

[0012] A₁, A₂, and A₃ are each independently selected from N or CR₄ and at least one of A₁, A₂, and A₃ is N, R₄ is H, F, Cl or methyl;

[0013] R₁ is C₃-C₈ cycloalkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^aR^b,

[0014] or 4- to 8-membered heteroalicyclic group, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^aR^b,

[0015] or aryl or heteroaryl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, ~~hydrogen~~hydroxyl, C₁-C₆ alkylthio, -SO₂-R₅, -SO-R₅, -CO-R₅, -CONH-R₅, -NHCO-R₅, -R'-COO-R'', -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl and/or C₁-C₆ alkoxy, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, and -O-R₆,

[0016] the aryl group is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms, the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1-2 atoms selected from N, O, or S as ring atoms,

[0017] R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

[0018] R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkyloxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, and C₁-C₆ alkylthio,

[0019] R' is C₂-C₆ alkenylene, or C₁-C₆ alkylene,

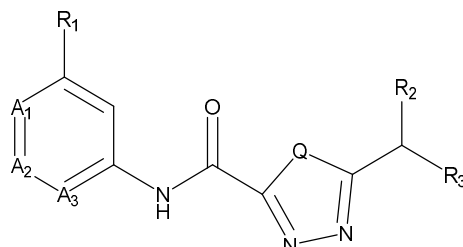
[0020] R'' is hydrogen, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

[0021] R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted

Claims

WHAT IS CLAIMED IS:

1. A compound of formula (I), or the pharmaceutically acceptable salts, ~~the isomers~~ the diastereomers, the enantiomers, or the solvates ~~or the prodrugs~~ thereof,



formula (I)

in formula (I),

Q is NH, O or S;

A₁, A₂, and A₃ are each independently selected from N or CR₄ and at least one of A₁, A₂, and A₃ is N, R₄ is H, F, Cl or methyl;

R₁ is C₃-C₈ cycloalkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^aR^b,

or 4- to 8-membered heteroalicyclic group, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^aR^b,

or aryl or heteroaryl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, ~~hydrogen~~ hydroxyl, C₁-C₆ alkylthio, -SO₂-R₅, -SO-R₅, -CO-R₅, -CONH-R₅, -NHCO-R₅, -R'-COO-R'', -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl and/or C₁-C₆ alkoxy, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, and -O-R₆,

~~the aryl group is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms, the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,~~

R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is

substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkoxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, and C₁-C₆ alkylthio,

R' is C₂-C₆ alkenylene, or C₁-C₆ alkylene,

R'' is hydrogen, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

R₂ is C₃-C₈ cycloalkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^cR^d,

or C₇-C₁₂ bridged cyclyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^cR^d,

or C₁-C₁₀ alkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, cyano, -CONH₂, C₃-C₈ cycloalkyl, and -NR^cR^d,

or -(CH₂)_n-R^e, wherein R^e is aryl or heteroaryl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, C₃-C₆ cycloalkyl, phenyl, naphthyl, C₂-C₆ alkynyl, C₂-C₆ alkenyl, and -NR^cR^d, wherein n is an integer from 0 to 3,

or -(CH₂)_m-R^f, wherein R^f is 4- to 8-membered heteroalicyclic group, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^cR^d, m is an integer from 0 to 3,

~~the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,—~~

~~the aryl group is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms,—~~

R^c and R^d are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

R₃ is hydrogen, C₁-C₃ alkyl, hydroxyl, halogen, trifluoromethyl, or cyano;

the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,

the aryl group mentioned above is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms.

2. The compound, the pharmaceutically acceptable salts, diastereomers, enantiomers, isomers, or solvates or ~~prodrugs~~ thereof according to claim 1, wherein, Q is NH, O or S;

A₁, A₂, and A₃ are each independently selected from N or CR₄ and at least one of A₁, A₂, and A₃ is N, R₄ is H, F, Cl or methyl;

R₁ is C₃-C₈ cycloalkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^aR^b,

or 4- to 8-membered heteroalicyclic group, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^aR^b,

or aryl or heteroaryl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, hydroxyl, C₁-C₆ alkylthio, -SO₂-R₅, -SO-R₅, -CO-R₅, -CONH-R₅, -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl, C₁-C₆ alkoxy C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, and -O-R₆,

~~the aryl group is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms, the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,~~

R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is

substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkoxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, and C₁-C₆ alkylthio,

R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

R₂ is C₃-C₈ cycloalkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^cR^d,

or C₇-C₁₂ bridged cyclyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^cR^d,

or C₁-C₁₀ alkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, cyano, -CONH₂, C₃-C₈ cycloalkyl, and -NR^cR^d,

or -(CH₂)_n-R^e, wherein R^e is aryl or heteroaryl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, C₂-C₆ alkynyl, C₂-C₆ alkenyl, and -NR^cR^d, wherein n is an integer from 0 to 3,

or -(CH₂)_m-R^f, wherein R^f is 4- to 8-membered heteroalicyclic group, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₆ alkyl, C₁-C₆ alkoxy, C₁-C₆ alkylthio, C₁-C₃ acyl, hydroxyl, halogen, trifluoromethyl, cyano, -CONH₂, oxo (=O) and -NR^cR^d, m is an integer from 0 to 3,

~~the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,—~~

~~the aryl group is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms,—~~

R^c and R^d are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted

with mono- or di-C₁-C₃ alkyl;

R₃ is hydrogen, C₁-C₃ alkyl, hydroxyl, halogen, trifluoromethyl, or cyano;

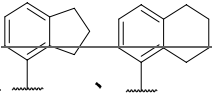
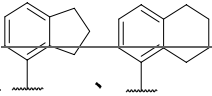
the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,

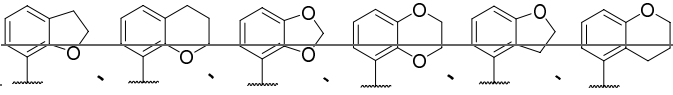
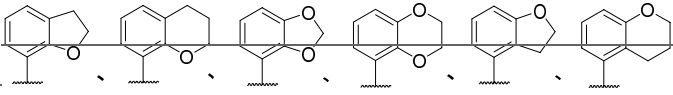
the aryl group mentioned above is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring, the heteroaryl is a monocyclic or bicyclic group having 5 to 10 ring atoms and containing 1 to 3 heteroatoms selected from N, O, or S as ring atoms.

3. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers, or~~ solvates or ~~prodrugs~~ thereof according to claim 1 or 2, wherein, A₃ is N, A₁, and A₂ are each independently selected from N or CR₄, R₄ is H, F, Cl or methyl.

4. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers, or~~ solvates or ~~prodrugs~~ thereof according to any one of claims 1-3, wherein, Q is NH.

5. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers, or~~ solvates or ~~prodrugs~~ thereof according to any one of claims 1 to 4, wherein, R₁ is C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or aryl or heteroaryl which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, hydroxyl, C₁-C₆ alkylthio, -CO-R₅, -SO₂-R₅, -SO-R₅, -CONH-R₅, -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl, C₁-C₆ alkoxy C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, and -O-R₆,


~~the aryl group is phenyl, naphthyl,~~  ~~, the heteroaryl group is pyrrolyl, furyl, pyridyl, thienyl, imidazolyl, thiazolyl, isothiazolyl, indazolyl, indolyl, isoindolyl, indolinyl, isoindolinyl, isoquinolinyl, indoliziny, isoxazolyl, 1,5-naphthyridinyl, 1,6-naphthyridinonyl, oxadiazolyl, oxazolyl, 1-phenyl-1H-pyrrolyl, phenazinyl, phenothiazinyl, phenoxazinyl, phthalazinyl, pteridinyl, purinyl, pyranyl, pyrazolyl, pyrazolo[3,4-d]pyrimidinyl, pyrido[3,2-d]pyrimidinyl, pyrido[3,4-d]pyrimidinyl, pyrazinyl, pyrimidinyl, pyridazinyl,~~


~~quinazolinyl, quinoxalinyl, quinolinyl,~~  ~~, the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,~~

R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy,

cyano, -NR^aR^b, C₃-C₈ cycloalkyloxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -CO-R₅, -SO₂-R₅, -SO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, or C₁-C₆ alkylthio,

R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

the aryl group mentioned above is phenyl, naphthyl, , , the heteroaryl group is pyrrolyl, furyl, pyridyl, thienyl, imidazolyl, thiazolyl, isothiazolyl, indazolyl, indolyl, isoindolyl, indolinyl, isoindolinyl, isoquinolinyl, indolizynyl, isoxazolyl, 1,5-naphthyridinyl, 1,6-naphthyridinonyl, oxadiazolyl, oxazolyl, 1-phenyl-1H-pyrrolyl, phenazinyl, phenothiazinyl, phenoxazinyl, phthalazinyl, pteridinyl, purinyl, pyranyl, pyrazolyl, pyrazolo[3,4-d]pyrimidinyl, pyrido[3,2-d]pyrimidinyl, pyrido[3,4-d]pyrimidinyl, pyrazinyl, pyrimidinyl, pyridazinyl, quinazolinyl, quinoxalinyl, quinolinyl, , , , , , , the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms.

6. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers, or solvates or~~ ~~prodrugs~~ thereof according to claim 5, wherein, R₁ is cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, oxetan-3-yl, tetrahydrofuran-3-yl, tetrahydropyran-4-yl, tetrahydropyran-3-yl, pyrrolidinyl, piperidinyl, piperazinyl, morpholinyl, thiomorpholinyl, or aryl or heteroaryl which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, hydroxyl, C₁-C₆ alkylthio, -SO₂-R₅, -SO-R₅, -CO-R₅, -CONH-R₅, -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl, C₁-C₆ alkoxy C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, and -O-R₆,

the aryl group is phenyl, , , the heteroaryl group is pyrazolyl, pyridyl, pyrimidinyl, thiazolyl, oxazolyl, , , , , , , the 4- to 8-membered

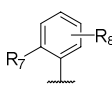
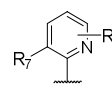
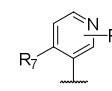
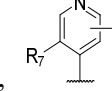
heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,

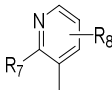
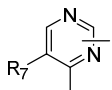
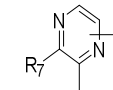
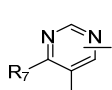
R₅ is hydrogen, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkyloxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, and C₁-C₆ alkylthio,

R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

the aryl group mentioned is phenyl, , , the heteroaryl group is pyrazolyl, pyridyl, , , , , , , the 4- to 8-membered heteroalicyclic group mentioned is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms.

7. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers,~~ or solvates or prodrugs thereof according to claim 5, wherein, R₁ is , , , ,

, , , or ,

R₇ is hydrogen, C₁-C₄ alkyl, C₁-C₃ alkoxy, halogen, hydroxyl, trifluoromethyl, trifluoromethoxy, cyano, C₂-C₄ alkynyl, C₂-C₄ alkenyl, C₃-C₄ cycloalkyl, or C₁-C₃ acyl;

R₈ is hydrogen, C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, hydroxyl, C₁-C₆ alkylthio, -CO-R₅, -SO₂-R₅, -SO-R₅, -CONH-R₅, -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl, C₁-C₆ alkoxy C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, or -O-R₆,

~~the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,~~

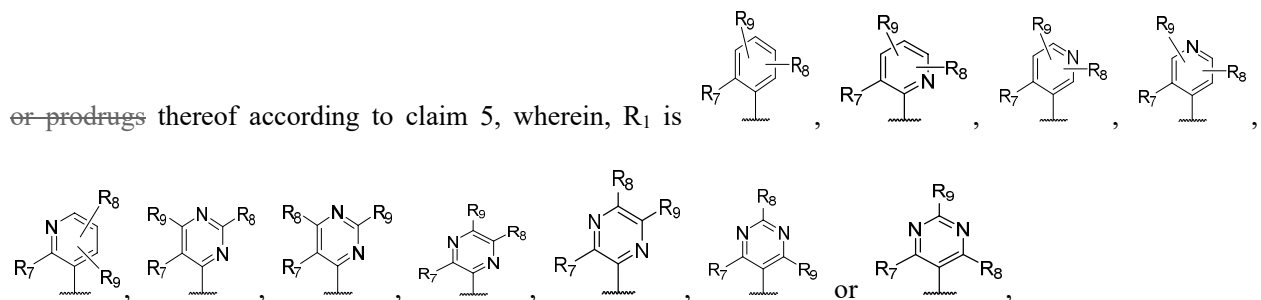
R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkyloxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, C₁-C₆ alkylthio,

R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

~~the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms.~~

8. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers,~~ or solvates



R₇ is hydrogen, C₁-C₄ alkyl, C₁-C₃ alkoxy, halogen, hydroxyl, trifluoromethyl, trifluoromethoxy, cyano, C₂-C₄ alkynyl, C₂-C₄ alkenyl, C₃-C₄ cycloalkyl, or C₁-C₃ acyl;

R₈ is hydrogen, C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, hydroxyl, C₁-C₆ alkylthio, -CO-R₅, -SO₂-R₅, -SO-R₅, -CONH-R₅, -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl, C₁-C₆ alkoxy C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, or -O-R₆,

~~the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,~~

R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl,

C₃-C₈ cycloalkyl, or C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkyloxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, and C₁-C₆ alkylthio,

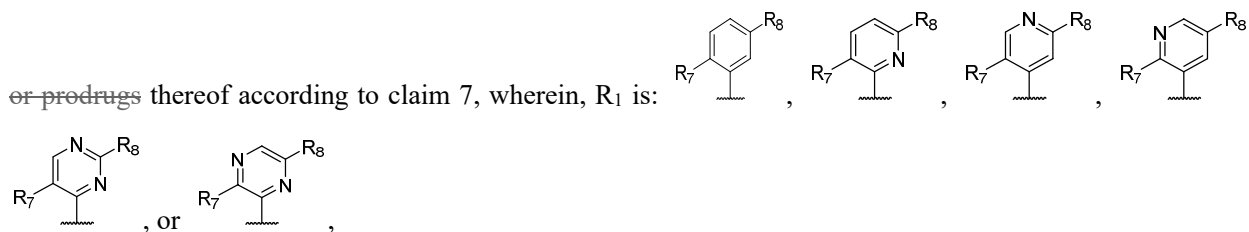
R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

R₉ is hydrogen, C₁-C₄ alkyl, C₁-C₃ alkoxy, halogen, hydroxy, trifluoromethyl, trifluoromethoxy, cyano, C₂-C₄ alkynyl, C₂-C₄ alkenyl, C₃-C₄ Cycloalkyl, or C₁-C₃ acyl;

the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms.

9. The compound, the pharmaceutically acceptable salts, diastereomers, enantiomers, isomers, or solvates

~~or prodrugs~~ thereof according to claim 7, wherein, R₁ is:



R₇ is hydrogen, methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, fluorine, chlorine, hydroxyl, trifluoromethyl, trifluoromethoxy, cyano, ethynyl, propynyl, vinyl, propenyl, cyclopropyl, cyclobutyl, formyl, or acetyl;

R₈ is hydrogen, C₁-C₁₀ alkyl, halogen, C₃-C₈ cycloalkyl, halogenated C₁-C₁₀ alkyl, cyano, hydroxyl, C₁-C₆ alkylthio, -CO-R₅, -SO₂-R₅, -SO-R₅, -CONH-R₅, -NR^aR^b, 4- to 8-membered heteroalicyclic group, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₃ alkoxy C₁-C₆ alkylthio, C₁-C₁₀ alkyl substituted with hydroxyl, C₁-C₆ alkoxy C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, (C₃-C₈ cycloalkyl)-O-(C₁-C₆ alkyl), C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, or -O-R₆,

~~the 4- to 8-membered heteroalicyclic group is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms,~~

R₅ is hydrogen, hydroxyl, C₁-C₆ alkyl, C₁-C₆ alkoxy C₁-C₆ alkyl, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group,

R₆ is C₁-C₁₀ alkyl, C₃-C₈ cycloalkyl, 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl substituted with 1 to 3 substituents selected from hydroxyl, C₁-C₆ alkoxy, cyano, -NR^aR^b, C₃-C₈ cycloalkyloxy, -CONH-R₅, C₃-C₈ cycloalkyl, C₃-C₈ cycloalkyl substituted with hydroxyl and/or C₁-C₄ alkyl, carboxylic, halogen, halogenated C₁-C₆ alkoxy, -SO₂-R₅, -SO-R₅, -CO-R₅, C₂-C₆ alkynyl, C₂-C₆ alkenyl, C₁-C₄ alkoxy C₁-C₆ alkoxy, 4- to 8-membered heteroalicyclic group, 4- to 8-membered heteroalicyclic group substituted with oxo, 4- to 8-membered heteroalicyclic group substituted with hydroxyl and/or C₁-C₄ alkyl, and C₁-C₆ alkylthio,

R^a and R^b are each independently selected from hydrogen, C₁-C₆ alkyl, C₃-C₈ cycloalkyl, C₁-C₆ alkyl substituted with C₁-C₆ alkoxy, C₁-C₆ alkyl substituted with hydroxyl, C₃-C₈ cycloalkyl C₁-C₆ alkyl, C₁-C₆ alkyl substituted with 4- to 8-membered heteroalicyclic group, C₁-C₆ alkyl substituted with C₁-C₃ alkylthio, or C₁-C₆ alkyl substituted with substituted amino or unsubstituted amino, wherein the substituted amino is substituted with mono- or di-C₁-C₃ alkyl;

the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms.

10. The compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers,~~ or solvates or ~~prodrugs~~ thereof according to any one of claims 1 to 9, wherein, R₂ is C₃-C₈ cycloalkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, formyl, acetyl, hydroxyl, fluorine, chlorine, trifluoromethyl, cyano, -CONH₂, oxo (=O), amino, dimethylamino, and diethylamino,

or C₇-C₁₀ bridged cyclyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, formyl, acetyl, hydroxyl, fluorine, chlorine, trifluoromethyl, cyano, -CONH₂, oxo (=O), amino, dimethylamino, and diethylamino,

or C₁-C₁₀ alkyl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, formyl, acetyl, hydroxyl, fluorine, chlorine, cyano, -CONH₂, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, amino, dimethylamino, and diethylamino,

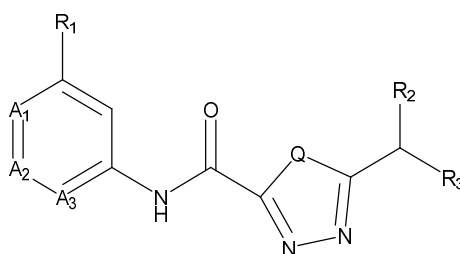
or -(CH₂)_n-R^e, wherein R^e is aryl or heteroaryl, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, formyl, acetyl, hydroxyl, fluorine, chlorine, trifluoromethyl, cyano, -CONH₂, ethynyl, vinyl, amino, dimethylamino, and diethylamino, n is an integer from 0 to 3,

or -(CH₂)_m-R^f, wherein R^f is 4- to 8-membered heteroalicyclic group, which is unsubstituted or substituted with 1 to 3 substituents selected from the group consisting of methyl, ethyl, propyl, isopropyl, methoxy, ethoxy, propoxy, isopropoxy, methylthio, ethylthio, propylthio, formyl, acetyl, hydroxyl, fluorine, chlorine, trifluoromethyl, cyano, -CONH₂, oxo (=O), amino, dimethylamino, and diethylamino, m is an integer from 0 to 3,

methoxyphenyl, 4-fluoro-3-methoxyphenyl, 2-fluoro-3-methoxyphenyl, 2-fluoro-4-methoxyphenyl, 2-fluoro-5-methoxyphenyl, 3-fluoro-4-methoxyphenyl, 3-fluoro-2-methoxyphenyl, 2-fluoro-3-trifluoromethylphenyl, 2-fluoro-4-trifluoromethylphenyl, 2-fluoro-5-trifluoromethylphenyl, 3-fluoro-2-trifluoromethylphenyl, 4-fluoro-2-trifluoromethylphenyl, 5-fluoro-2-trifluoromethylphenyl, 4-fluoro-3-trifluoromethylphenyl, 3-fluoro-4-trifluoromethylphenyl, 3-fluoro-5-trifluoromethylphenyl, 2-fluoro-5-ethylphenyl, 2-fluoro-5-cyclopropylphenyl, or 2-fluoro-5-phenylphenyl.

13. The compound, the pharmaceutically acceptable salts, diastereomers, enantiomers~~isomers~~, or solvates-~~or prodrugs~~ thereof according to claim 1, wherein, R₃ is hydrogen, methyl, ethyl, hydroxyl, cyano, trifluoromethyl, fluorine, or chlorine.

14. The compound, the pharmaceutically acceptable salts, diastereomers, enantiomers~~isomers~~, or solvates-~~or prodrugs~~ thereof according to claim 1,



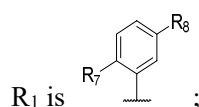
formula (I)

in formula (I),

Q is NH;

A₁, and A₂ are each CH;

A₃ is N;



R₇ is methyl, ethyl, propyl, isopropyl, fluorine, chlorine, trifluoromethyl, vinyl, or propenyl;

R₈ is cyano, C₁-C₃ alkoxy C₁-C₆ alkylthio, or -O-R₆;

R₅ is C₁-C₆ alkyl;

R₆ is 4- to 8-membered heteroalicyclic group, or C₁-C₁₀ alkyl which is substituted with 1 to 3 substituents selected from the group consisting of hydroxyl, C₁-C₆ alkoxy, cyano, C₃-C₈ cycloalkyloxy, C₃-C₈ cycloalkyl, -SO₂-R₅, 4- to 8-membered heteroalicyclic group, and C₁-C₆ alkylthio;

R₂ is -(CH₂)_n-R^e, wherein R^e is aryl, which is unsubstituted or substituted with 1 substituent selected from the group consisting of halogen, and cyano, wherein n is an integer from 0 to 3;

the 4- to 8-membered heteroalicyclic group mentioned above is a 4- to 8-membered heteroalicyclic group containing 1 to 2 atoms selected from N, O, or S as ring atoms;

the aryl group mentioned above is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and

having at least one aromatic ring;

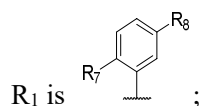
R₃ is hydrogen.

15. The compound, the pharmaceutically acceptable salts, diastereomers, enantiomers, isomers, or solvates or prodrugs thereof according to claim 14, wherein

Q is NH;

A₁, and A₂ are each CH;

A₃ is N;



R₇ is methyl, chlorine, or trifluoromethyl;

R₈ is -O-R₆;

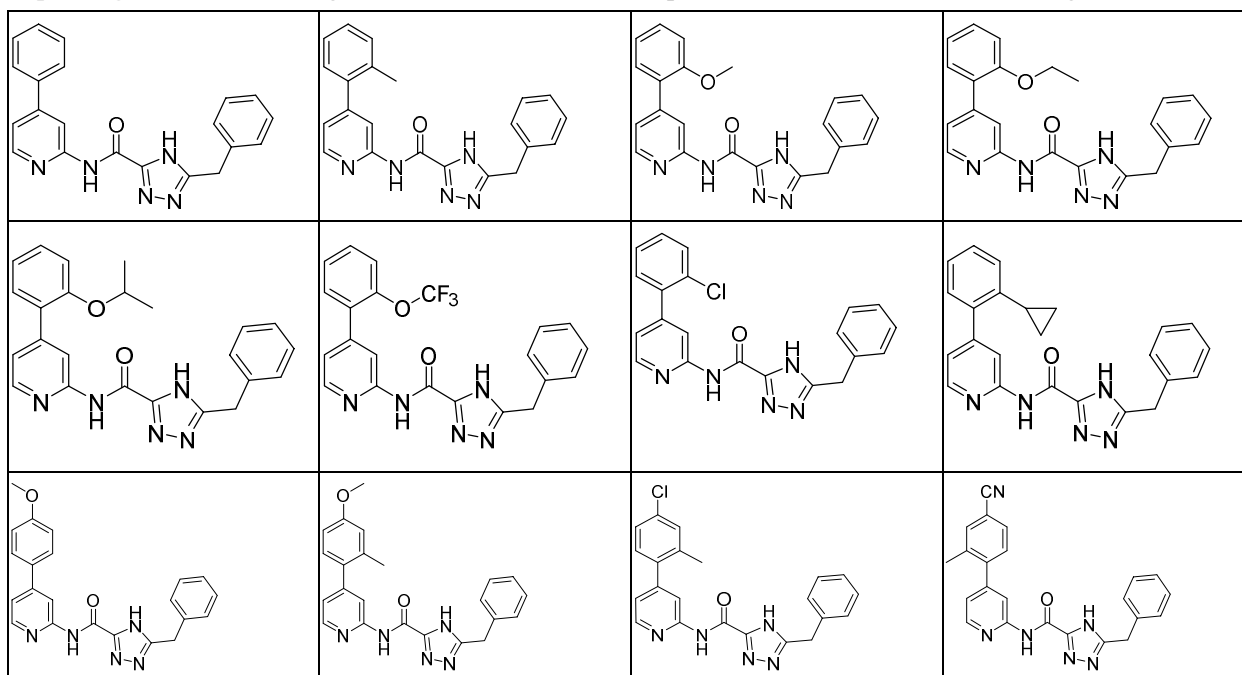
R₆ is C₁-C₁₀ alkyl which is substituted with 1 to 3 substituents selected from hydroxyl;

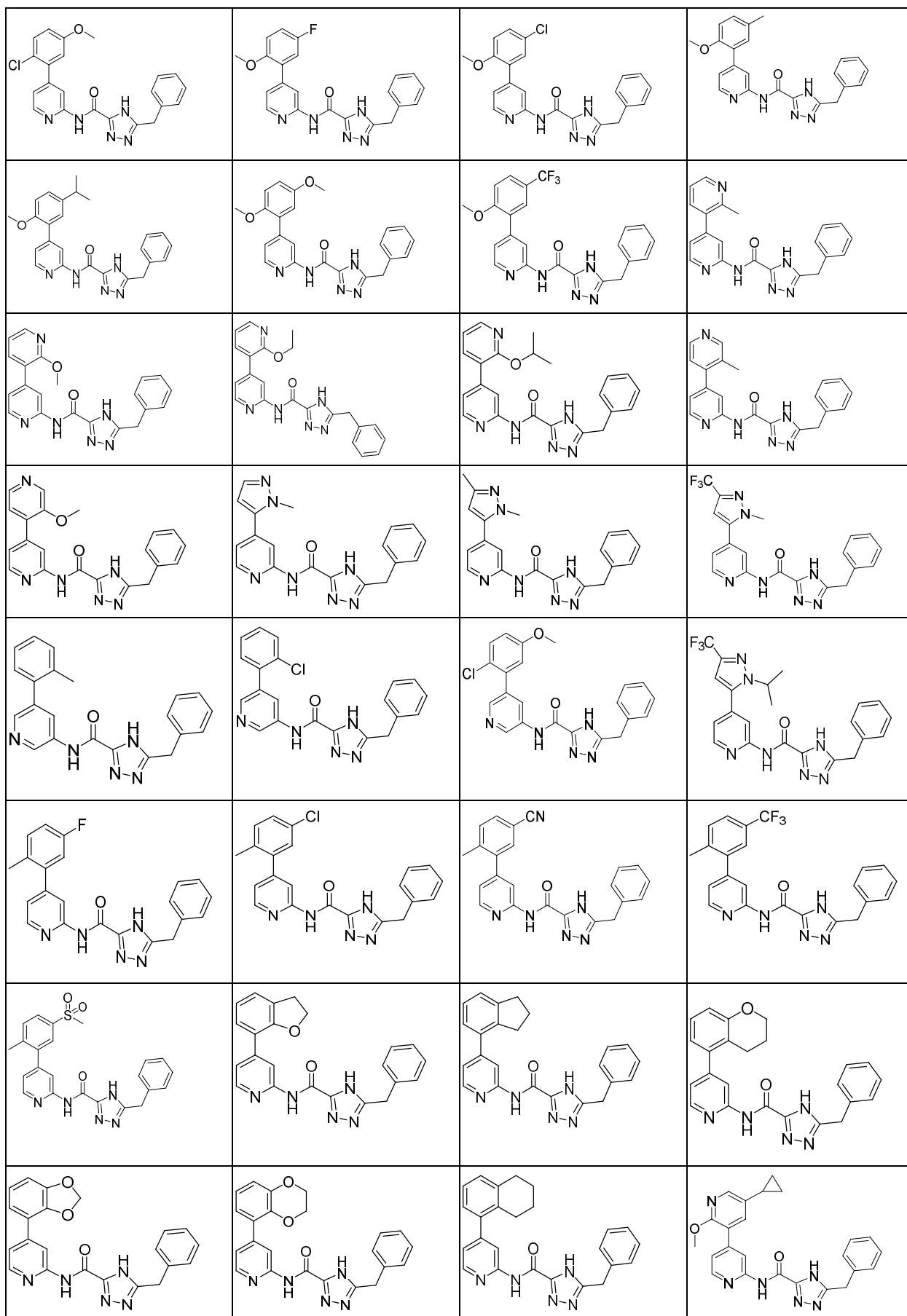
R₂ is -(CH₂)_n-R^e, wherein R^e is aryl, which is unsubstituted or substituted with 1 substituent selected from halogen, wherein n is an integer from 0;

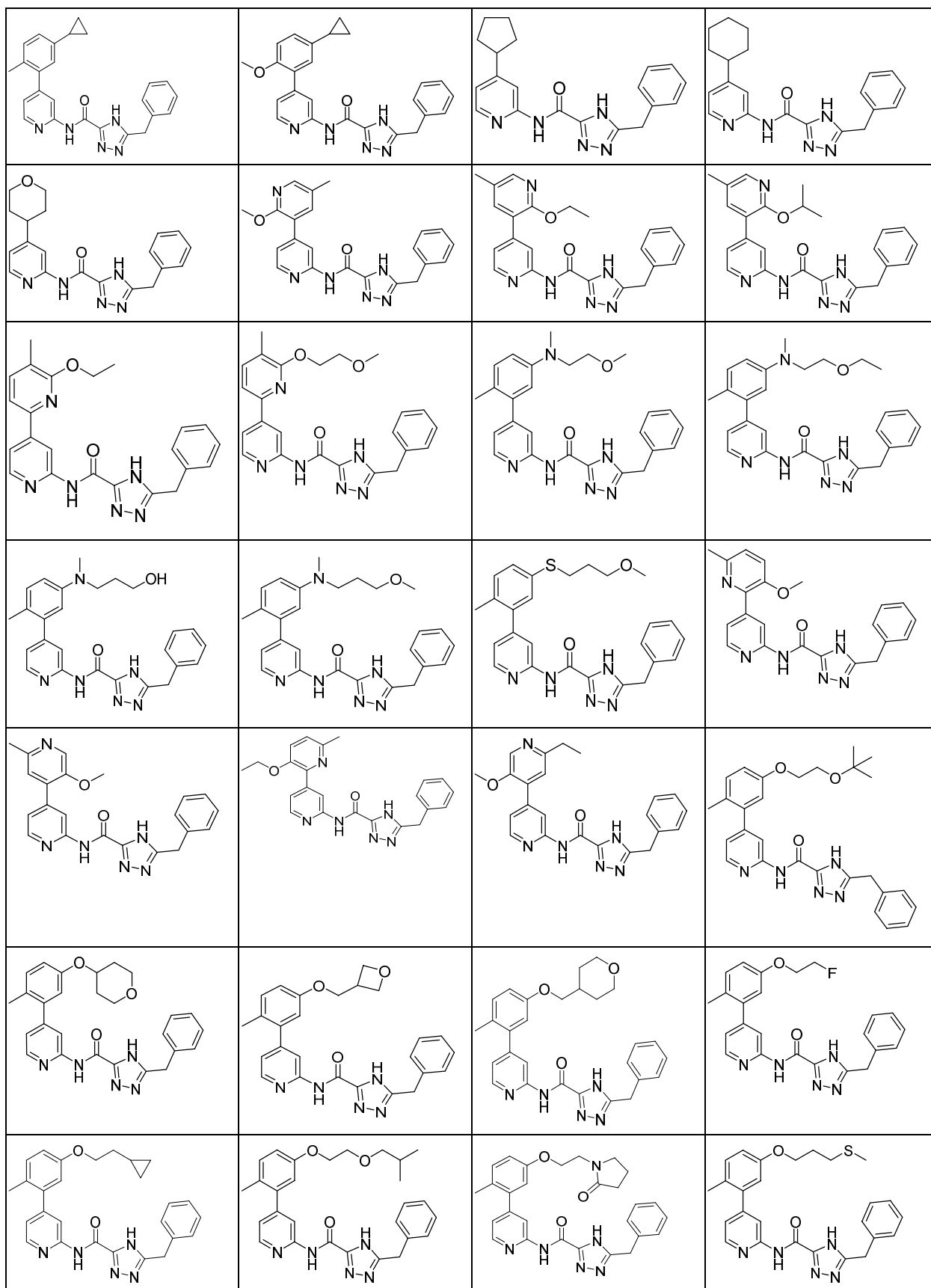
the aryl group mentioned above is a monocyclic or bicyclic group containing 6 to 12 carbon ring atoms and having at least one aromatic ring;

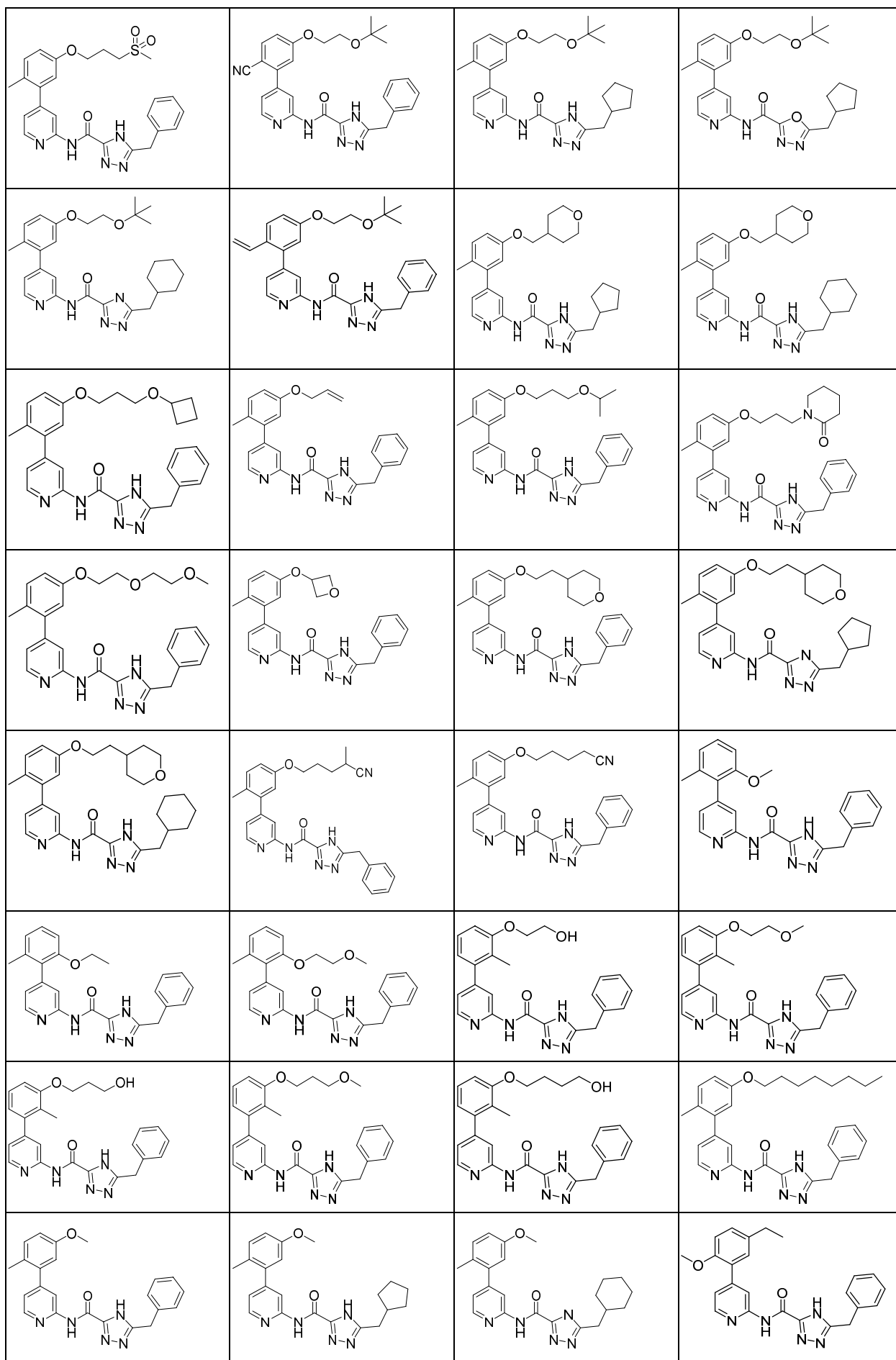
R₃ is hydrogen.

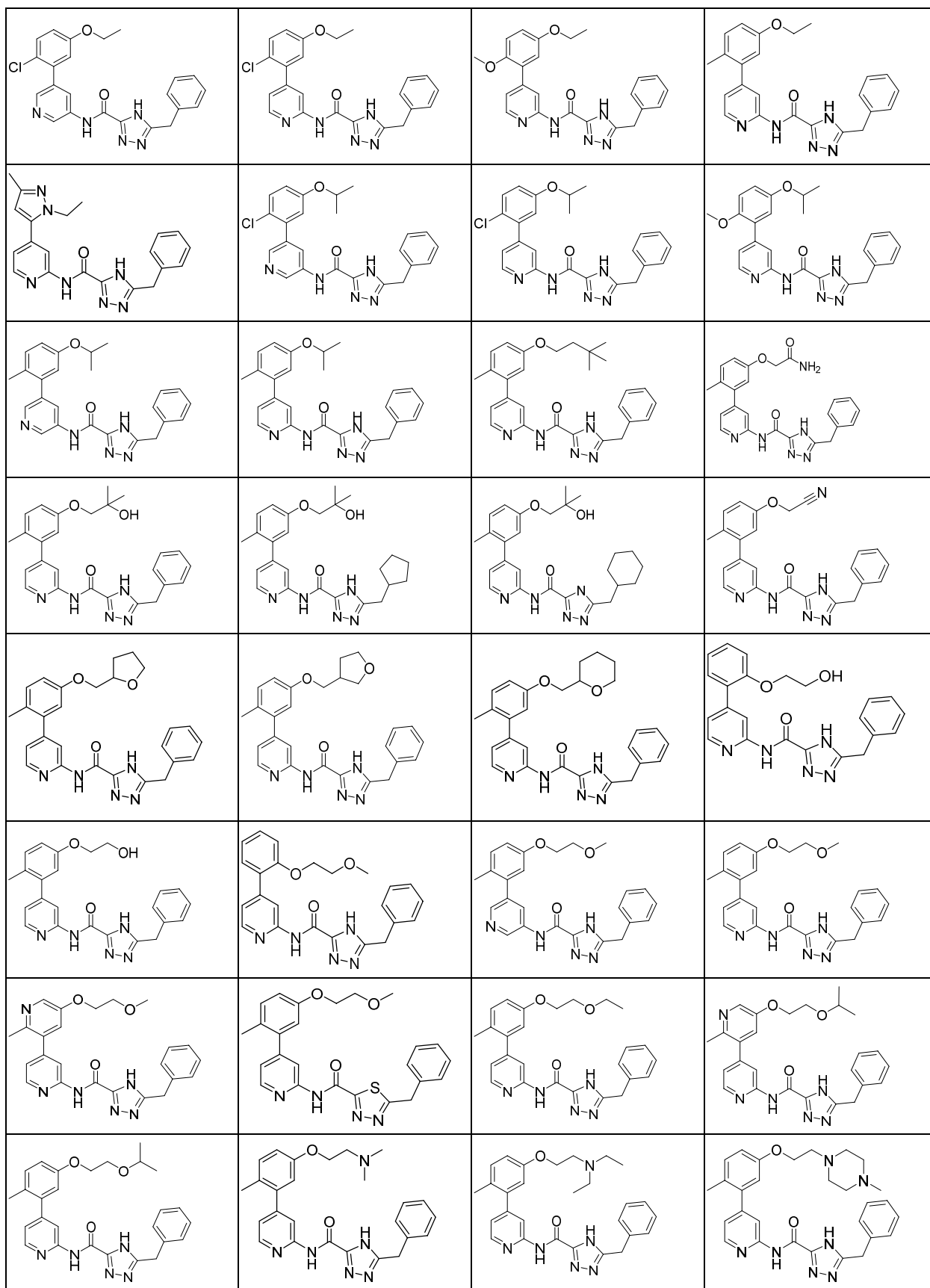
16. The compound, the pharmaceutically acceptable salts, diastereomers, enantiomers, isomers, or solvates or prodrugs thereof according to claim 1, wherein, the compound is selected from the following structures:

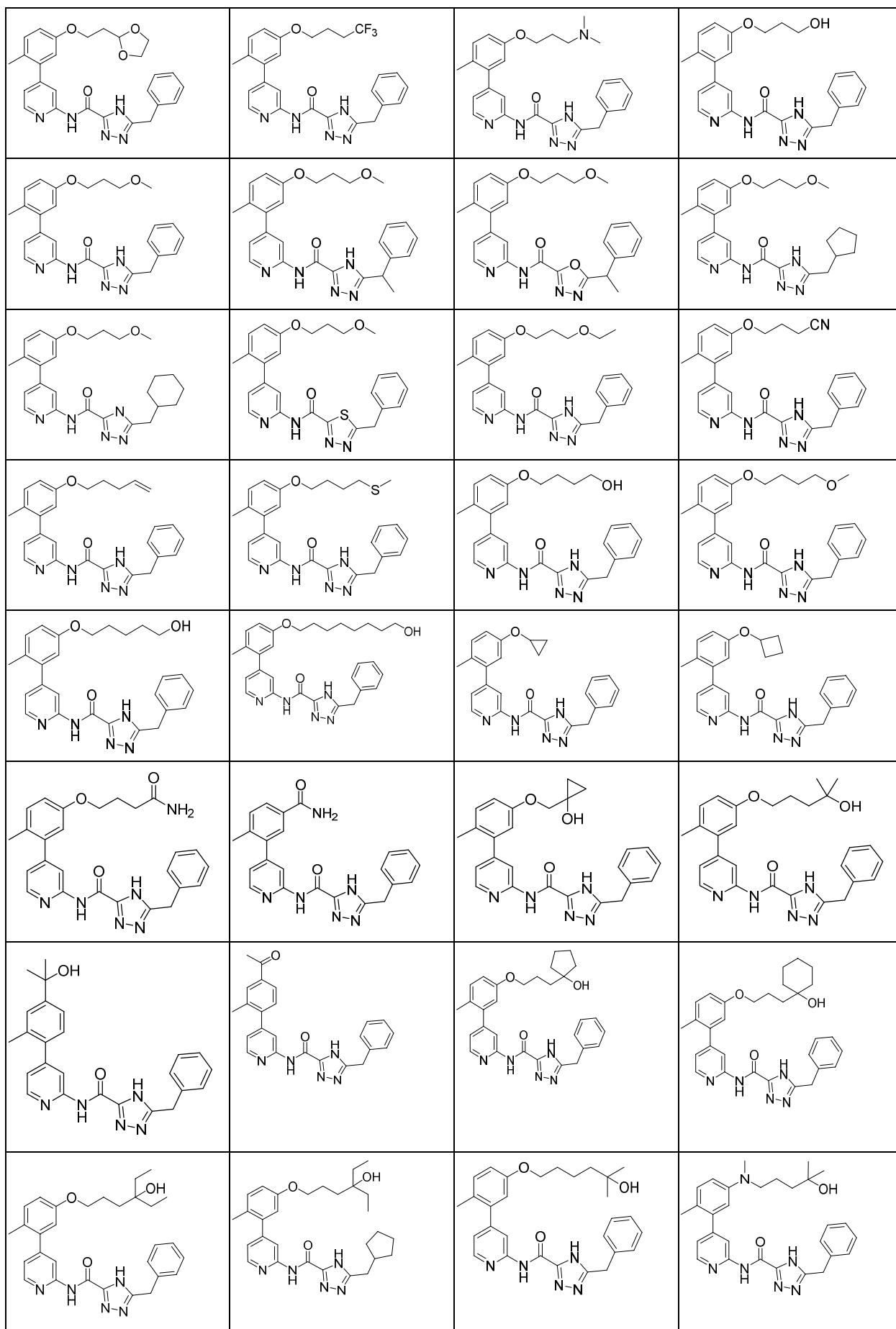


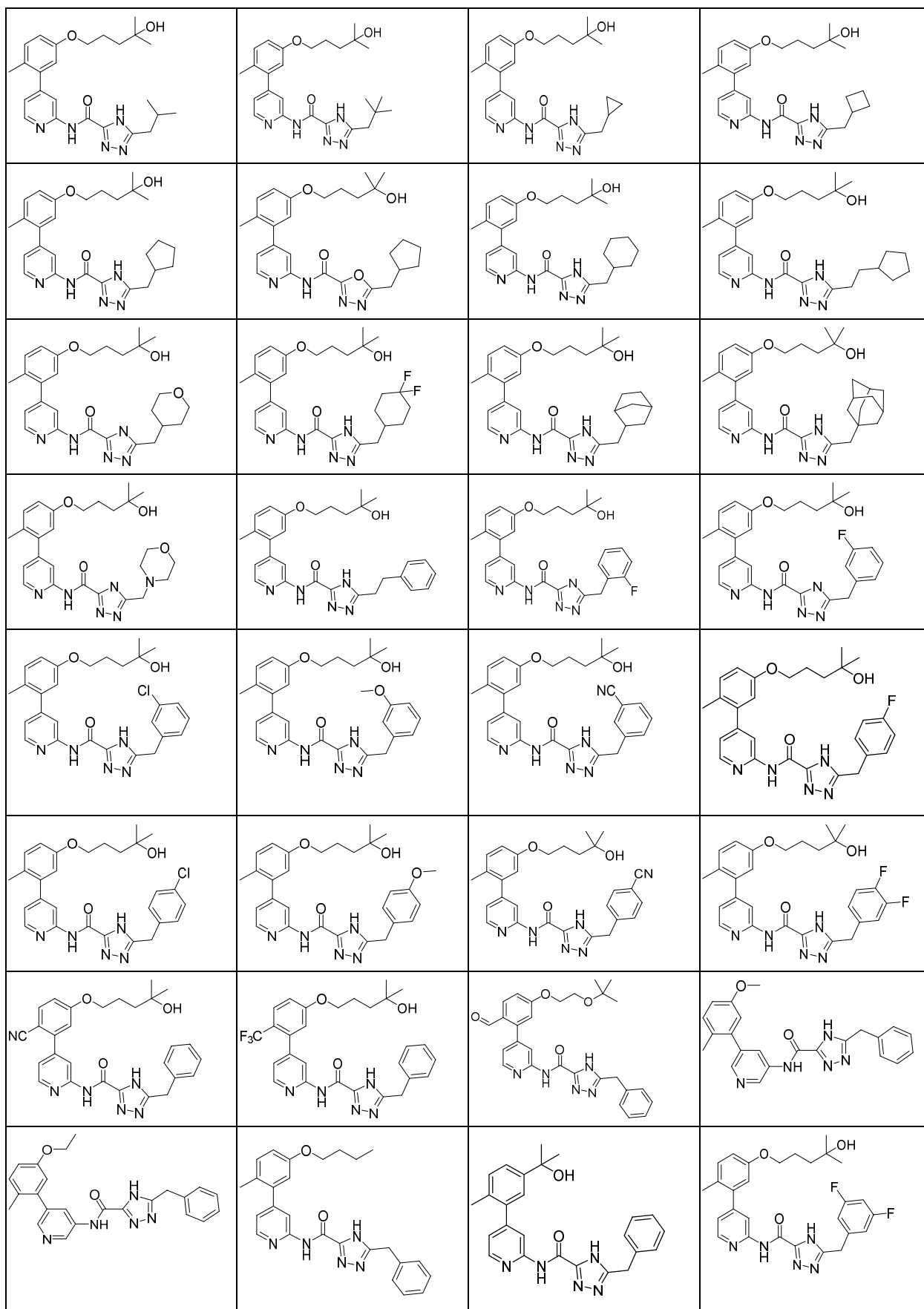


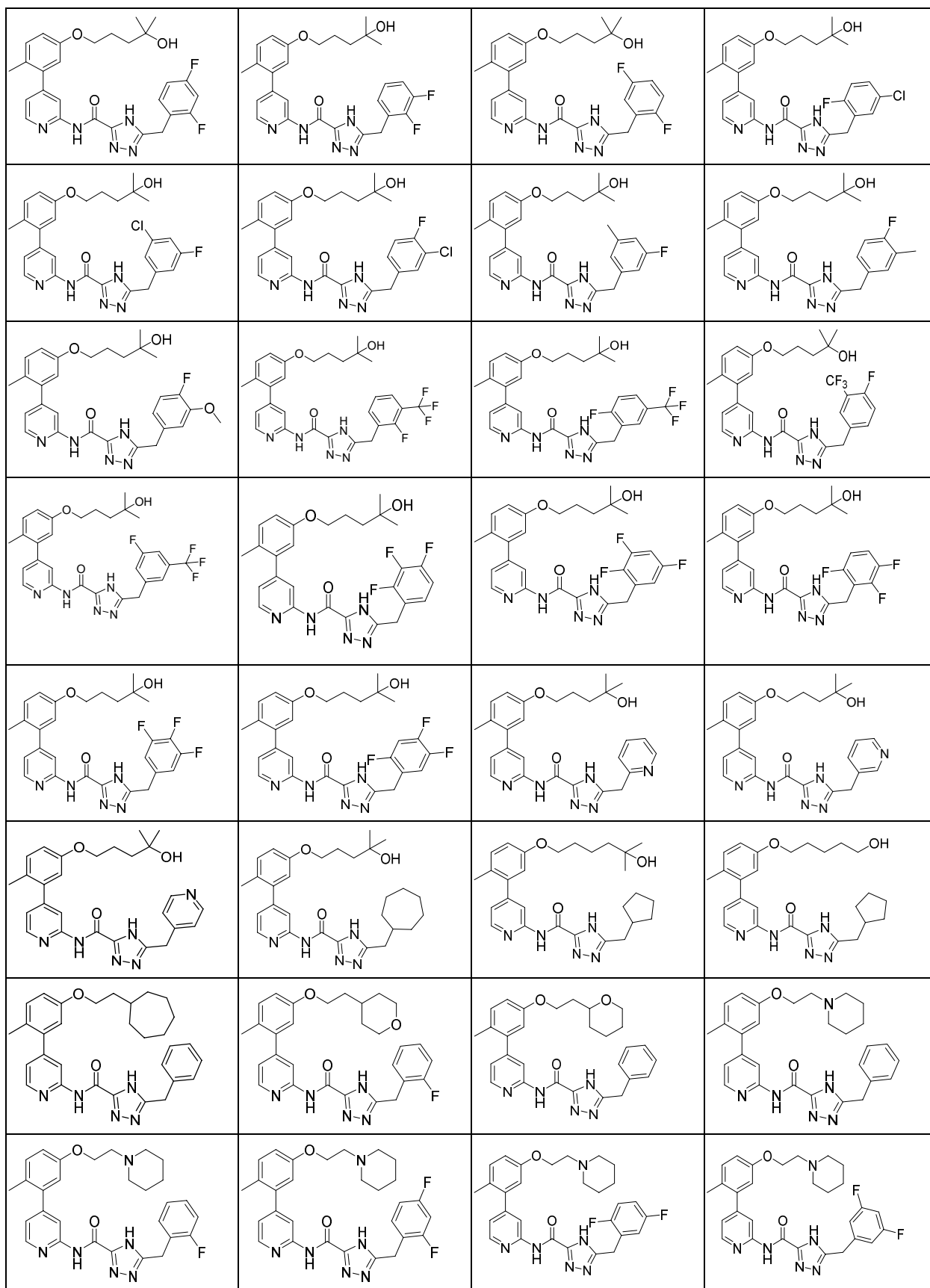


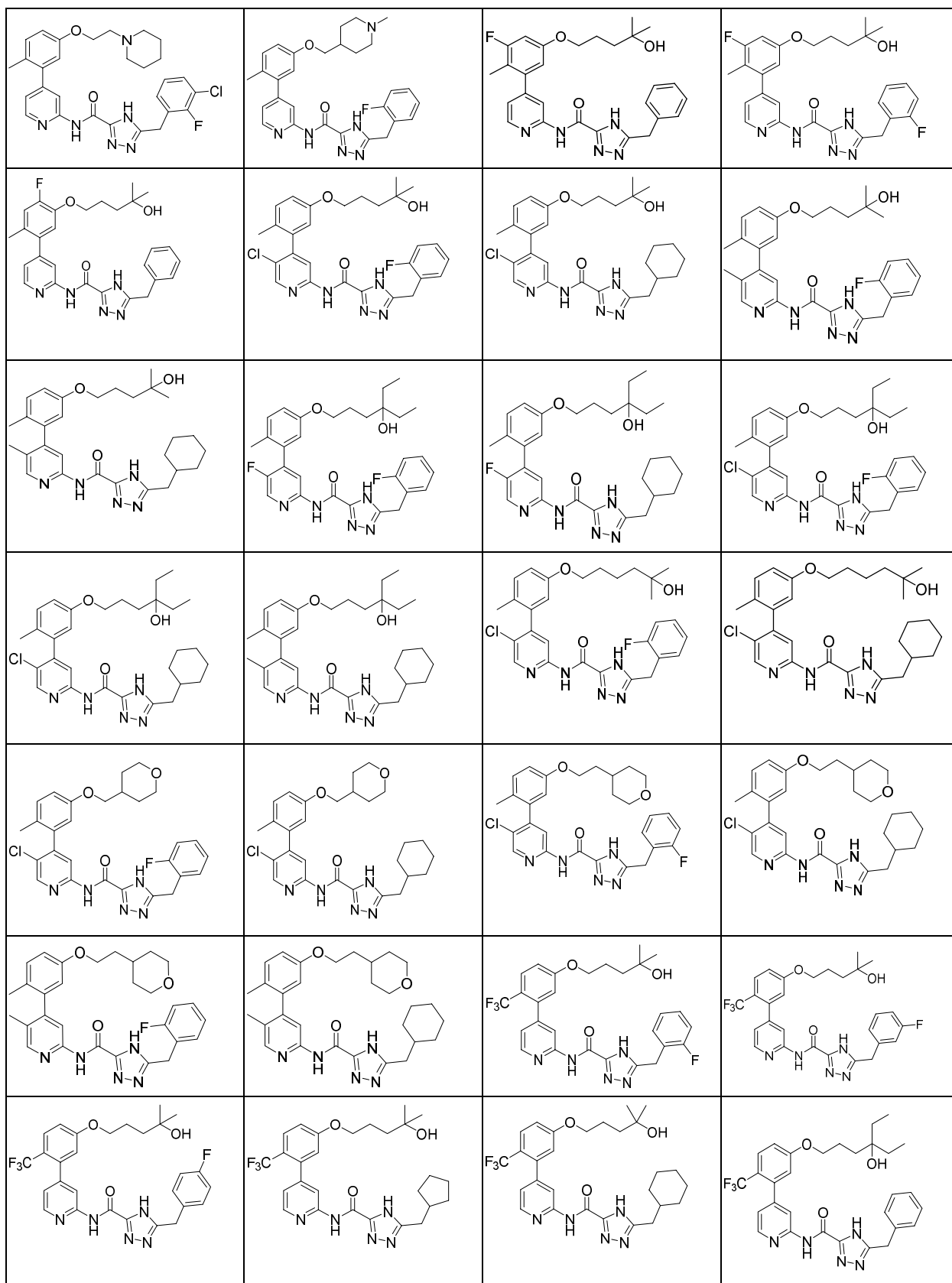


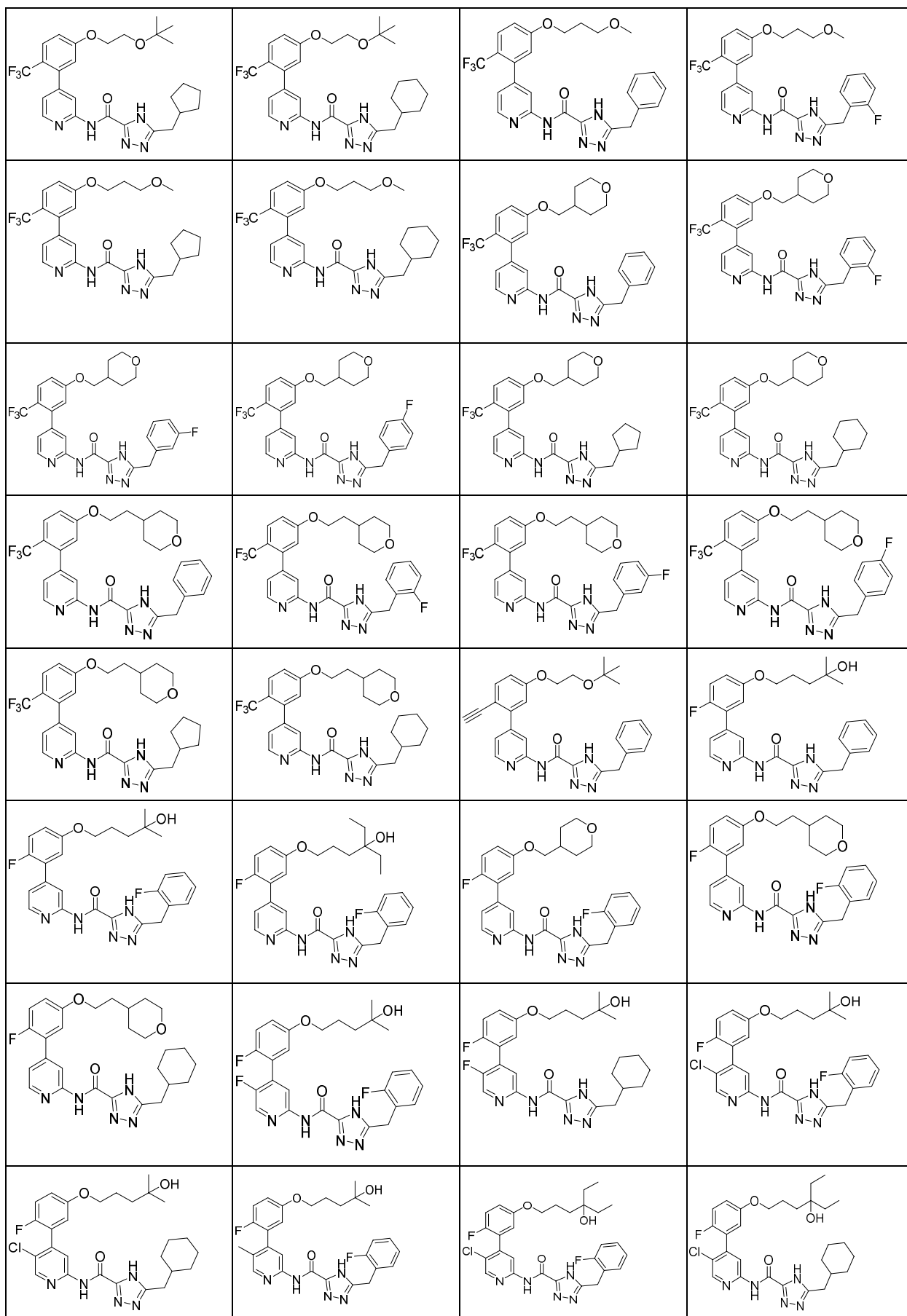


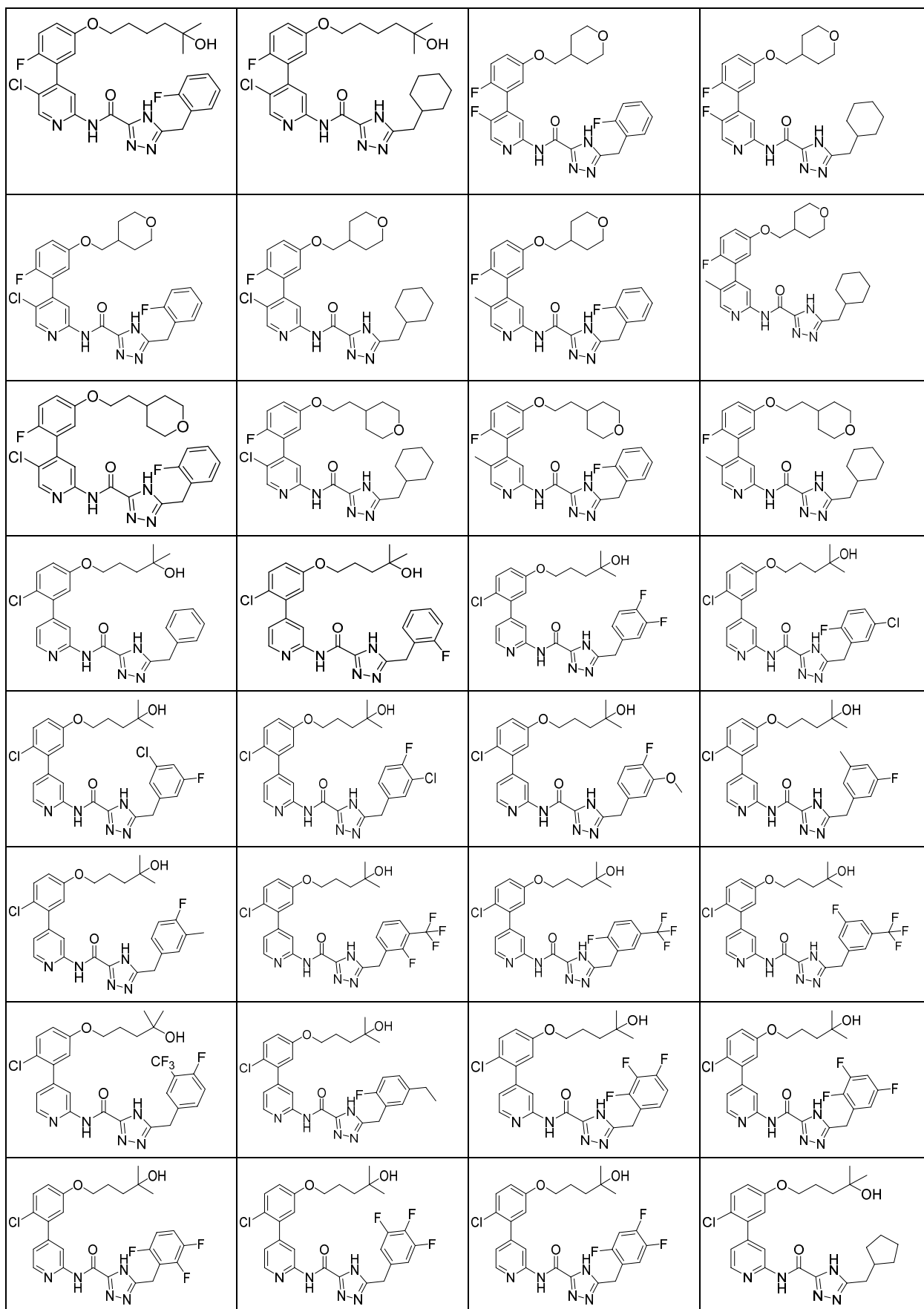


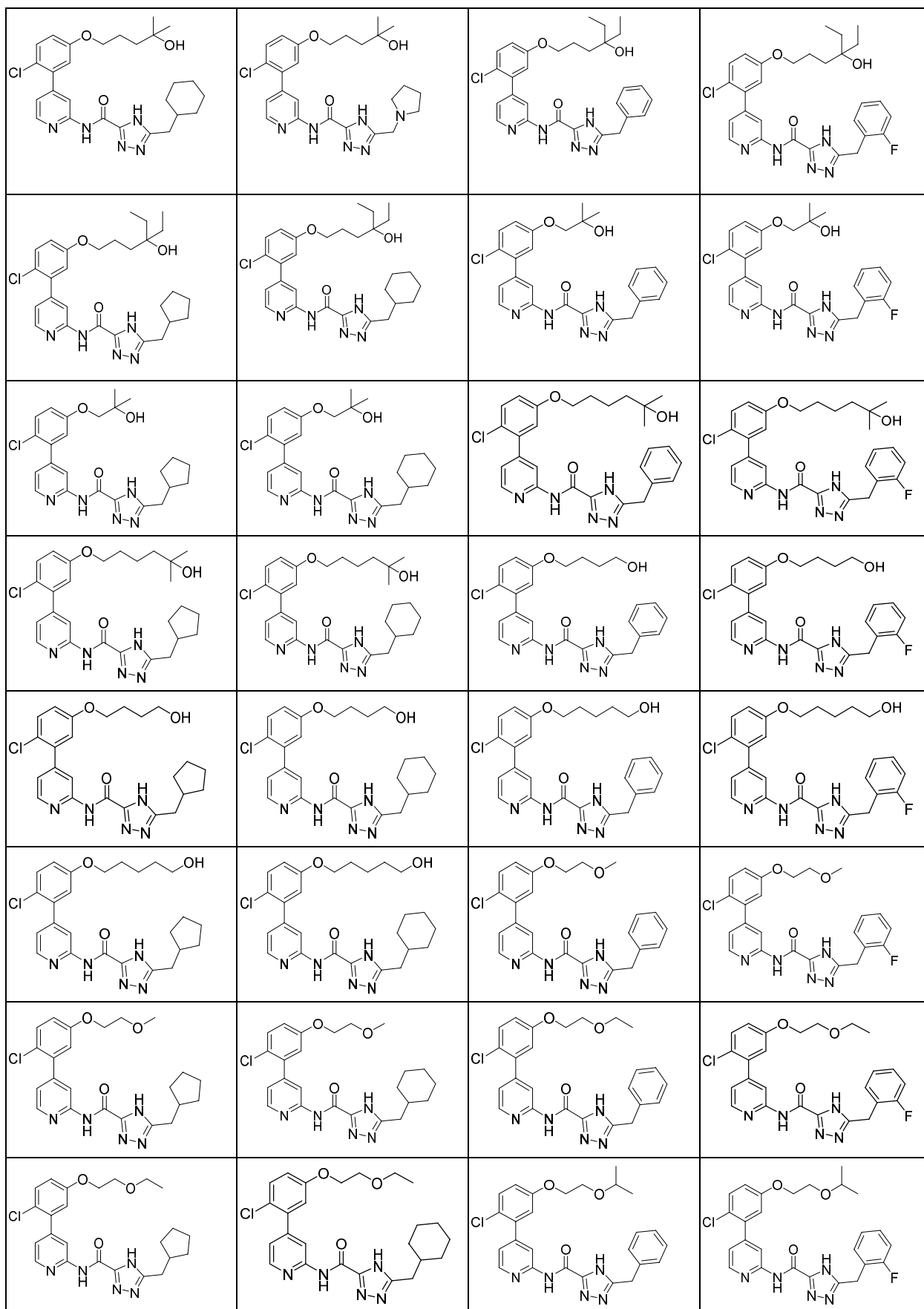


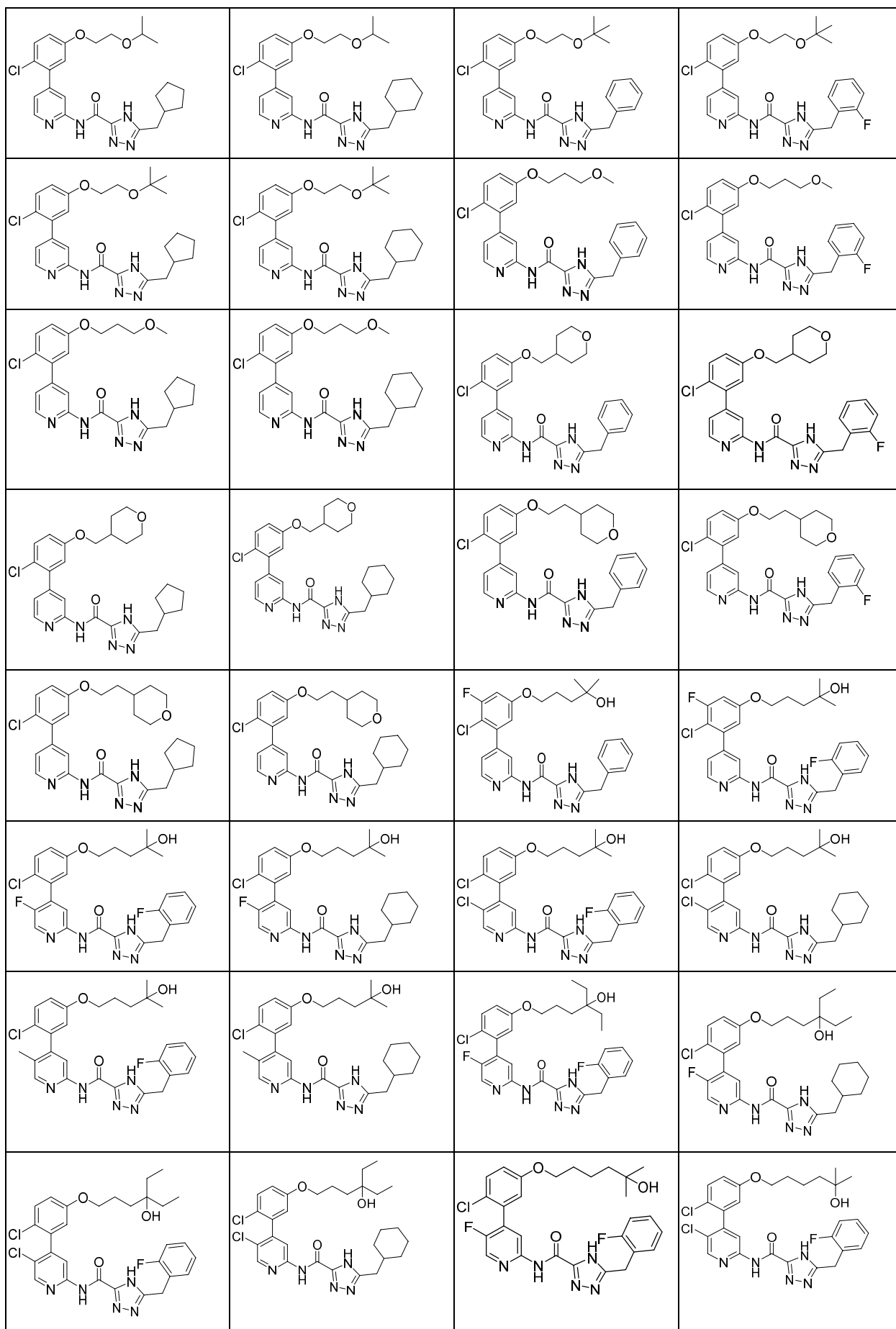


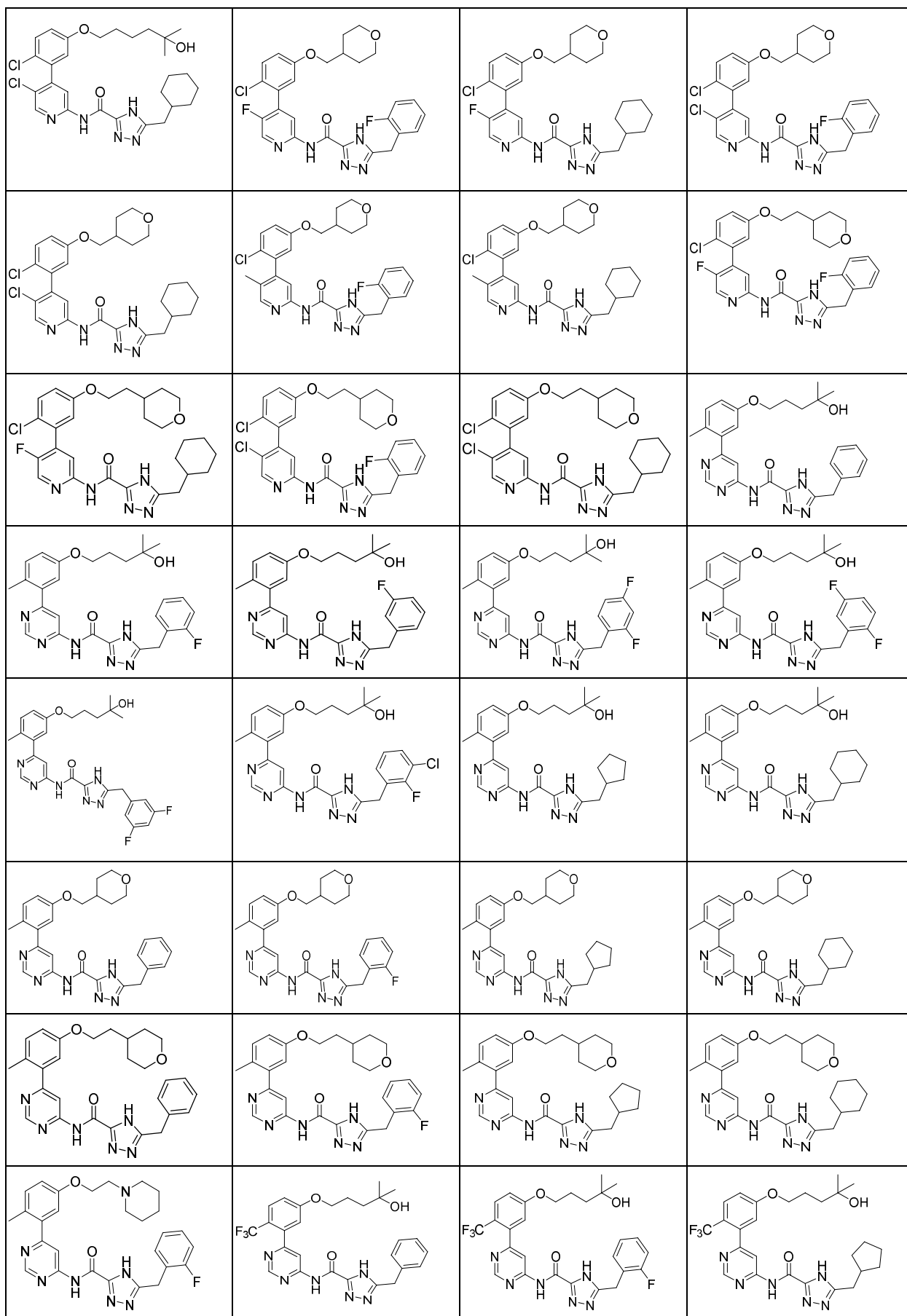


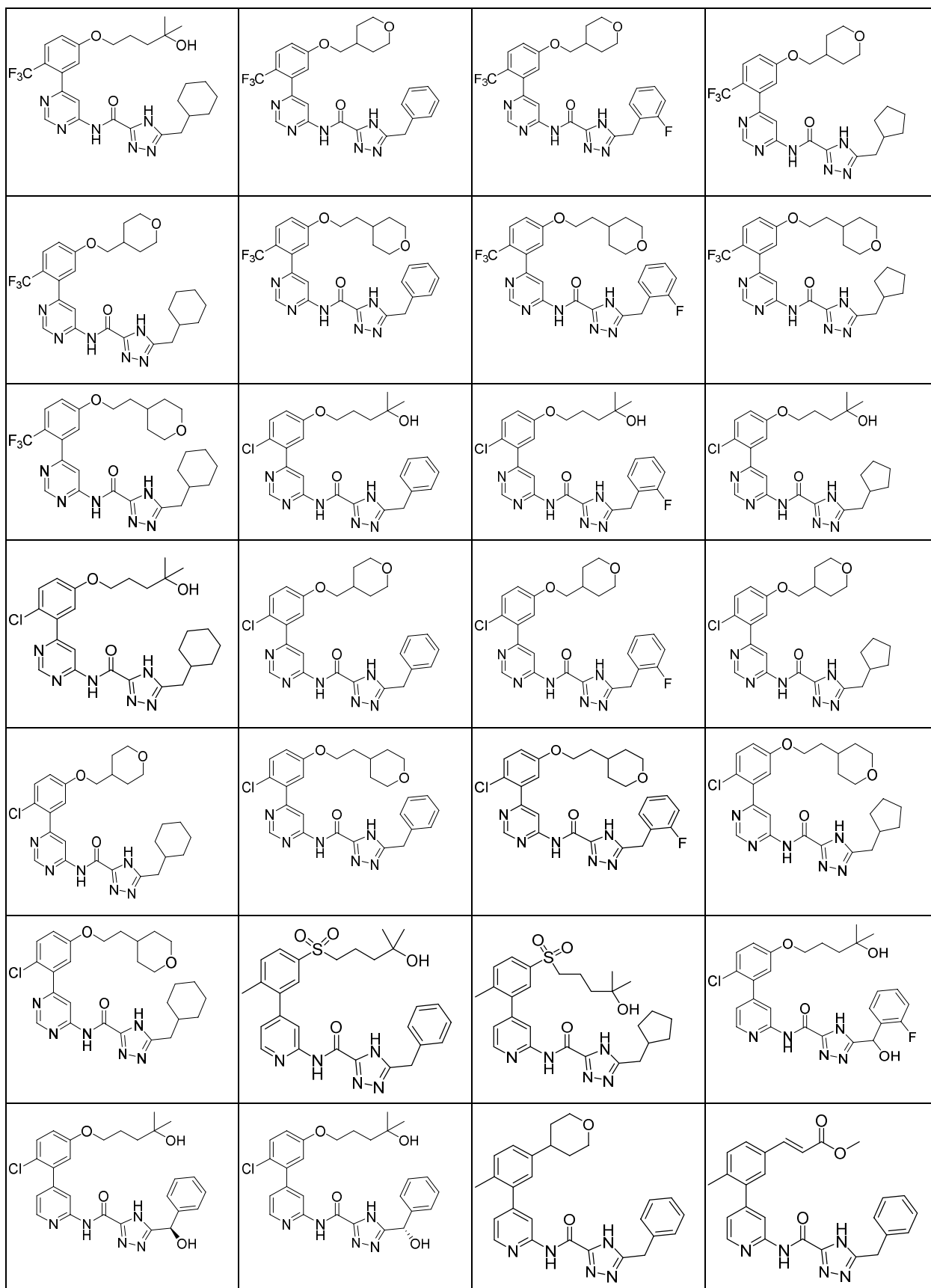


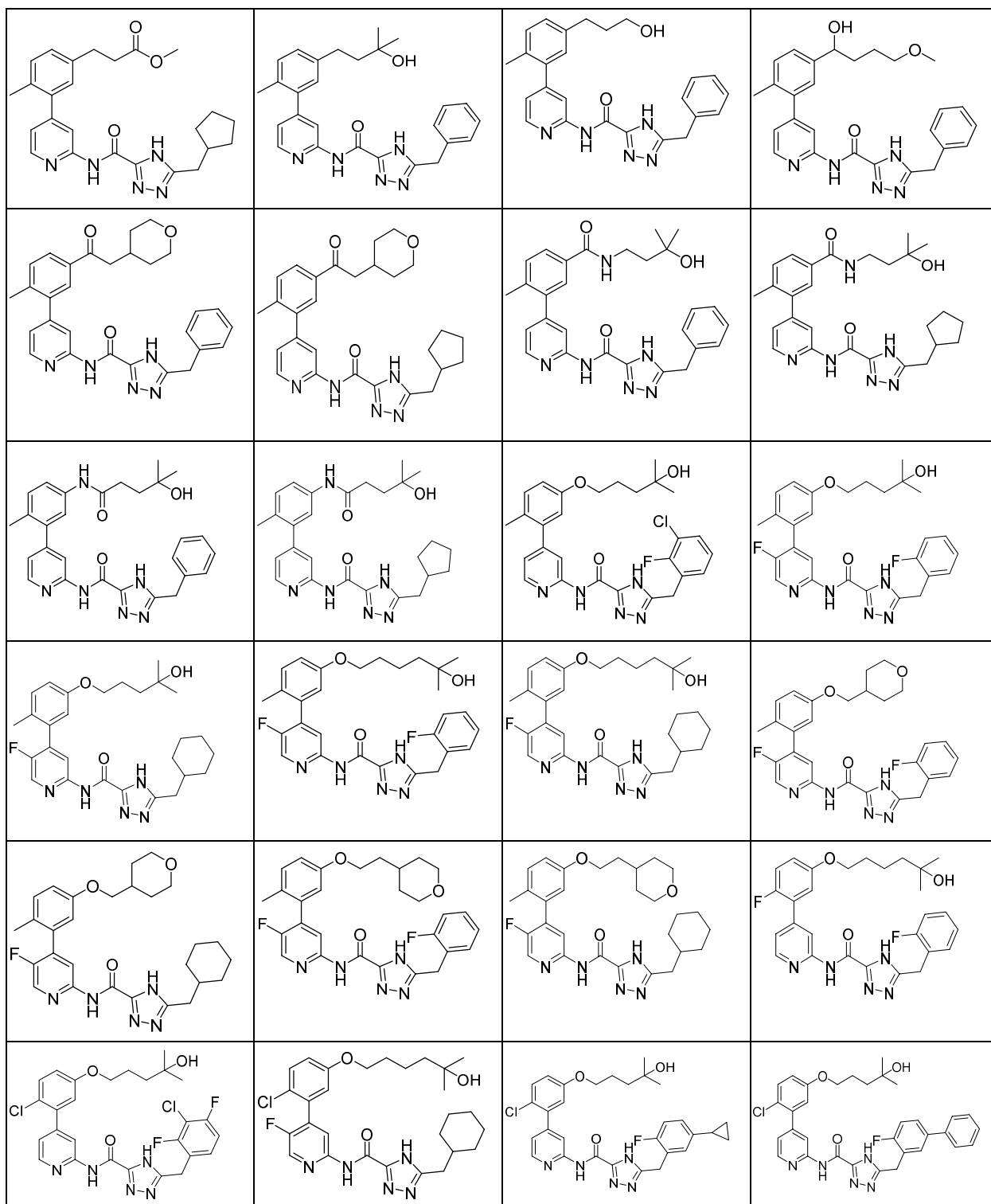












17. Use of the compound, the pharmaceutically acceptable salts, diastereomers, enantiomers, isomers, or solvates ~~or prodrugs~~ thereof according to any one of claims 1-16, in the preparation of a medicament for treatment for RIP1-related diseases, wherein, the RIP1-related disease ~~includes~~ is selected from ocular fundus disease, xerophthalmia, psoriasis, leucoderma, dermatitis, alopecia areata, rheumatoid arthritis, colitis, multiple sclerosis, systemic lupus erythematosus, Crohn's disease, atherosclerosis, pulmonary fibrosis, liver fibrosis, myelofibrosis, non-small cell lung cancer, small cell lung cancer, breast cancer, pancreatic cancer, glioma,

glioblastoma, ovarian cancer, cervical cancer, colorectal cancer, melanoma, endometrial cancer, prostate cancer, bladder cancer, leukemia, gastric cancer, liver cancer, gastrointestinal stromal tumor, thyroid cancer, chronic myeloid leukemia, acute myeloid leukemia, non-Hodgkin's lymphoma, nasopharyngeal cancer, esophageal cancer, brain tumor, B-cell and T-cell lymphoma, lymphoma, multiple myeloma, biliary cancer and sarcoma, cholangiocarcinoma, inflammatory bowel disease, ulcerative colitis, retinal detachment, retinitis pigmentosa, macular degeneration, pancreatitis, atopic dermatitis, spondyloarthritis, gout, SoJIA, Sjogren's syndrome, systemic scleroderma, antiphospholipid syndrome, vasculitis, osteoarthritis, non-alcoholic steatohepatitis, alcoholic steatohepatitis, autoimmune hepatitis, autoimmune hepatobiliary disease, primary sclerosing cholangitis, nephritis, celiac disease, autoimmune ITP, transplant rejection, ischemia-reperfusion injury of solid organs, sepsis, systemic inflammatory response syndrome, cerebrovascular accident, myocardial infarction, Huntington's disease, Alzheimer's disease, Parkinson's disease, allergic diseases, asthma, atopic dermatitis, multiple sclerosis, type I diabetes, Wegener's granulomatosis, pulmonary sarcoidosis, Behçet's disease, interleukin-1 converzyme-related fever syndrome, chronic obstructive pulmonary disease, tumor necrosis factor receptor related periodic syndrome and periodontitis.

18. A pharmaceutical composition, comprising a compound, the pharmaceutically acceptable salts, ~~diastereomers, enantiomers, isomers, or solvates or prodrugs~~ thereof according to any one of claims 1-16, and one or more pharmaceutically acceptable carriers or excipients.