubstituted C_6 - C_{20} aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, unsubstituted or halogen- or morpholinyl-substituted C_1 - C_6 alkyl, C_1 - C_6 alkoxy, C_1 - C_6 alkylcarbonyl, C_1 - C_6 alkoxy carbonyl, $-NR_aR_b$, $-C(O)(NR_aR_b)$, unsubstituted phenyl or phenyl substituted by 1-4 of R_3 , or unsubstituted 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S or 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S substituted by 1-4 of R_4 ;

15 R_2 is substituted or unsubstituted C_6 - C_{20} aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C_1 - C_4 alkylenedioxy, unsubstituted or halogen- or $-NR_cR_d$ -substituted C_1 - C_6 alkyl, C_1 - C_6 alkoxy, C_1 - C_6 sulfamido, $-NR_aR_b$, $-C(O)R'$, morpholinyl, or unsubstituted or R'' -substituted piperidinyl;

20 wherein, R_3 is halogen, nitro, cyano, C_1 - C_4 alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C_1 - C_6 alkyl, C_1 - C_6 alkoxy, $-NR_aR_b$, $-C(O)R'$, or morpholinyl;

25 R_4 is halogen, nitro, cyano, unsubstituted or halogen-substituted C_1 - C_6 alkyl,

C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or unsubstituted or C₁-C₆ alkoxy-carbonyl-substituted piperidinyl;

R' is C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heterocyclyl;

5 R'' is C₁-C₆ alkyl; C₃-C₆ cycloalkyl; C₁-C₆ alkylcarbonyl; C₁-C₆ alkoxy-carbonyl; C₃-C₆ cycloalkylcarbonyl; or unsubstituted benzoyl or benzoyl substituted by substituent(s) selected from halogen, C₁-C₆ alkyl, and halogen-substituted C₁-C₆ alkyl;

R_a and R_b are each independently H or C₁-C₆ alkyl;

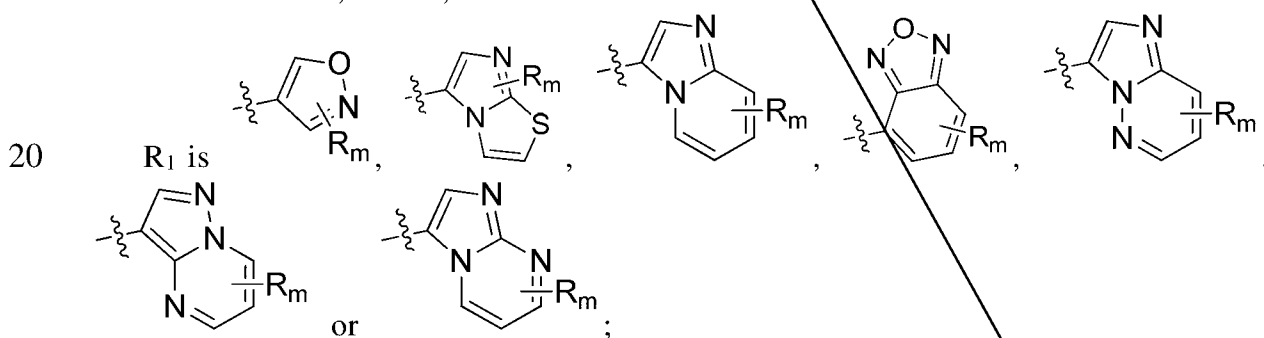
10 R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl.

3. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1 or 2, wherein X and Z are N, Y is C.

15 4. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to any one of claims 1 to 3,

wherein, W and V are independently selected from H, C₁-C₄ alkyl, C₁-C₄ alkoxy;

X and Z are N, Y is C;



wherein, R_m is H, halogen, nitro, cyano; unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl; C₁-C₄ alkoxy; C₁-C₄ alkylcarbonyl; C₁-C₄ alkoxy-carbonyl; -NR_aR_b; -C(O)(NR_aR_b); -OC(O)-R_f; unsubstituted phenyl or phenyl
25 substituted by 1-3 of R₃; or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from N, O, and S or 5- to 7-membered heteroaryl containing 1-3

heteroatoms selected from N, O, and S substituted by 1-3 of R₄, wherein said heteroaryl is selected from furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranal, pyridinyl, morpholinyl, oxazinyl, pyrazinyl;

R₂ is cyano; C₁-C₄ alkoxy carbonyl; -NR_cR_d; -NHC(O)-R_e; substituted or
5 unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl or C₃-C₆
10 cycloalkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, morpholinylmethyl, or unsubstituted or R''-substituted piperidinyl;

R₃ is halogen, nitro, cyano, C₁-C₂ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', or 4-morpholinyl;

15 R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', 4-piperidinyl, or 1-t-butoxycarbonyl-4-piperidinyl;

R' is C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, or 4-methylpiperazinyl;

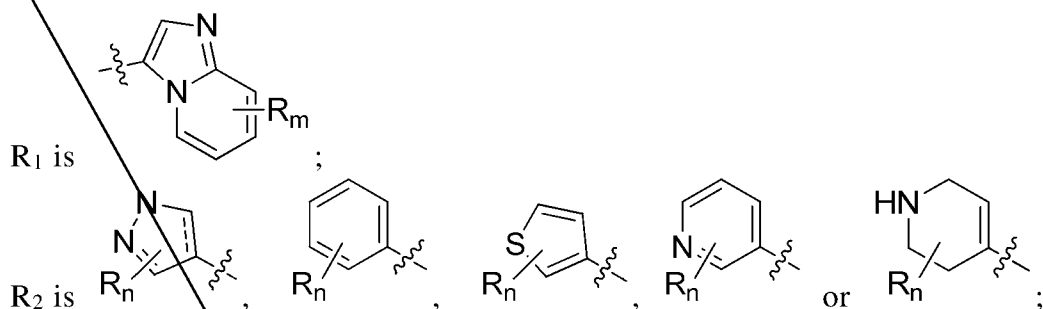
R'' is C₁-C₄ alkyl, C₃-C₆ cycloalkyl, C₁-C₄ alkyl carbonyl, C₁-C₄ alkoxy carbonyl, C₃-C₆ cycloalkyl carbonyl, or p-trifluoromethylbenzoyl;

20 R_a and R_b are each independently H, C₁-C₄ alkyl or C₁-C₄ alkyl carbonyl;

R_e is unsubstituted or C₁-C₆ alkyl or halogen- or C₁-C₆ alkoxy-substituted C₆-C₂₀ aryl, unsubstituted or halogen-substituted C₁-C₆ alkyl;

R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl, said 4- to 7-membered heteroaryl is selected from furanyl, pyrrolyl, thienyl.
25

5. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to any one of claims 1 to 4,



wherein, R_m is H, halogen, nitro, hydroxyl, C_1 - C_4 alkoxy, unsubstituted phenyl or phenyl substituted by 1-3 of R_3 , or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from N, O, and S or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from N, O, and S substituted by 1-3 of R_4 , wherein said heteroaryl is selected from furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranal, pyridinyl, morpholinyl, oxazinyl, pyrazinyl;

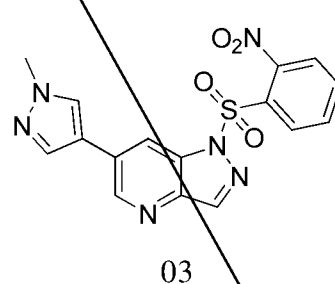
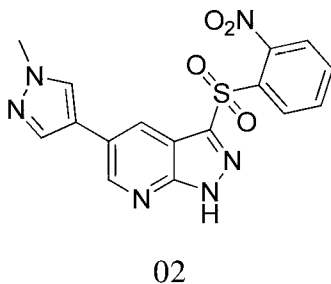
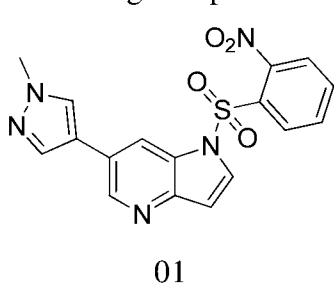
R_n is H, halogen; nitro; cyano; unsubstituted or halogen-, dimethylamino-, 4-morpholinyl-, 1-aziridinyl-, 1-azetidyl-, 1-tetrahydropyrrolyl-, 1-piperidinyl- or 1-homopiperidinyl-substituted C_1 - C_4 alkyl; C_1 - C_4 alkoxy; C_1 - C_4 sulfamido; $-NR_aR_b$; $-C(O)R'$; 4-morpholinyl; or unsubstituted or R'' -substituted piperidinyl;

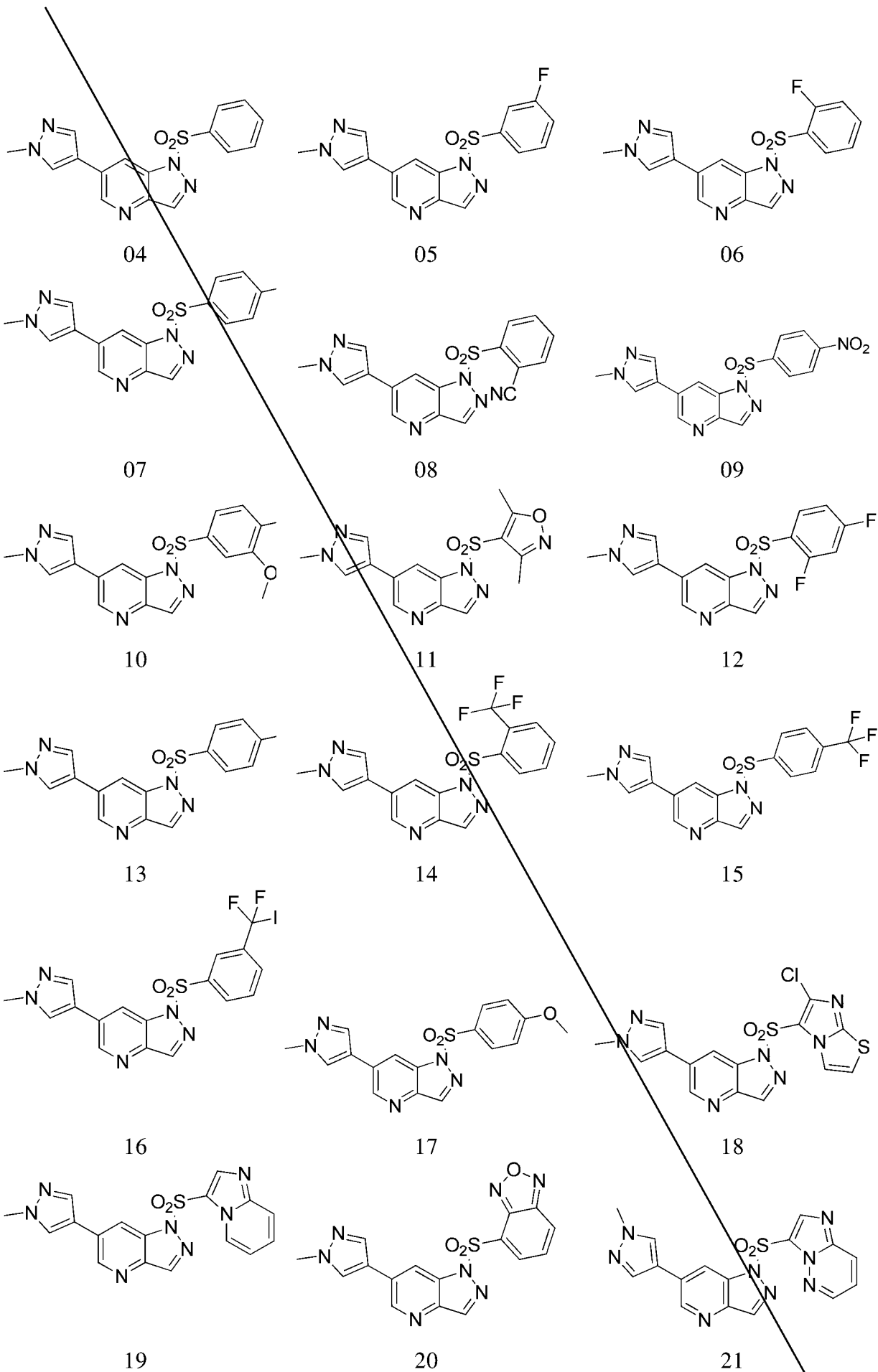
R' is C_1 - C_4 alkyl, C_1 - C_4 alkoxy, $-NR_aR_b$, or 4-methylpiperazinyl;

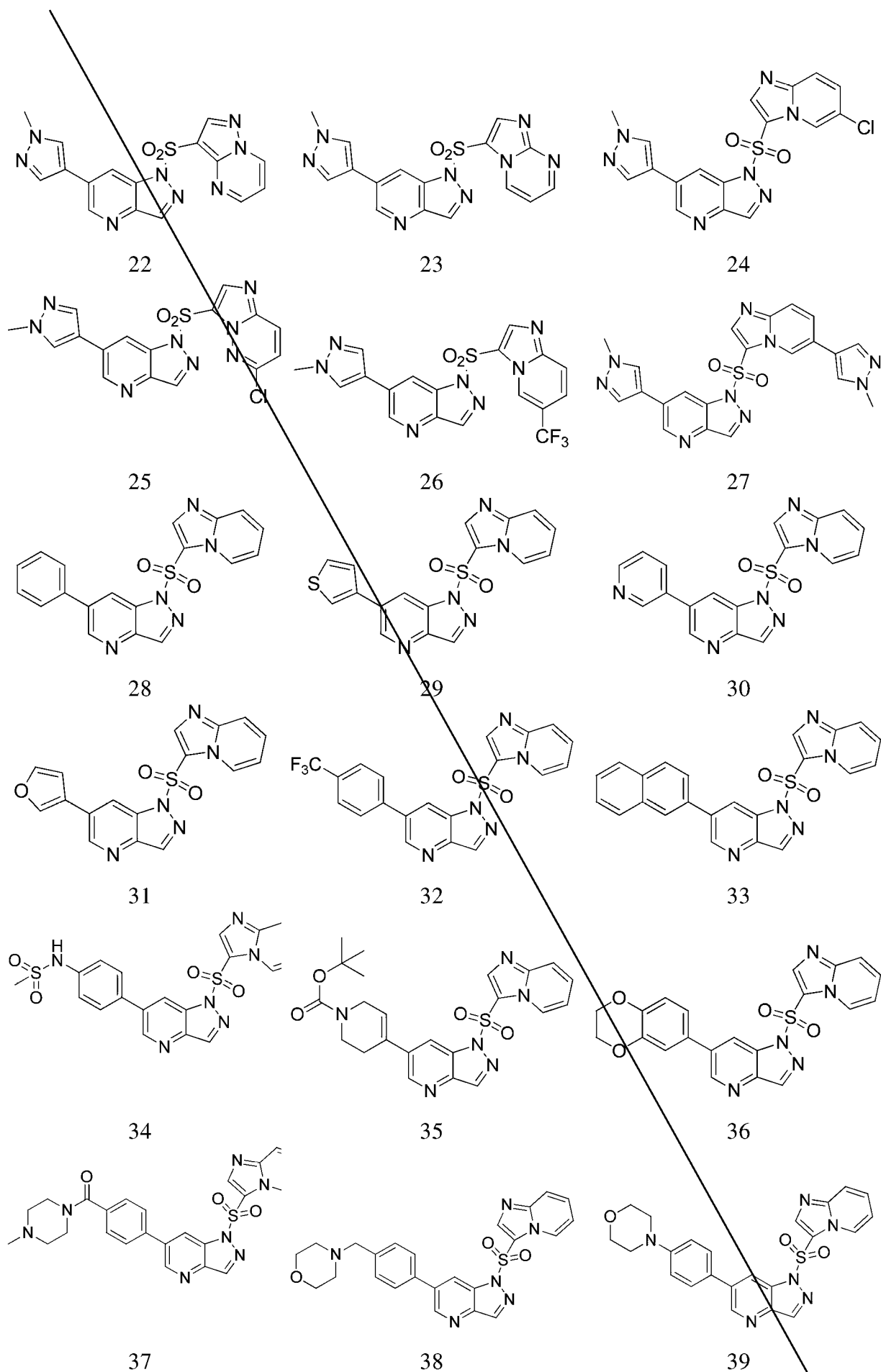
R'' is C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_4 alkylcarbonyl, C_1 - C_4 alkoxy carbonyl, C_3 - C_6 cycloalkylcarbonyl, or *p*-trifluoromethylbenzoyl;

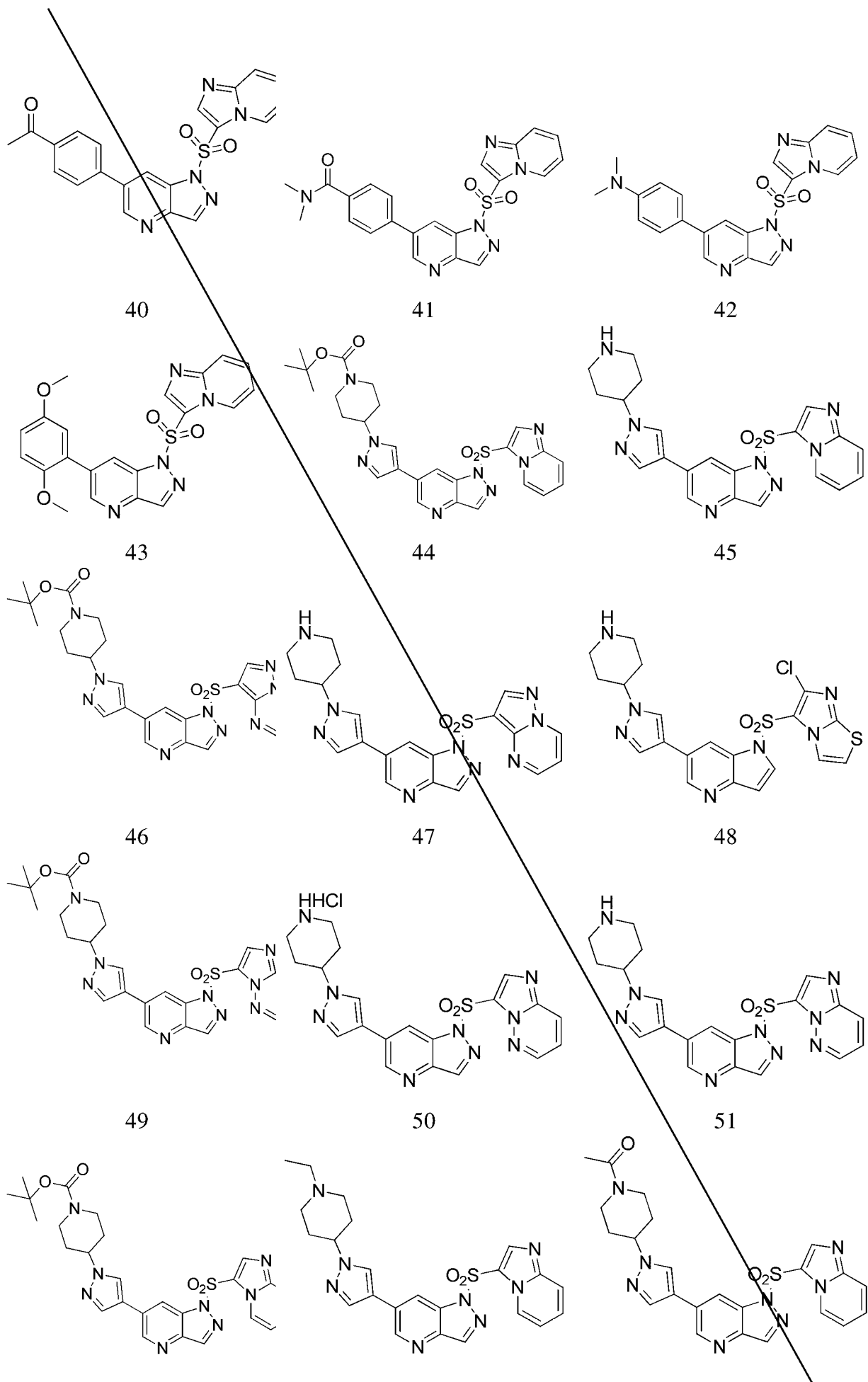
R_a and R_b are independently H, C_1 - C_4 alkyl or C_1 - C_4 alkylcarbonyl.

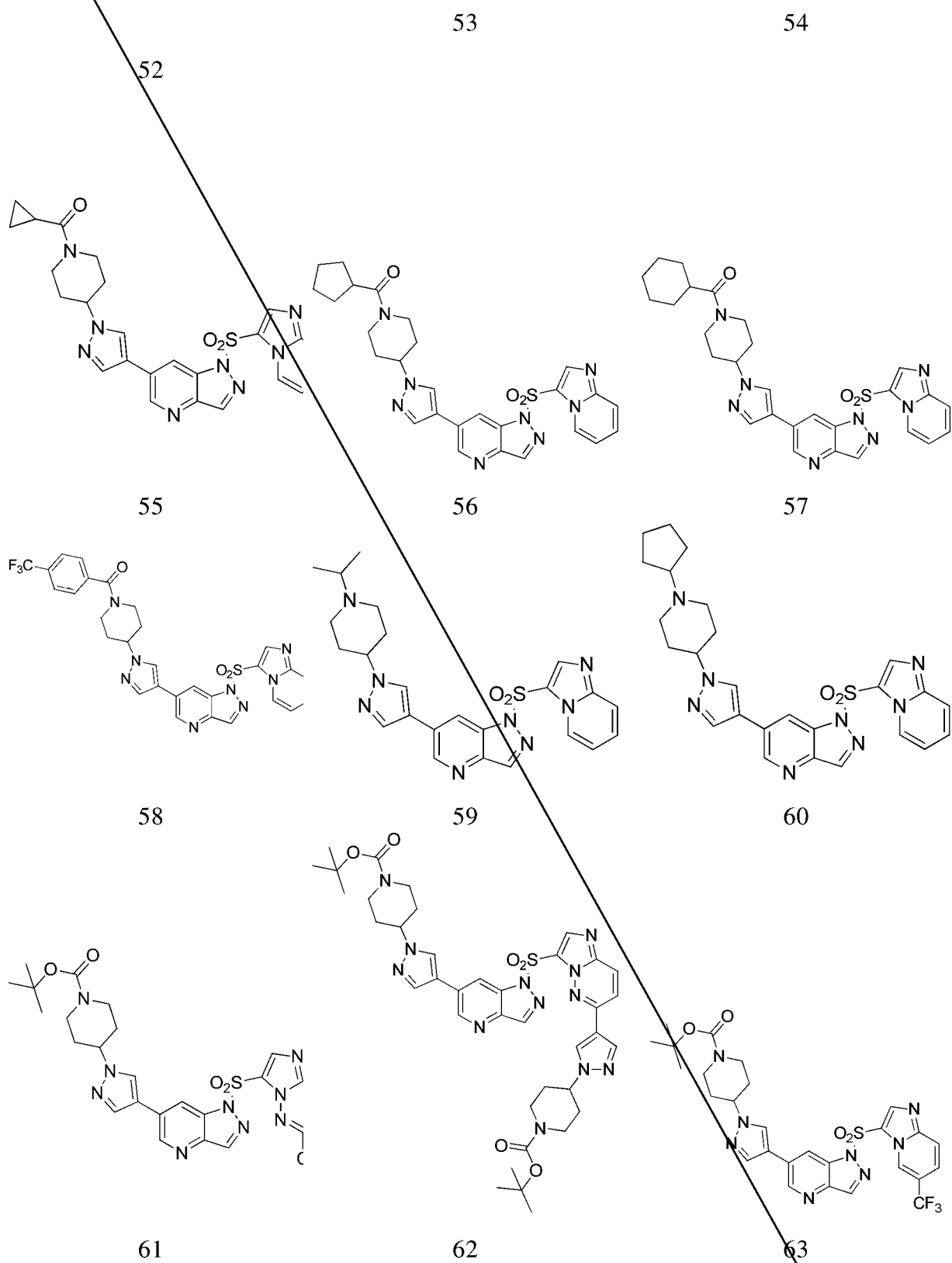
6. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1, wherein, the 5-member-heterocycle fused pyridine compound is selected from the following compounds:

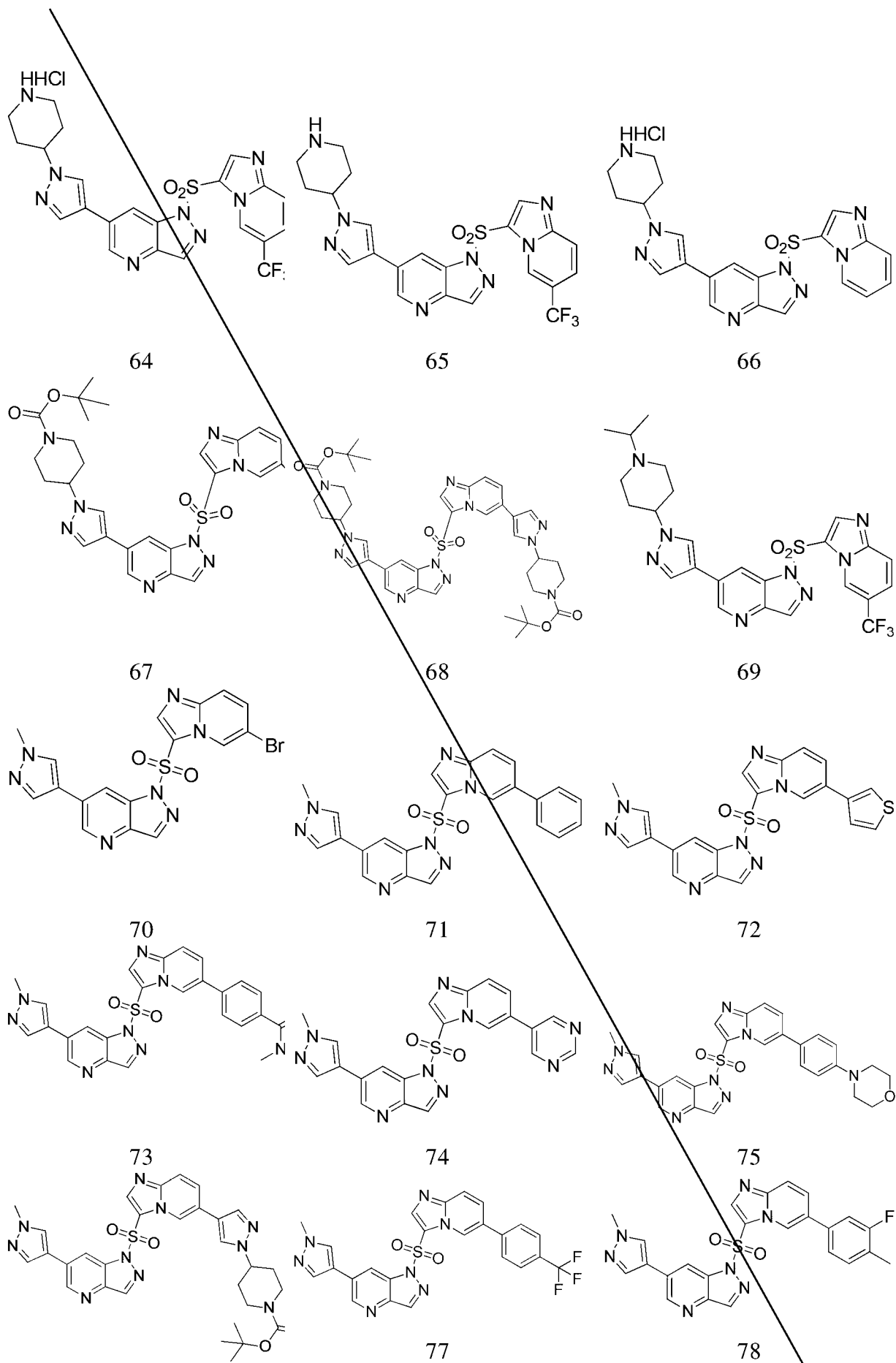




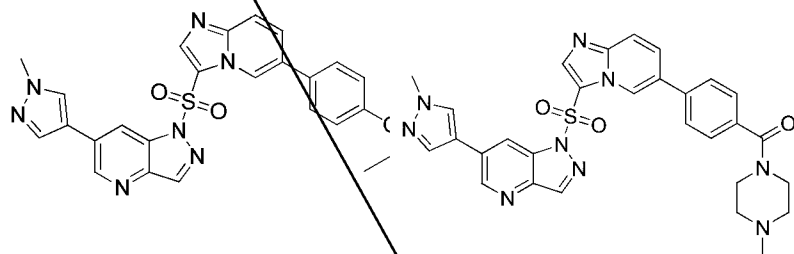




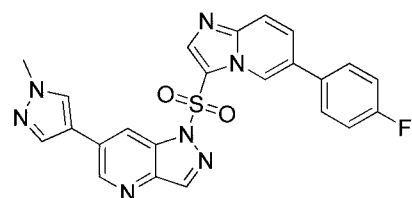




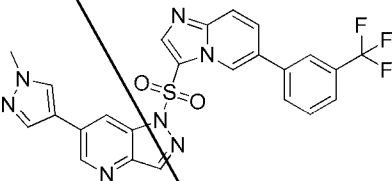
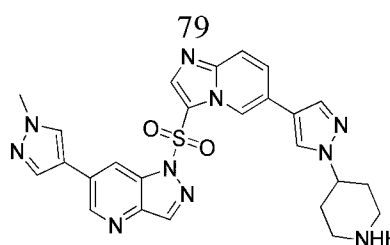
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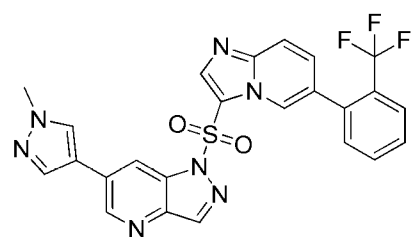
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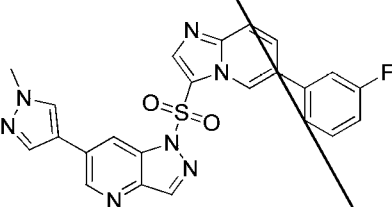
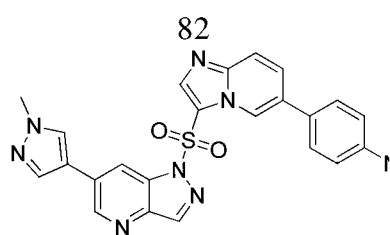
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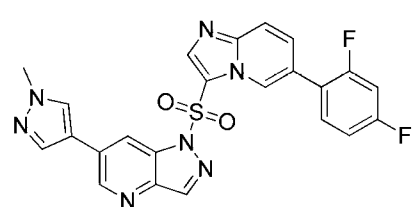
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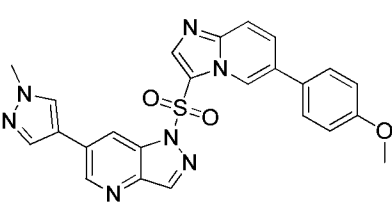
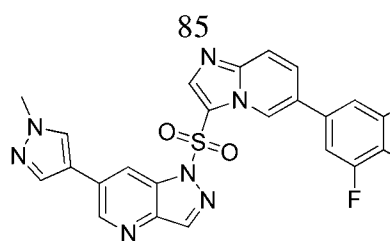
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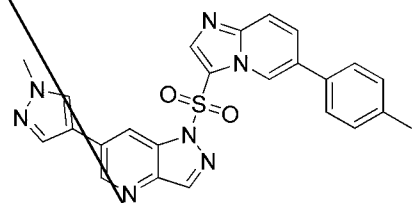
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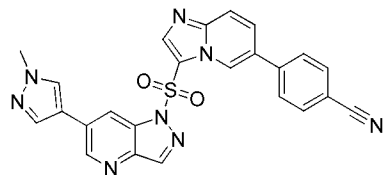
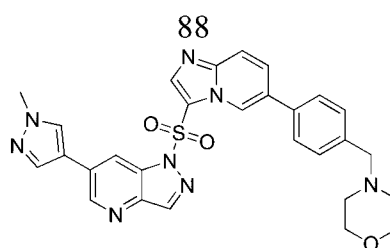
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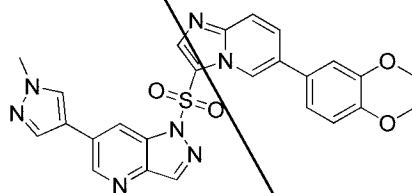
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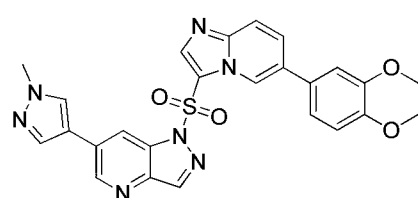
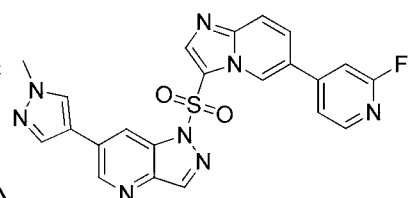
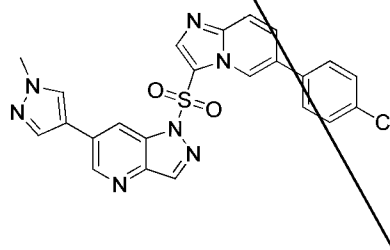


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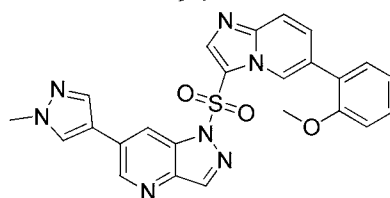


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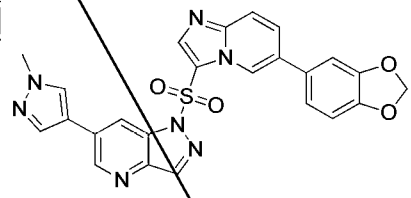
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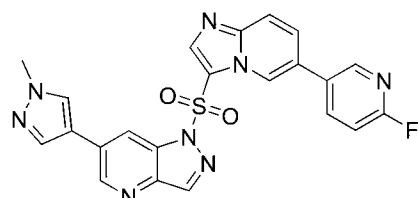
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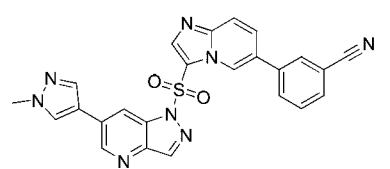
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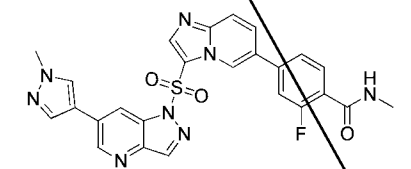
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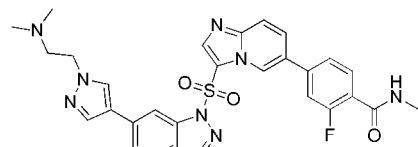
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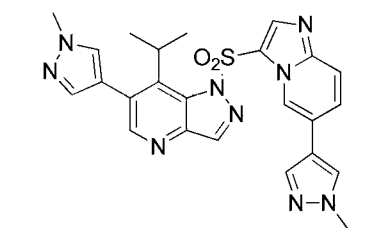
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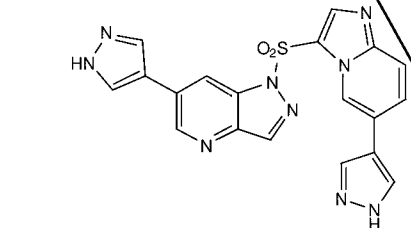
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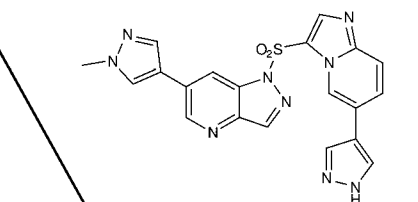
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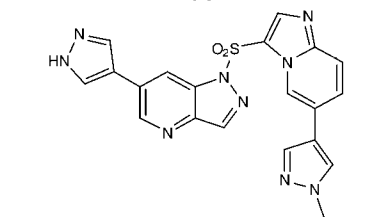
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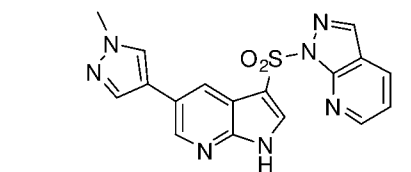
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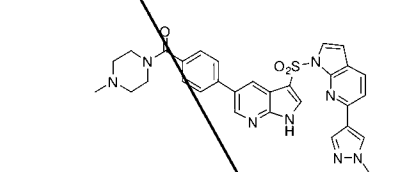
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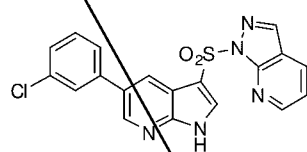
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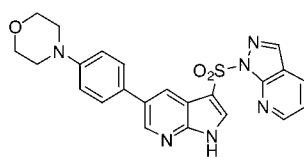
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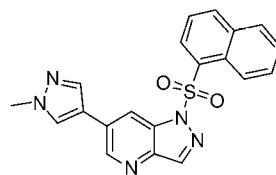
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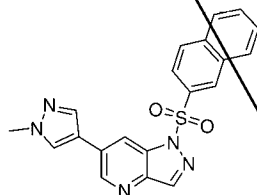
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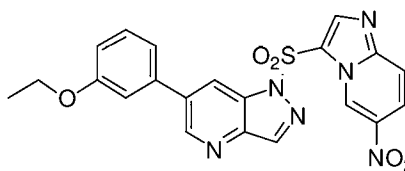
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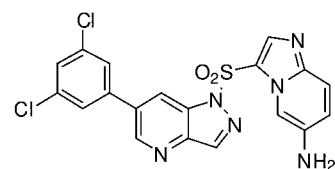
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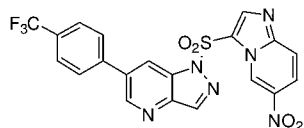
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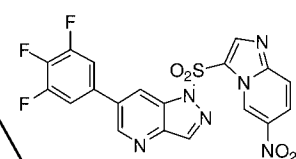
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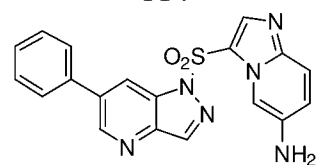
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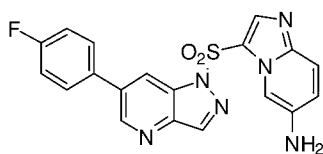
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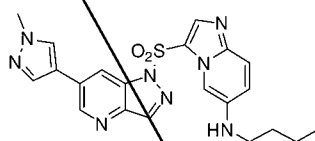
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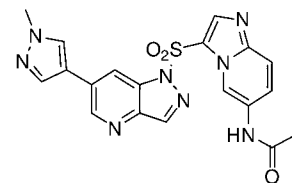
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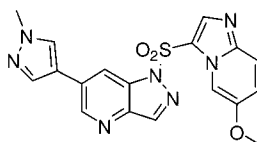
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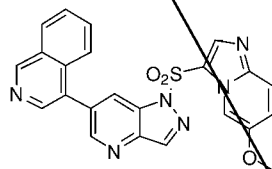
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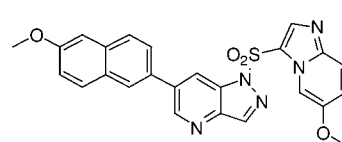
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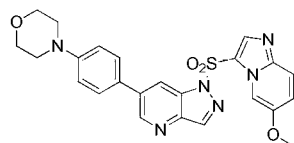
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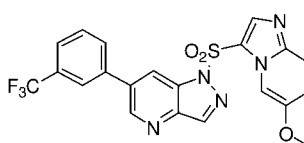
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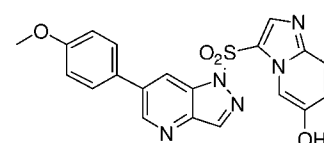
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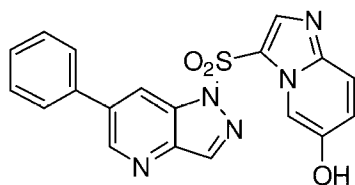
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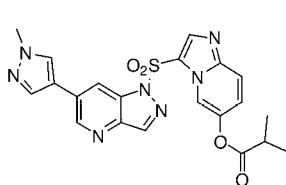
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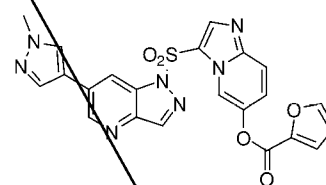
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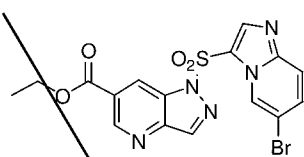
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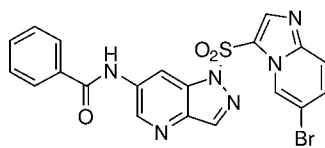
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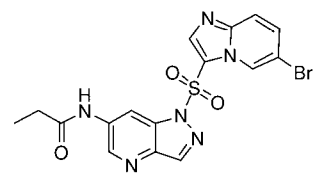
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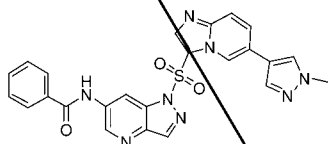
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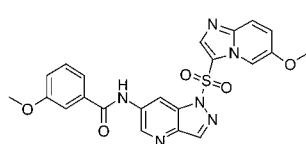
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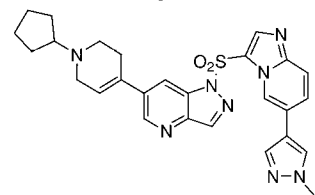
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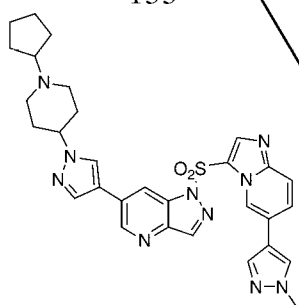
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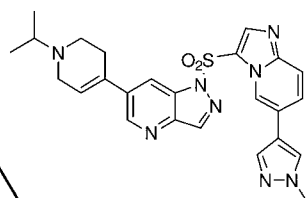
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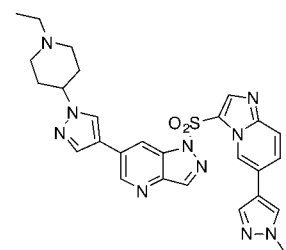
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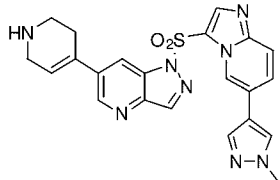
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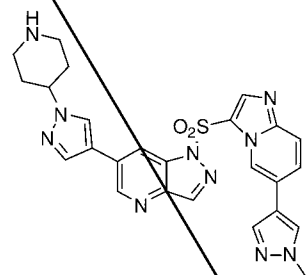
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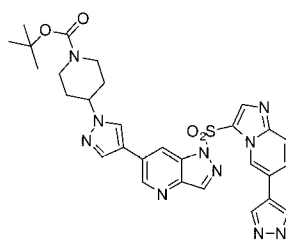
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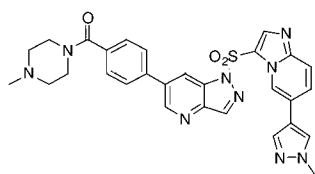
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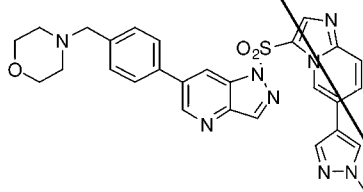
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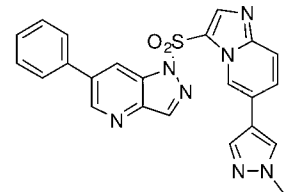
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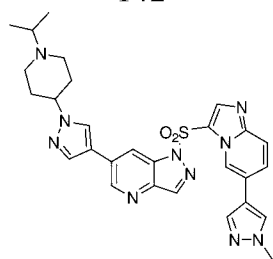
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7. Use of the 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof according to any one of claims 1 to 6 in preparation of a medicament for preventing or treating diseases associated with abnormal cell proliferation, morphological change and hyperkinesis related to abnormal protein tyrosine kinase, or diseases related to angiogenesis or metastasis.

8. Use of the 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof according to any one of claims 1 to 6 in preparation of a medicament as protein tyrosine kinase inhibitor, particular in preparation of a medicament as c-Met inhibitor.

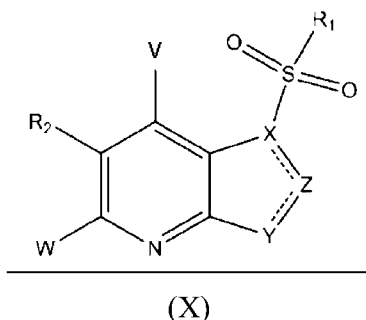
9. A pharmaceutical composition comprising a prophylactically or therapeutically effective amount of one or more 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof according to any one of claims 1 to 6, and a pharmaceutically acceptable excipient.

10. A method of preventing or treating diseases associated with abnormal cell proliferation, morphological change and hyperkinesis related to abnormal protein tyrosine kinase, or diseases related to angiogenesis or metastasis, in a subject in need thereof, said method comprises administering a prophylactically or therapeutically effective amount of the 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof according to any one of claims 1 to 6 or the pharmaceutical composition according to claim 9 to the subject.

CLAIMS

What is claimed is:

1. A 5-member-heterocycle-fused pyridine compound having a structure of Formula (X), pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof,



wherein X, Y and Z are each independently N or C, at least one of X, Y and Z is N, and Y and Z are unsubstituted; provided that when X is N, Z is N;

— — — — represents a single bond or double bond, and X, Y and Z abide by valence-bond theory;

W and V are each independently selected from the group consisting of H, halogen, unsubstituted or halogen-substituted C₁-C₄ alkyl, unsubstituted or halogen-substituted C₁-C₄ alkoxy, nitro, and cyano;

R₁ is substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, hydroxyl; unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylcarbonyl, C₁-C₆ alkoxy carbonyl, -NR_aR_b, -C(O)(NR_aR_b), -OC(O)-R_f, unsubstituted phenyl or phenyl substituted by 1-4 of R₃, or unsubstituted 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S, or 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S substituted by 1-4 of R₄;

R₂ is cyano; C₁-C₄ alkoxy carbonyl; -NR_cR_d; substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered

heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl or C₃-C₆ cycloalkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, morpholinylmethyl, or unsubstituted or R''-substituted piperidinyl;

wherein R₃ is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or morpholinyl;

R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or unsubstituted or C₁-C₆ alkoxycarbonyl-substituted piperidinyl;

R' is C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heterocyclyl;

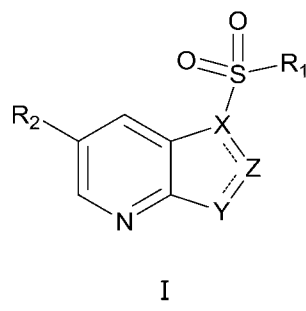
R'' is C₁-C₆ alkyl; C₃-C₆ cycloalkyl; C₁-C₆ alkylcarbonyl; C₁-C₆ alkoxycarbonyl; C₃-C₆ cycloalkylcarbonyl; or unsubstituted benzoyl or benzoyl substituted by substituent(s) selected from the group consisting of halogen, C₁-C₆ alkyl, and halogen-substituted C₁-C₆ alkyl;

R_a and R_b are each independently H, C₁-C₆ alkyl or C₁-C₆ alkylcarbonyl;

R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl;

R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl.

2. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1, wherein, the compound has a structure of Formula (I),



wherein,

X, Y and Z are each independently N or C, at least one of X, Y and Z is N, and Y and Z are unsubstituted; provided that when X is N, Z is N;

— — — represents a single bond or double bond, and X, Y and Z abide by valence-bond theory;

R₁ is substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylcarbonyl, C₁-C₆ alkoxy carbonyl, -NR_aR_b, -C(O)(NR_aR_b), unsubstituted phenyl or phenyl substituted by 1-4 of R₃, or unsubstituted 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S, or 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S substituted by 1-4 of R₄;

R₂ is substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected the group consisting of from N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylendioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, or unsubstituted or R''-substituted piperidinyl;

wherein, R₃ is halogen, nitro, cyano, C₁-C₄ alkylendioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or morpholinyl;

R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or unsubstituted or C₁-C₆ alkoxy carbonyl-substituted piperidinyl;

R' is C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heterocyclyl;

R'' is C₁-C₆ alkyl; C₃-C₆ cycloalkyl; C₁-C₆ alkylcarbonyl; C₁-C₆ alkoxy carbonyl; C₃-C₆ cycloalkylcarbonyl; or unsubstituted benzoyl or benzoyl substituted by substituent(s) selected from the group consisting of halogen, C₁-C₆ alkyl, and halogen-substituted C₁-C₆ alkyl;

R_a and R_b are each independently H or C₁-C₆ alkyl;

R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl.

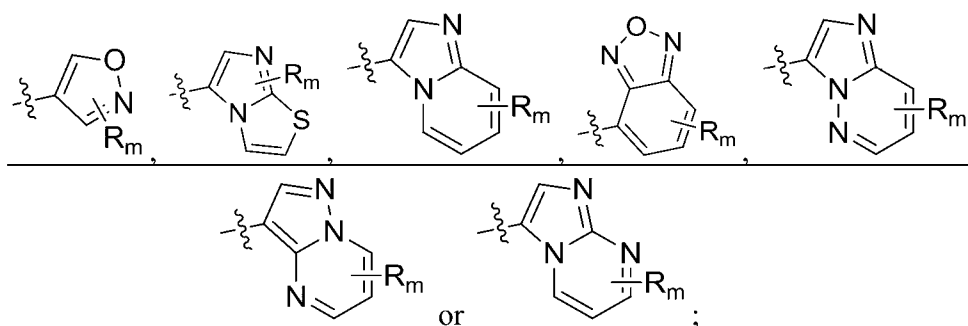
3. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1, wherein X and Z are N, Y is CH.

4. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1,

wherein, W and V are independently selected from the group consisting of H, C₁-C₄ alkyl, and C₁-C₄ alkoxy;

X and Z are N, Y is CH;

R₁ is



wherein, R_m is H, halogen, nitro, cyano; unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl; C₁-C₄ alkoxy; C₁-C₄ alkylcarbonyl; C₁-C₄ alkoxy carbonyl; -NR_aR_b; -C(O)(NR_aR_b); -OC(O)-R_f; unsubstituted phenyl or phenyl substituted by 1-3 of R₃; or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R₄, wherein said heteroaryl is selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranyl, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

R₂ is cyano; C₁-C₄ alkoxy carbonyl; -NR_cR_d; substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl or C₃-C₆ cycloalkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, morpholinylmethyl, or unsubstituted or R''-substituted piperidinyl;

R₃ is halogen, nitro, cyano, C₁-C₂ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', or 4-morpholinyl;

R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', 4-piperidinyl, or 1-t-butoxycarbonyl-4-piperidinyl;

R' is C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, or 4-methylpiperazinyl;

R'' is C₁-C₄ alkyl, C₃-C₆ cycloalkyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxycarbonyl, C₃-C₆ cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

R_a and R_b are each independently H, C₁-C₄ alkyl or C₁-C₄ alkylcarbonyl;

R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl;

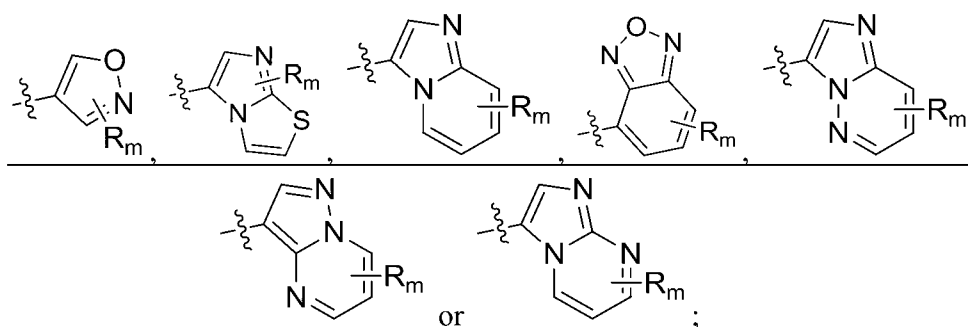
R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl, said 4- to 7-membered heteroaryl is selected from the group consisting of furanyl, pyrrolyl, and thienyl.

5. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 2,

wherein W and V are independently selected from the group consisting of H, C₁-C₄ alkyl, and C₁-C₄ alkoxy;

X and Z are N, Y is CH;

R₁ is



wherein, R_m is H, halogen, nitro, cyano; unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl; C₁-C₄ alkoxy; C₁-C₄ alkylcarbonyl; C₁-C₄ alkoxycarbonyl; -NR_aR_b; -C(O)(NR_aR_b); -OC(O)-R_f; unsubstituted phenyl or phenyl substituted by 1-3 of R₃; or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R₄, wherein said heteroaryl is

selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranyl, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

R₂ is cyano; C₁-C₄ alkoxy carbonyl; -NR_cR_d; substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl or C₃-C₆ cycloalkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, morpholinylmethyl, or unsubstituted or R''-substituted piperidinyl;

R₃ is halogen, nitro, cyano, C₁-C₂ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', or 4-morpholinyl;

R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', 4-piperidinyl, or 1-t-butoxycarbonyl-4-piperidinyl;

R' is C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, or 4-methylpiperazinyl;

R'' is C₁-C₄ alkyl, C₃-C₆ cycloalkyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxy carbonyl, C₃-C₆ cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

R_a and R_b are each independently H, C₁-C₄ alkyl or C₁-C₄ alkylcarbonyl;

R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl;

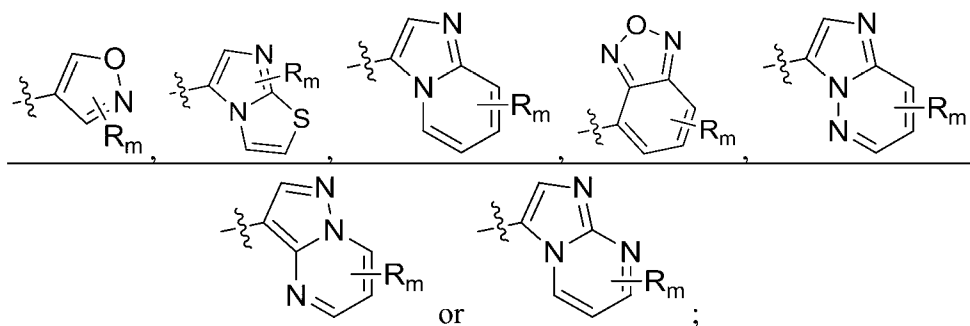
R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl, said 4- to 7-membered heteroaryl is selected from the group consisting of furanyl, pyrrolyl, and thienyl.

6. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 3,

wherein, W and V are independently selected from the group consisting of H, C₁-C₄ alkyl, and C₁-C₄ alkoxy;

X and Z are N, Y is C;

R₁ is



wherein, R_m is H, halogen, nitro, cyano; unsubstituted or halogen- or morpholinyl-substituted C_1 - C_4 alkyl; C_1 - C_4 alkoxy; C_1 - C_4 alkylcarbonyl; C_1 - C_4 alkoxy carbonyl; $-NR_aR_b$; $-C(O)(NR_aR_b)$; $-OC(O)-R_f$; unsubstituted phenyl or phenyl substituted by 1-3 of R_3 ; or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R_4 , wherein said heteroaryl is selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranyl, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

R_2 is cyano; C_1 - C_4 alkoxy carbonyl; $-NR_cR_d$; substituted or unsubstituted C_6 - C_{20} aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C_1 - C_4 alkylenedioxy, unsubstituted or halogen- or $-NR_cR_d$ -substituted C_1 - C_6 alkyl or C_3 - C_6 cycloalkyl, C_1 - C_6 alkoxy, C_1 - C_6 sulfamido, $-NR_aR_b$, $-C(O)R'$, morpholinyl, morpholinylmethyl, or unsubstituted or R'' -substituted piperidinyl;

R_3 is halogen, nitro, cyano, C_1 - C_2 alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C_1 - C_4 alkyl, C_1 - C_4 alkoxy, $-NR_aR_b$, $-C(O)R'$, or 4-morpholinyl;

R_4 is halogen, nitro, cyano, unsubstituted or halogen-substituted C_1 - C_4 alkyl, C_1 - C_4 alkoxy, $-NR_aR_b$, $-C(O)R'$, 4-piperidinyl, or 1-t-butoxycarbonyl-4-piperidinyl;

R' is C_1 - C_4 alkyl, C_1 - C_4 alkoxy, $-NR_aR_b$, or 4-methylpiperazinyl;

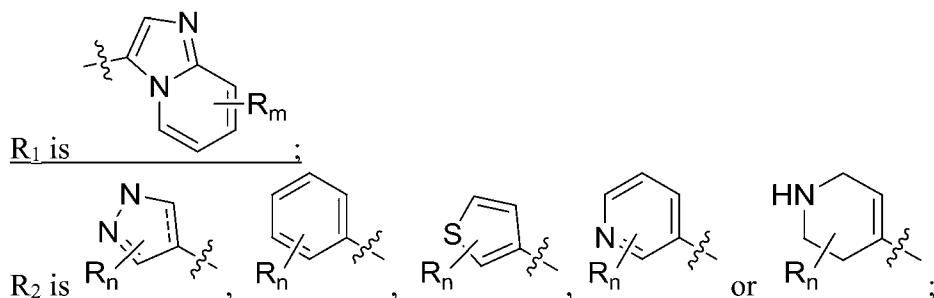
R'' is C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_4 alkylcarbonyl, C_1 - C_4 alkoxy carbonyl, C_3 - C_6 cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

R_a and R_b are each independently H, C_1 - C_4 alkyl or C_1 - C_4 alkylcarbonyl;

R_c and R_d are each independently H or C_1 - C_6 alkyl; or, R_c and R_d , together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl;

R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl, said 4- to 7-membered heteroaryl is selected from the group consisting of furanyl, pyrrolyl, and thienyl.

7. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 3,



wherein, R_m is H, halogen, nitro, hydroxyl, C₁-C₄ alkoxy, unsubstituted phenyl or phenyl substituted by 1-3 of R₃, or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S, or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R₄, wherein said heteroaryl is selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranal, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

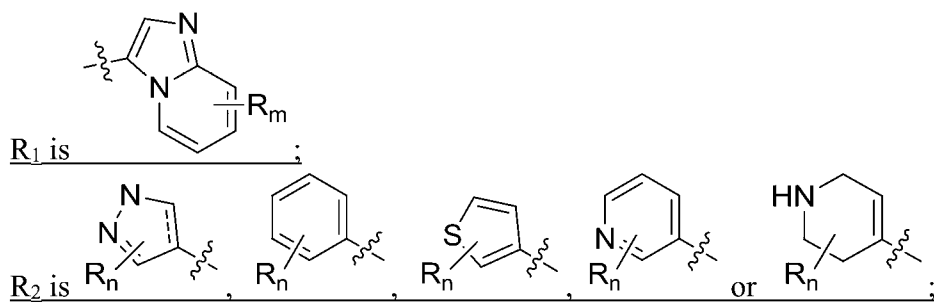
R_n is H, halogen; nitro; cyano; unsubstituted or halogen-, dimethylamino-, 4-morpholinyl-, 1-aziridinyl-, 1-azetidiny-, 1-tetrahydropyrrolyl-, 1-piperidinyl- or 1-homopiperidinyl-substituted C₁-C₄ alkyl; C₁-C₄ alkoxy; C₁-C₄ sulfamido; -NR_aR_b; -C(O)R'; 4-morpholinyl; or unsubstituted or R''-substituted piperidinyl;

R' is C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, or 4-methylpiperazinyl;

R'' is C₁-C₄ alkyl, C₃-C₆ cycloalkyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxycarbonyl, C₃-C₆ cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

R_a and R_b are independently H, C₁-C₄ alkyl or C₁-C₄ alkylcarbonyl.

8. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 6,



wherein, R_m is H, halogen, nitro, hydroxyl, C_1 - C_4 alkoxy, unsubstituted phenyl or phenyl substituted by 1-3 of R_3 , or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S, or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R_4 , wherein said heteroaryl is selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranyl, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

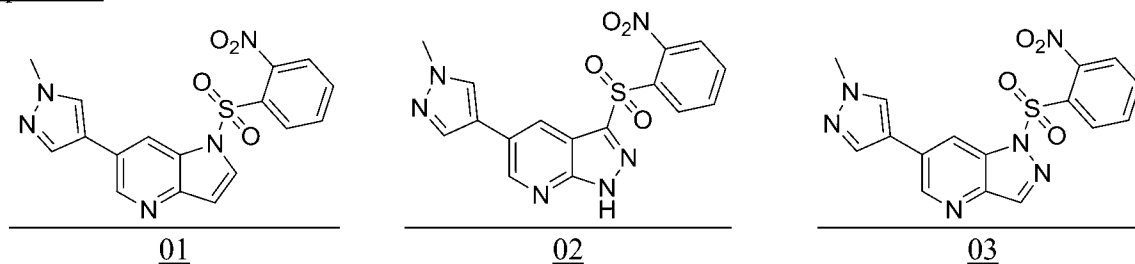
R_n is H, halogen; nitro; cyano; unsubstituted or halogen-, dimethylamino-, 4-morpholinyl-, 1-aziridinyl-, 1-azetidiny-, 1-tetrahydropyrrolyl-, 1-piperidinyl- or 1-homopiperidinyl-substituted C_1 - C_4 alkyl; C_1 - C_4 alkoxy; C_1 - C_4 sulfamido; $-NR_aR_b$; $-C(O)R'$; 4-morpholinyl; or unsubstituted or R'' -substituted piperidinyl;

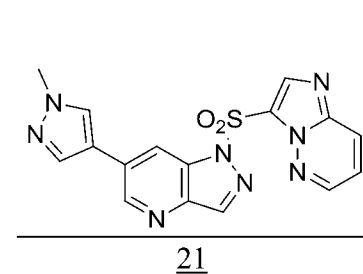
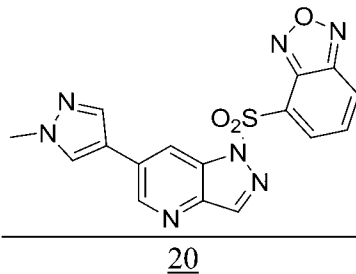
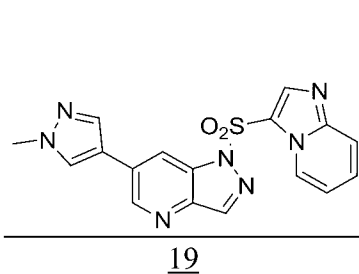
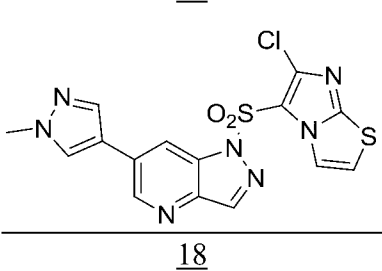
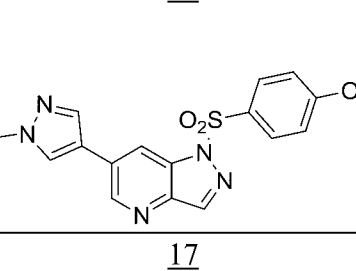
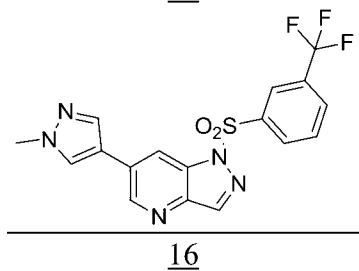
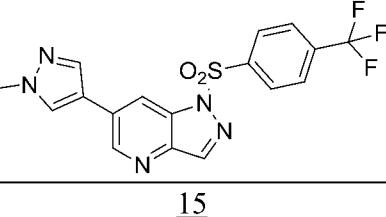
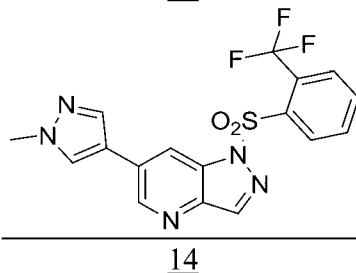
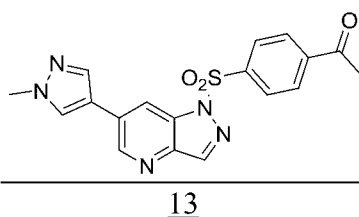
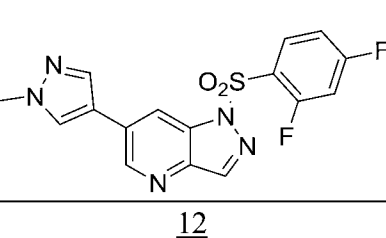
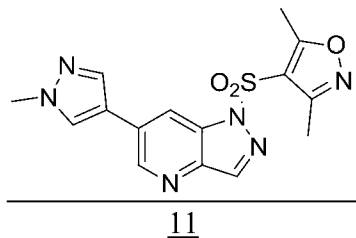
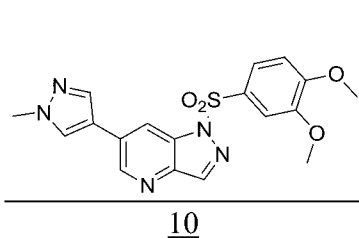
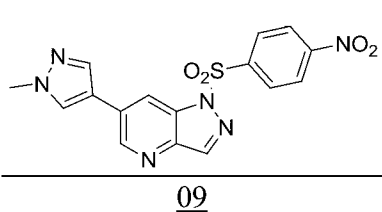
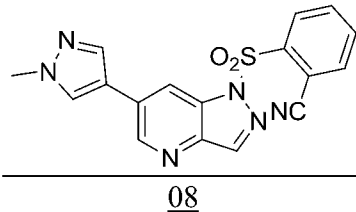
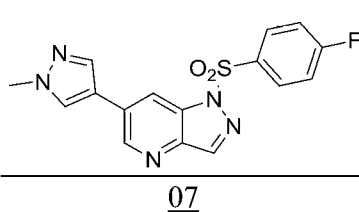
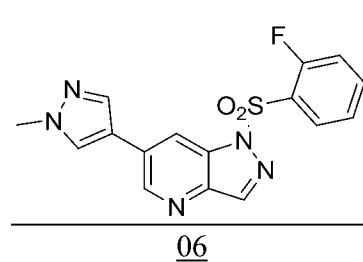
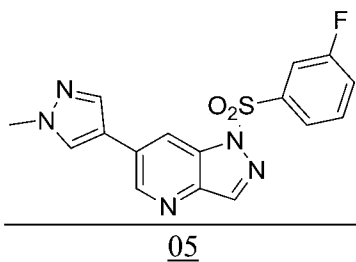
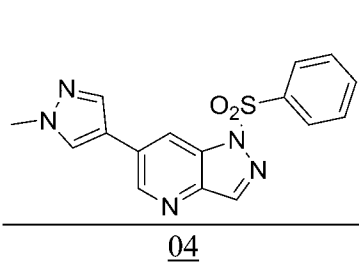
R' is C_1 - C_4 alkyl, C_1 - C_4 alkoxy, $-NR_aR_b$, or 4-methylpiperazinyl;

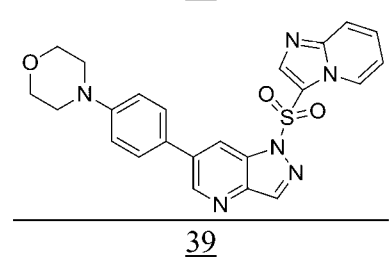
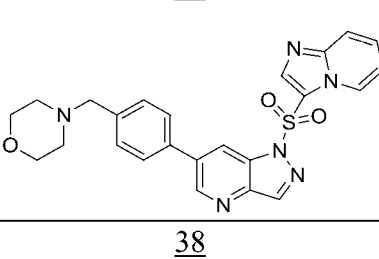
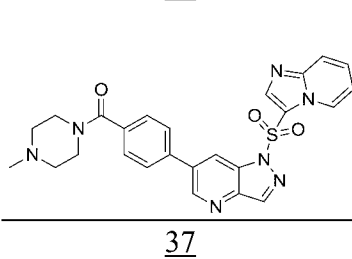
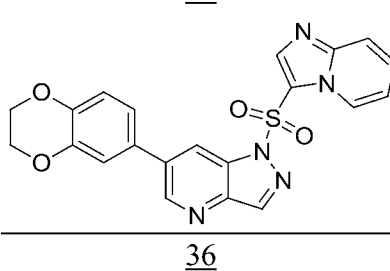
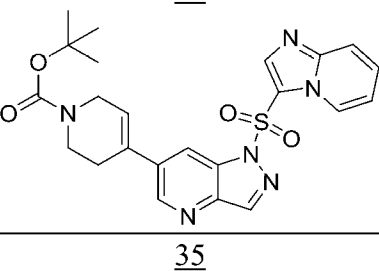
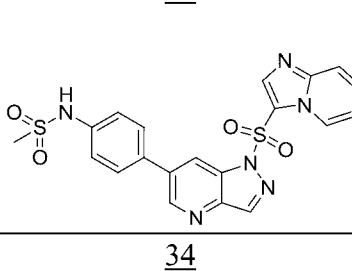
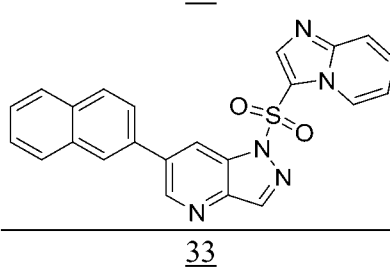
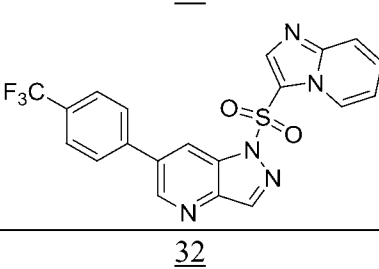
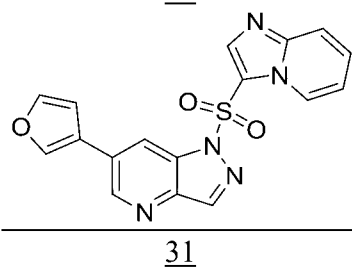
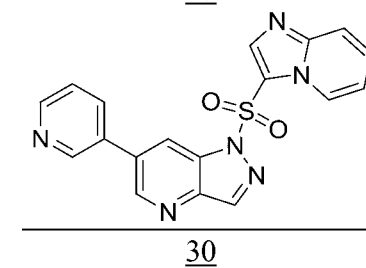
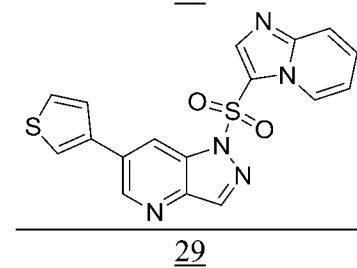
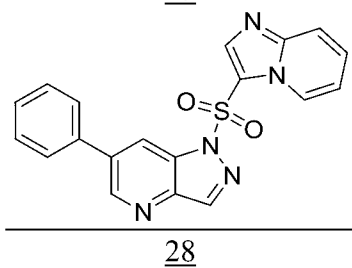
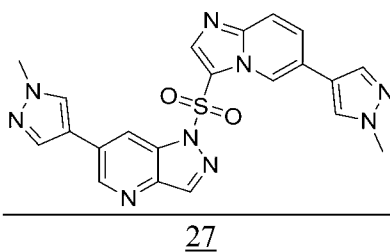
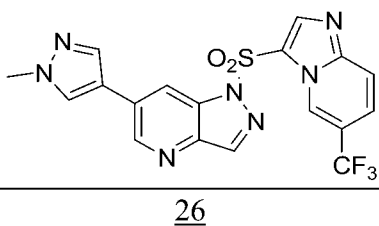
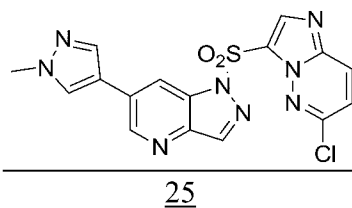
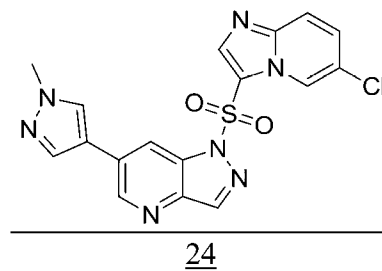
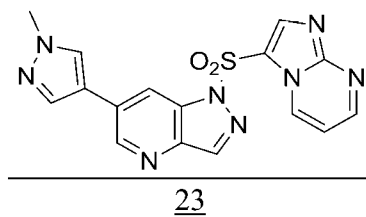
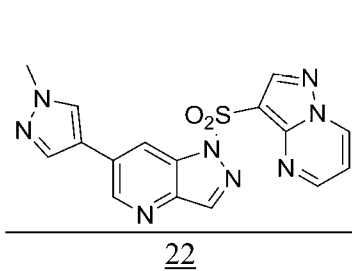
R'' is C_1 - C_4 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_4 alkylcarbonyl, C_1 - C_4 alkoxy carbonyl, C_3 - C_6 cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

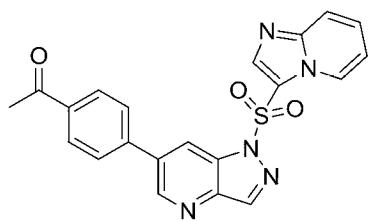
R_a and R_b are independently H, C_1 - C_4 alkyl or C_1 - C_4 alkylcarbonyl.

9. The 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof, according to claim 1, wherein, the 5-member-heterocycle fused pyridine compound is selected from the group consisting of the following compounds:

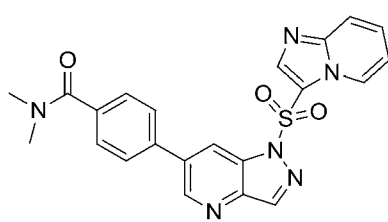




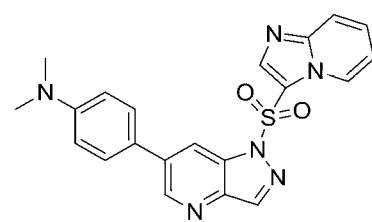




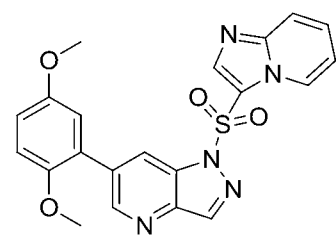
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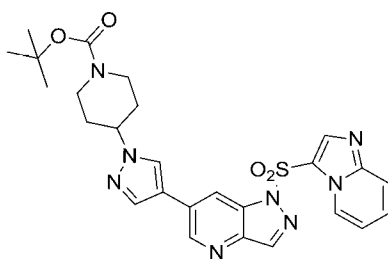
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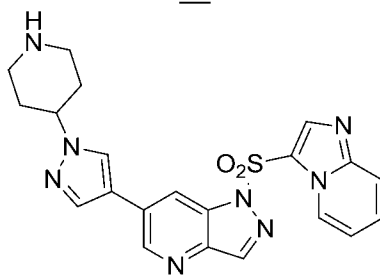
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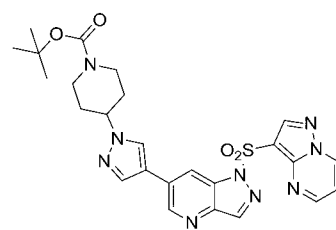
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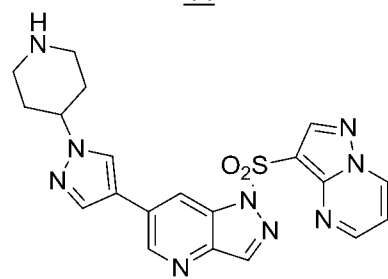
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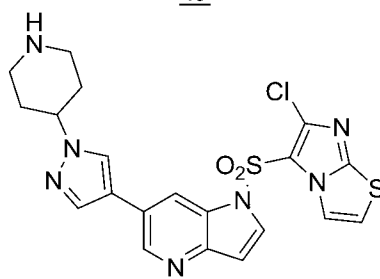
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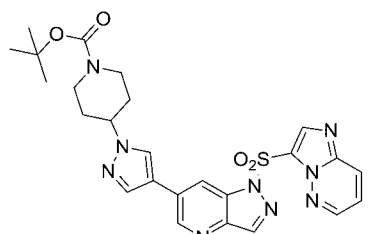
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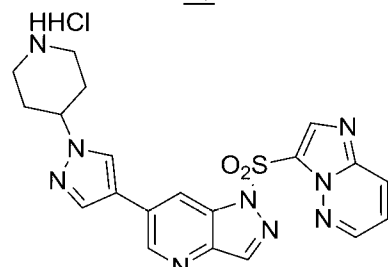
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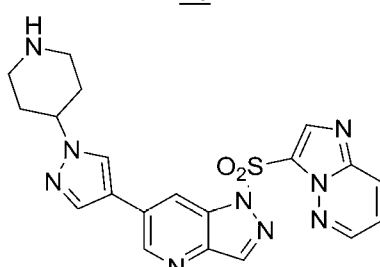
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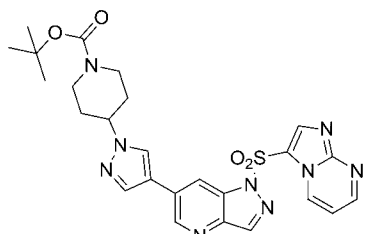
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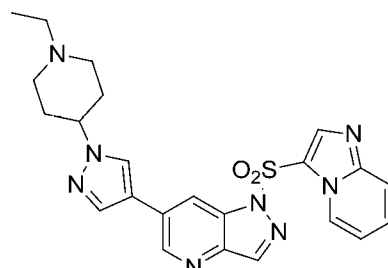
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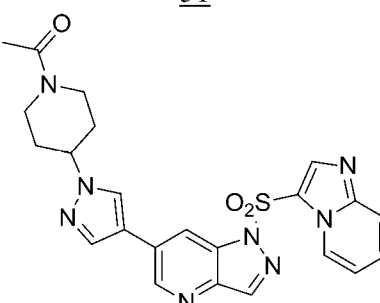
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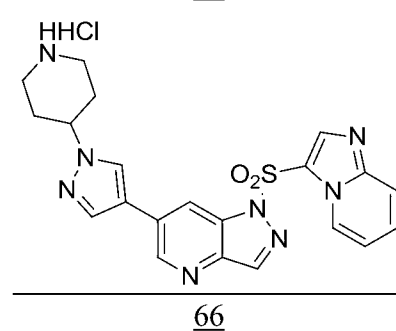
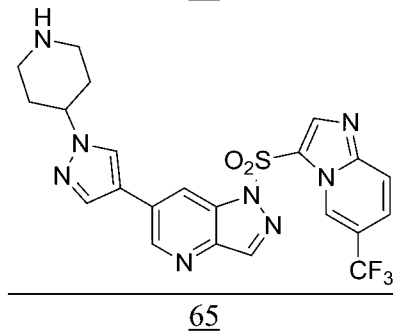
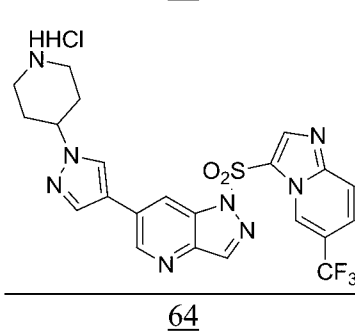
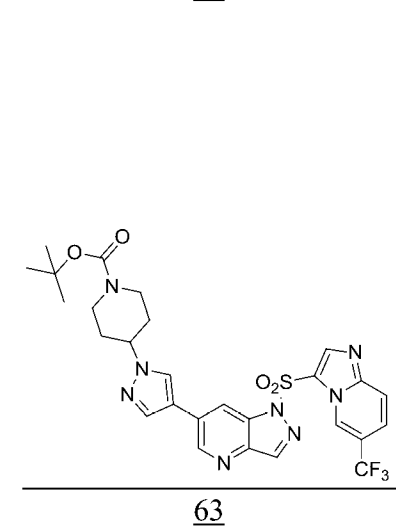
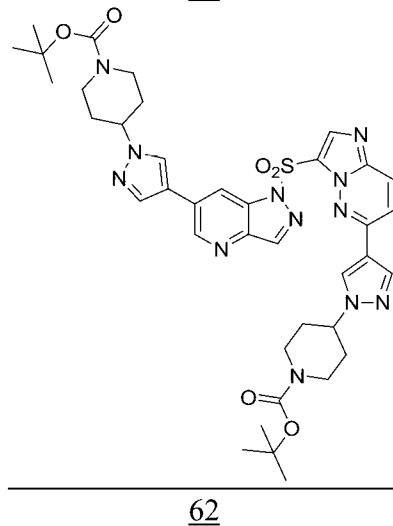
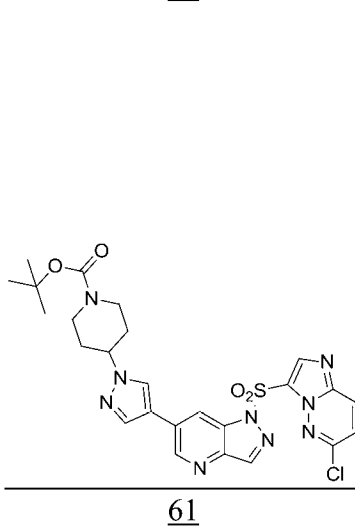
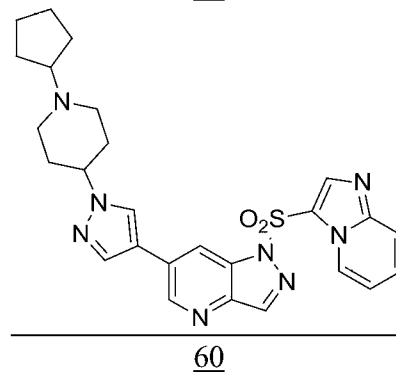
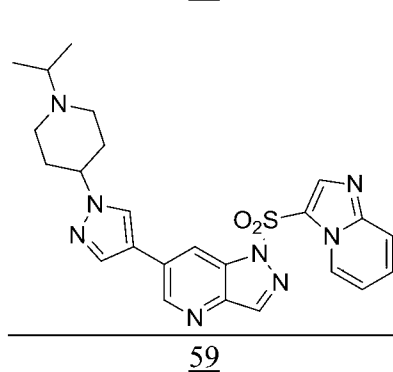
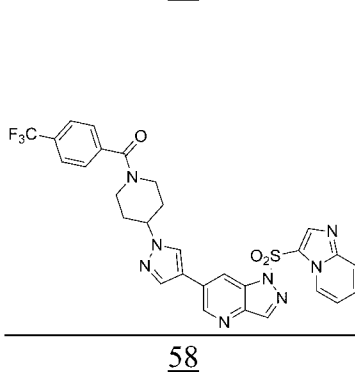
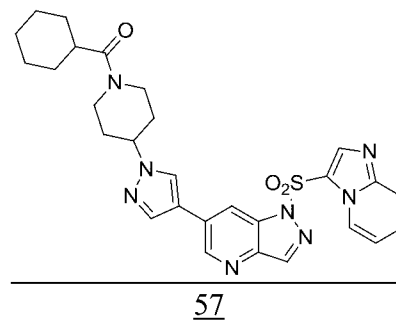
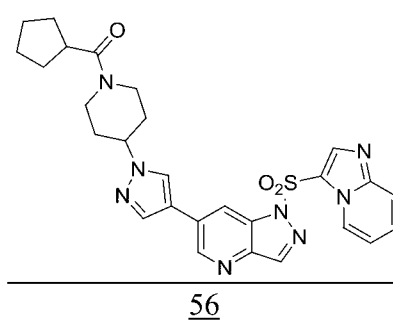
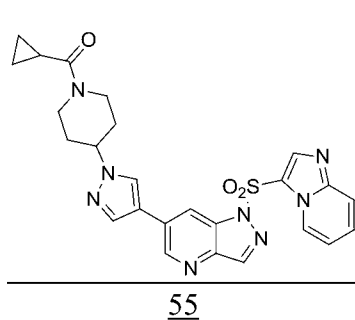
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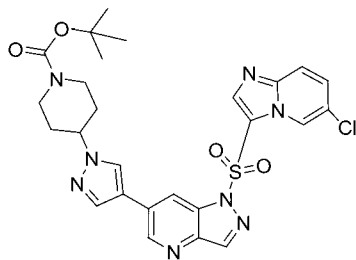


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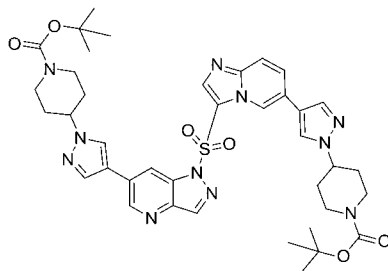


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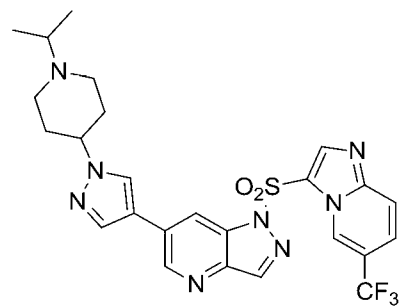




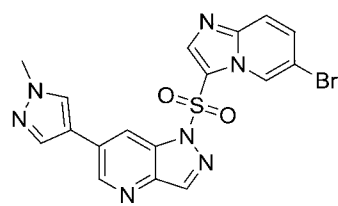
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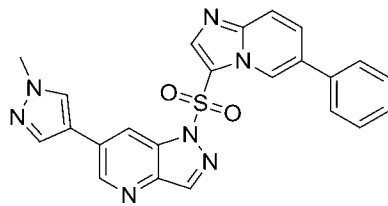
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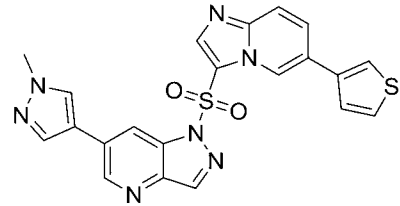
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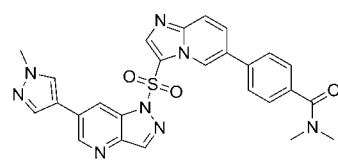
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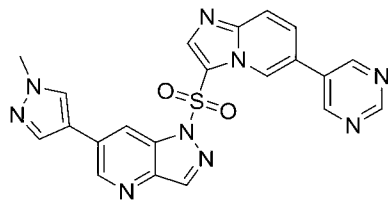
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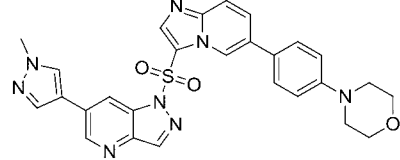
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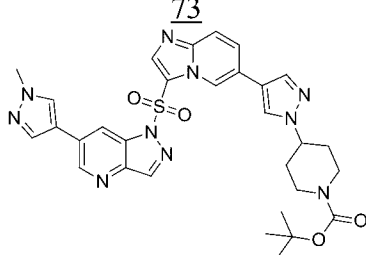
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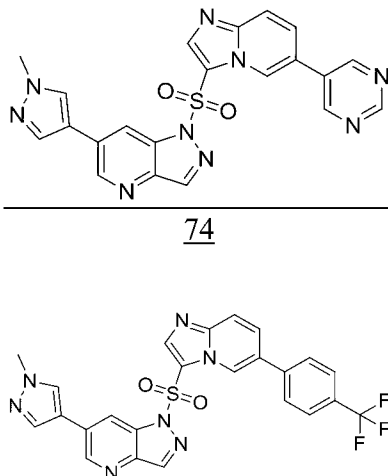
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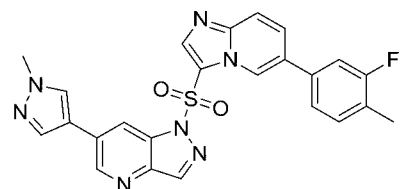
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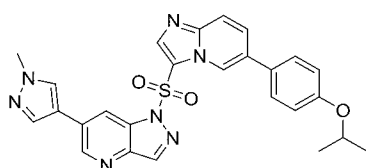
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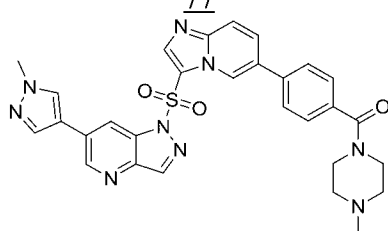
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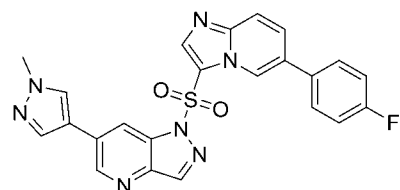
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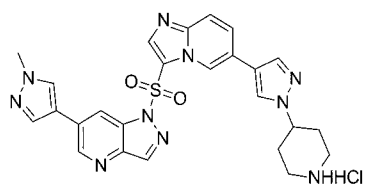
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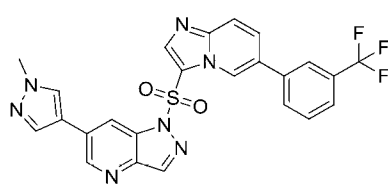
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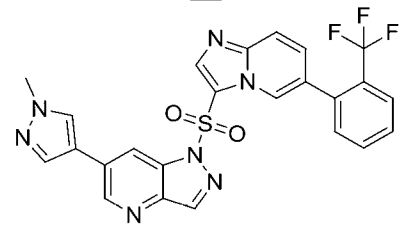
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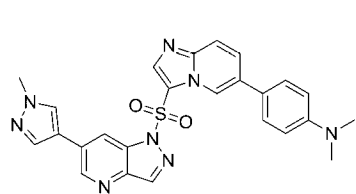
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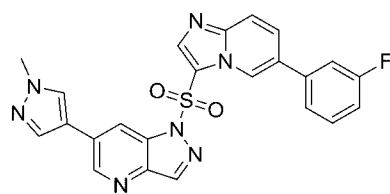
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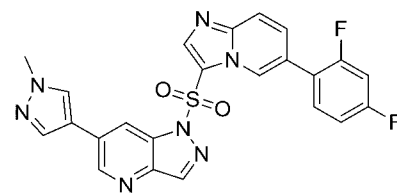
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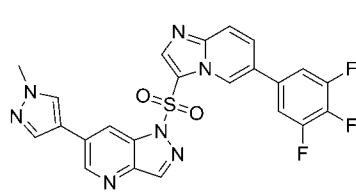
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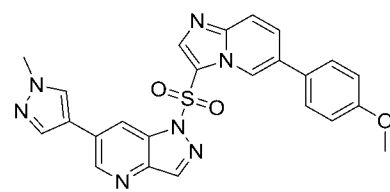
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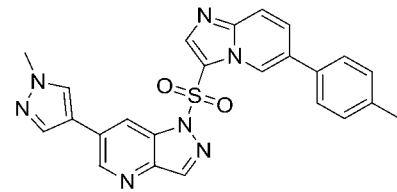
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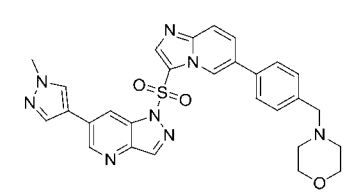
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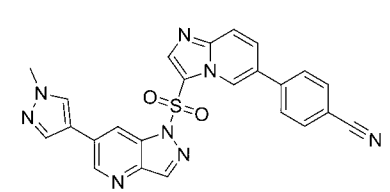
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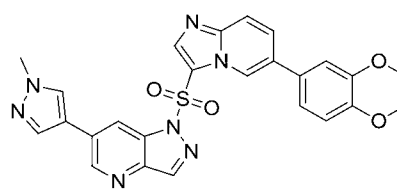
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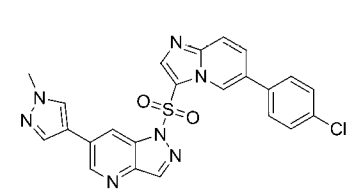
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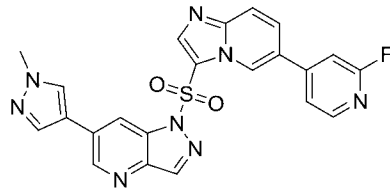
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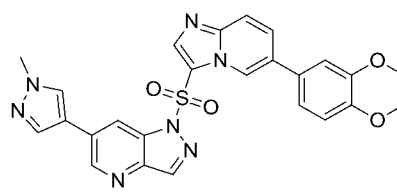
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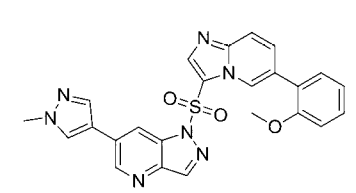
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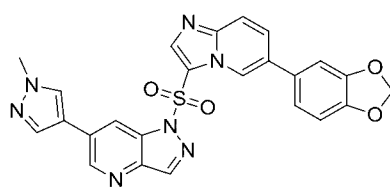
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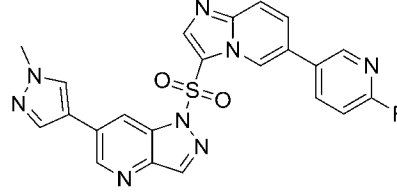
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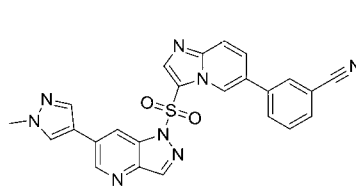
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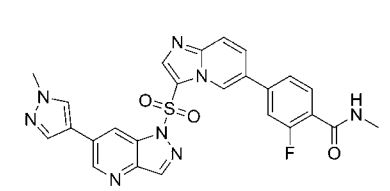
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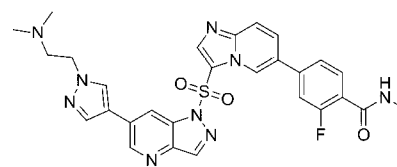
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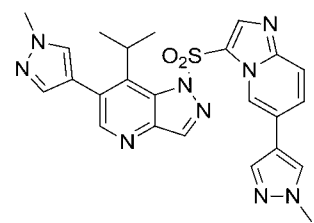
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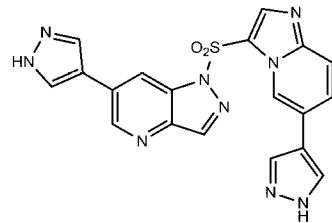
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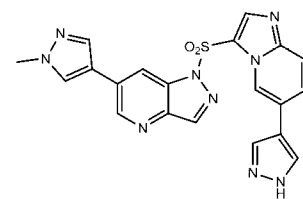
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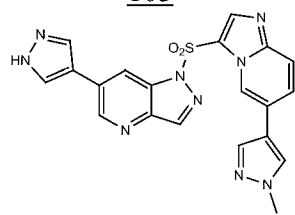
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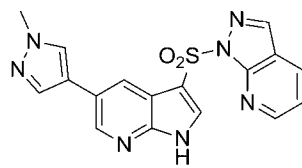
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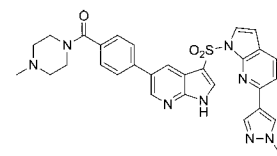
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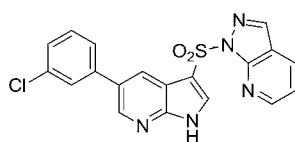
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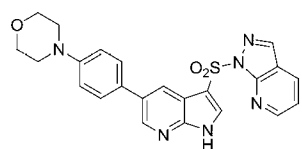
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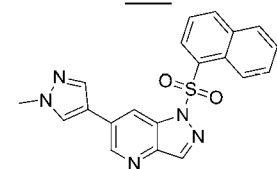
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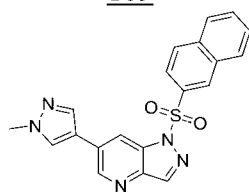
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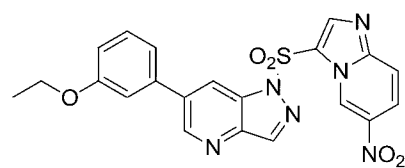
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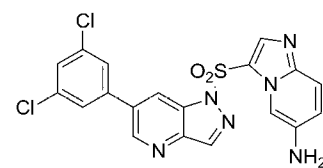
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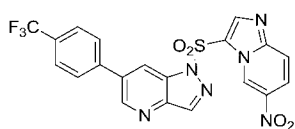
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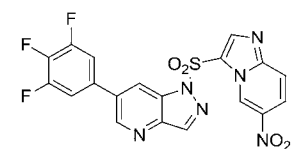
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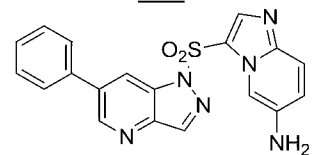
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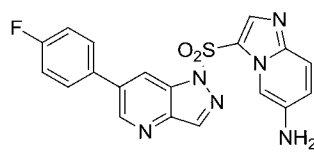
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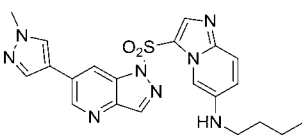
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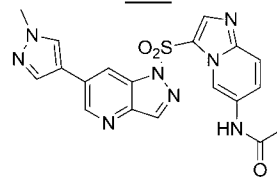
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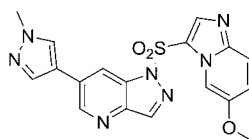
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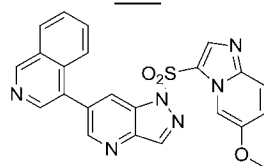
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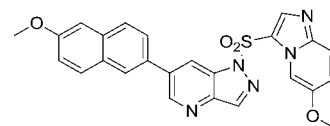
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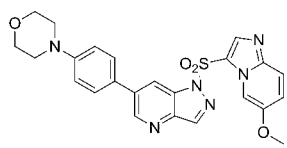
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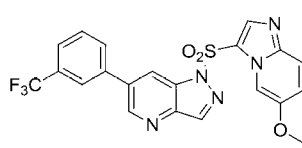
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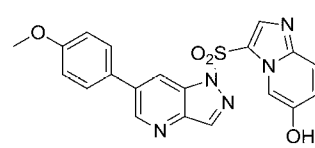
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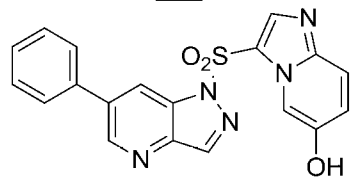
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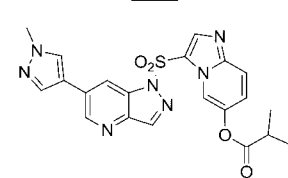
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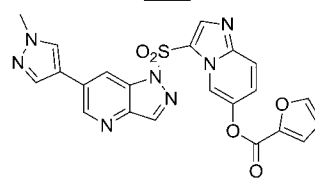
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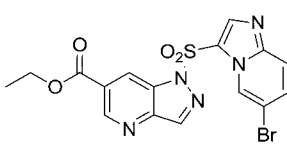
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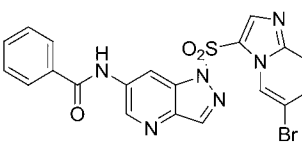
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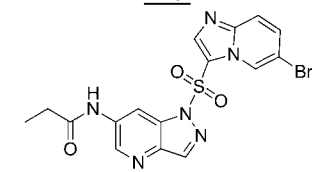
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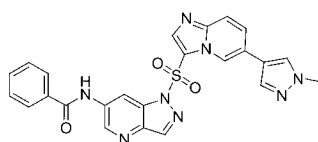
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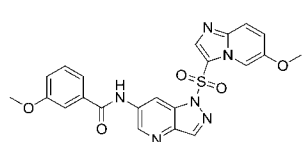
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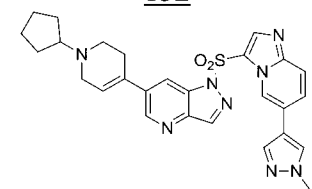
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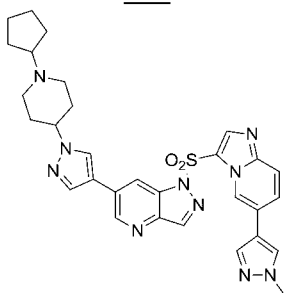
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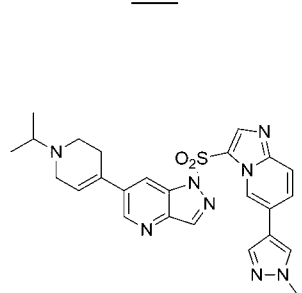
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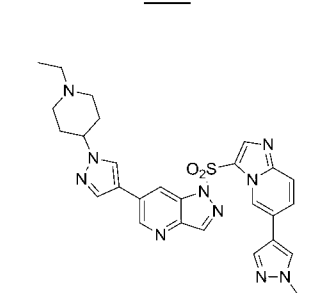
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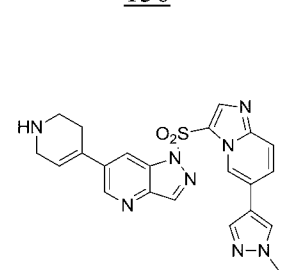
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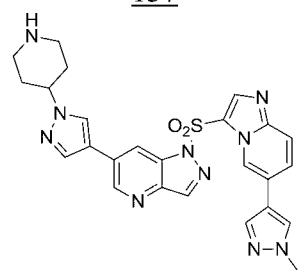
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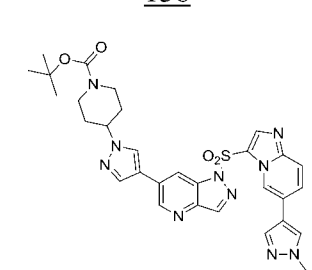
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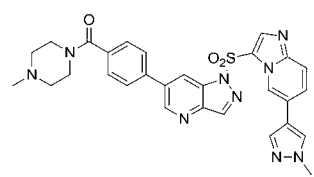


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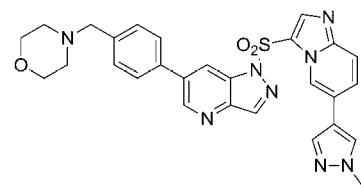


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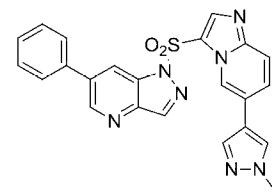
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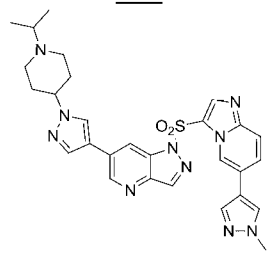
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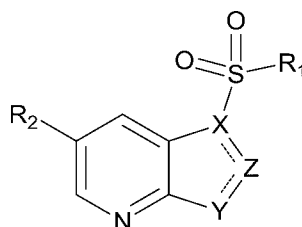
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145.

10. A pharmaceutical composition comprising a prophylactically or therapeutically effective amount of one or more 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof according to claim 1, and a pharmaceutically acceptable excipient.

11. The pharmaceutical composition of claim 10, wherein the 5-member-heterocycle-fused pyridine compound has a structure of Formula (I),



I

wherein,

X, Y and Z are each independently N or C, at least one of X, Y and Z is N, and Y and Z are unsubstituted; provided that when X is N, Z is N;

— — — represents single bond or double bond, and X, Y and Z abide by valence-bond theory;

R₁ is substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms

selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylcarbonyl, C₁-C₆ alkoxycarbonyl, -NR_aR_b, -C(O)(NR_aR_b), unsubstituted phenyl or phenyl substituted by 1-4 of R₃, or unsubstituted 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S or 4- to 7-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S substituted by 1-4 of R₄;

R₂ is substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, or unsubstituted or R''-substituted piperidinyl;

wherein, R₃ is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or morpholinyl;

R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, -C(O)R', or unsubstituted or C₁-C₆ alkoxycarbonyl-substituted piperidinyl;

R' is C₁-C₆ alkyl, C₁-C₆ alkoxy, -NR_aR_b, or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heterocyclyl;

R'' is C₁-C₆ alkyl; C₃-C₆ cycloalkyl; C₁-C₆ alkylcarbonyl; C₁-C₆ alkoxycarbonyl; C₃-C₆ cycloalkylcarbonyl; or unsubstituted benzoyl or benzoyl substituted by substituent(s) selected from the group consisting of halogen, C₁-C₆ alkyl, and halogen-substituted C₁-C₆ alkyl;

R_a and R_b are each independently H or C₁-C₆ alkyl;

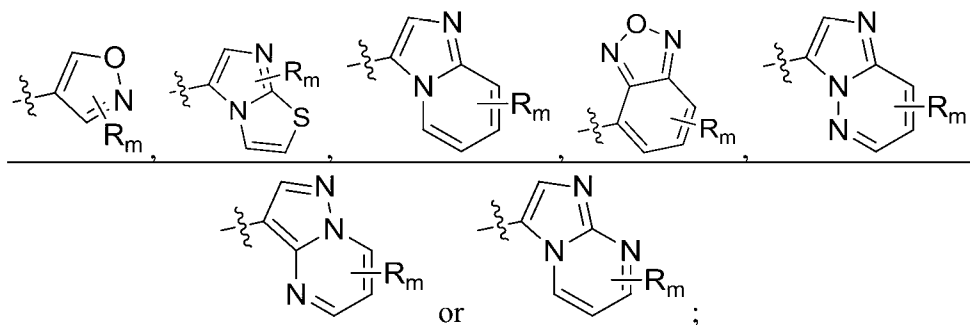
R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl.

12. The pharmaceutical composition of claim 11, wherein X and Z are N, Y is CH.

13. The pharmaceutical composition of claim 12,

wherein W and V are independently selected from the group consisting of H, C₁-C₄ alkyl, and C₁-C₄ alkoxy;

R₁ is



R_m is H, halogen, nitro, cyano; unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl; C₁-C₄ alkoxy; C₁-C₄ alkylcarbonyl; C₁-C₄ alkoxycarbonyl; -NR_aR_b; -C(O)(NR_aR_b); -OC(O)-R_f; unsubstituted phenyl or phenyl substituted by 1-3 of R₃; or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S, or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R₄, wherein said heteroaryl is selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranyl, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

R₂ is cyano; C₁-C₄ alkoxycarbonyl; -NR_cR_d; substituted or unsubstituted C₆-C₂₀ aryl; substituted or unsubstituted 5- to 10-membered heteroaryl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; or substituted or unsubstituted 4- to 10-membered heterocyclyl containing 1-5 heteroatoms selected from the group consisting of N, O, and S; wherein, substituent in the substituted group is halogen, nitro, cyano, C₁-C₄ alkylenedioxy, unsubstituted or halogen- or -NR_cR_d-substituted C₁-C₆ alkyl or C₃-C₆ cycloalkyl, C₁-C₆ alkoxy, C₁-C₆ sulfamido, -NR_aR_b, -C(O)R', morpholinyl, morpholinylmethyl, or unsubstituted or R''-substituted piperidinyl;

R₃ is halogen, nitro, cyano, C₁-C₂ alkylenedioxy, unsubstituted or halogen- or morpholinyl-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', or 4-morpholinyl;

R₄ is halogen, nitro, cyano, unsubstituted or halogen-substituted C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, -C(O)R', 4-piperidinyl, or 1-t-butoxycarbonyl-4-piperidinyl;

R' is C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, or 4-methylpiperazinyl;

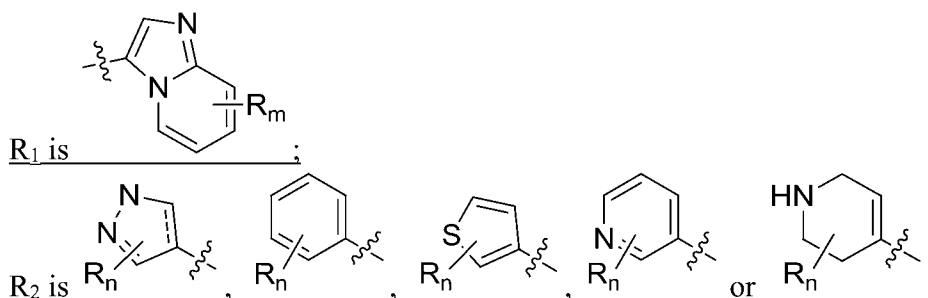
R'' is C₁-C₄ alkyl, C₃-C₆ cycloalkyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxycarbonyl, C₃-C₆ cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

R_a and R_b are each independently H, C₁-C₄ alkyl or C₁-C₄ alkylcarbonyl;

R_c and R_d are each independently H or C₁-C₆ alkyl; or, R_c and R_d, together with the N atom to which they are attached, form 3- to 7-membered heterocyclyl;

R_f is C₁-C₆ alkyl or unsubstituted or halogen- or C₁-C₆ alkyl-substituted 4- to 7-membered heteroaryl, said 4- to 7-membered heteroaryl is selected from the group consisting of furanyl, pyrrolyl, and thienyl.

14. The pharmaceutical composition of claim 13, wherein



wherein, R_m is H, halogen, nitro, hydroxyl, C₁-C₄ alkoxy, unsubstituted phenyl or phenyl substituted by 1-3 of R₃, or unsubstituted 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S, or 5- to 7-membered heteroaryl containing 1-3 heteroatoms selected from the group consisting of N, O, and S substituted by 1-3 of R₄, wherein said heteroaryl is selected from the group consisting of furanyl, thienyl, pyrrolyl, pyrazolyl, imidazolyl, oxazolyl, isoxazolyl, pyranyl, pyridinyl, morpholinyl, oxazinyl, and pyrazinyl;

R_n is H, halogen; nitro; cyano; unsubstituted or halogen-, dimethylamino-, 4-morpholinyl-, 1-aziridinyl-, 1-azetidiny-, 1-tetrahydropyrrolyl-, 1-piperidinyl- or 1-homopiperidinyl-substituted C₁-C₄ alkyl; C₁-C₄ alkoxy; C₁-C₄ sulfamido; -NR_aR_b; -C(O)R'; 4-morpholinyl; or unsubstituted or R''-substituted piperidinyl;

R' is C₁-C₄ alkyl, C₁-C₄ alkoxy, -NR_aR_b, or 4-methylpiperazinyl;

R'' is C₁-C₄ alkyl, C₃-C₆ cycloalkyl, C₁-C₄ alkylcarbonyl, C₁-C₄ alkoxycarbonyl, C₃-C₆ cycloalkylcarbonyl, or p-trifluoromethylbenzoyl;

R_a and R_b are independently H, C₁-C₄ alkyl or C₁-C₄ alkylcarbonyl.

15. The pharmaceutical composition of claim 10, wherein the compound is selected from the group consisting of any of compounds 01-145.

16. A 5-member-heterocycle-fused pyridine compound, pharmaceutically acceptable salts or pharmaceutically acceptable solvates thereof according to any one of claims 1 to 9 or a pharmaceutical composition according to any one of claims 10 to 15 for use in a method of preventing or treating diseases associated with abnormal cell proliferation, morphological change and hyperkinesis related to abnormal protein tyrosine kinase, or diseases related to angiogenesis or metastasis, in a subject in need thereof, said method comprises administering a prophylactically or therapeutically effective amount of said compound or said pharmaceutical composition.

17. The use according to claim 16, wherein the disease associated with abnormal cell proliferation related to abnormal protein tyrosine is a disease associated with abnormal cell proliferation related to abnormal c-Met, and wherein the disease associated with abnormal cell proliferation related to abnormal c-Met is a cancer associated with over-expression or over-activation of c-Met.

18. The use according to claim 17, wherein the cancer associated with over-expression or over-activation of c-Met is selected from the group consisting of liver cancer, bile duct cancer, pancreatic cancer, lung cancer, thyroid cancer, pleural mesothelioma, lung cancer, stomach cancer, breast cancer, colon cancer, prostate cancer, pancreatic cancer, esophageal cancer, ovarian cancer, renal cancer, glioma and melanoma.