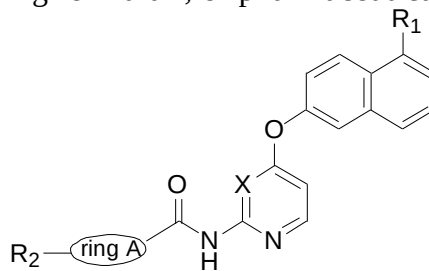


Claims

1. A compound of the following formula I, or pharmaceutically acceptable salts thereof:



Formula I

wherein:

X is selected from the group consisting of CH and N;

Ring A may be selected from the group consisting of a substituted or unsubstituted 6-10 membered aryl, substituted or unsubstituted 5-12 membered heteroaryl, wherein “substituted” means that one or more hydrogen atoms on a group are substituted by a substituent selected from the group consisting of a C1-C8 alkyl, C1-C8 alkoxy, C1-C8 alkylamino, halogen, halogenated C1-C8 alkyl;

R₁ is selected from -CONHR₃, -COOR₃;

R₂ is selected from the group consisting of a substituted or unsubstituted C1-C8 alkyl, substituted or unsubstituted C1-C8 alkoxy, substituted or unsubstituted 4-10 membered heterocyclic group, substituted or unsubstituted amino, substituted or unsubstituted C1-C8 alkylamino, -NHCOR₃; wherein the substituent is further substituted by one or more substituents selected from the group consisting of a C1-C8 alkyl, hydroxy, hydroxy C1-C8 alkyl, -COOR₃, amino-substituted C3-C10 cycloalkyl group, 4-10 membered heterocycloalkyl which is unsubstituted or substituted by one or more halogen atoms, hydroxyl or C1-C8 alkyl;

R₃ is selected from hydrogen, C1-C8 alkyl or C2-C10 alkenyl.

2. The compound of claim 1, wherein, in the formula I compound, R₂ is selected from the group consisting of a substituted or unsubstituted C1-C4 alkyl, substituted or unsubstituted C1-C4 alkoxy, substituted or unsubstituted 5-6 membered heterocyclic group, substituted or unsubstituted amino, substituted or unsubstituted C1-C4 alkylamino, -NHCOR₃; wherein the substituent group is further substituted by one or more substituents selected from the group consisting of a C1-C8 alkyl, hydroxy, hydroxy C1-C8 alkyl, -COOR₃, amino-substituted C3-C10 cycloalkyl, 4-10 membered heterocycloalkyl which is unsubstituted or substituted by one or more halogen atoms, hydroxyl or C1-C8 alkyl.

3. The compound of claim 1, wherein, in the formula I compound, ring A is selected from a substituted or unsubstituted 6-10 membered aryl or substituted or unsubstituted 5-6 membered heteroaryl.

4. The compound of claim 1, wherein, in the formula I compound, ring A is a substituted or unsubstituted group selected from the group consisting of benzene ring,

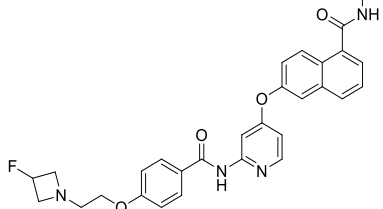
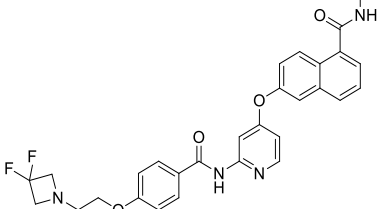
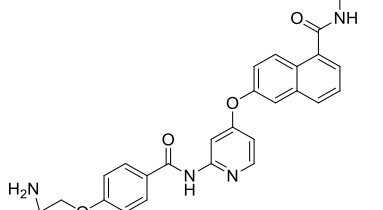
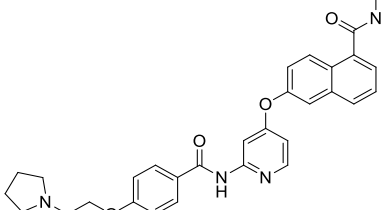
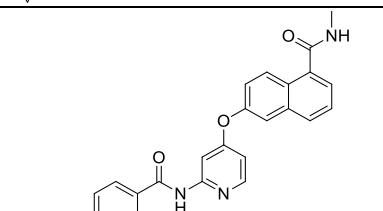
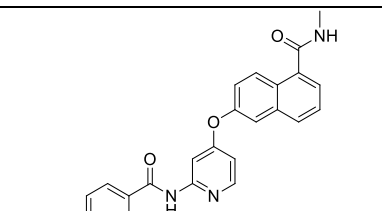
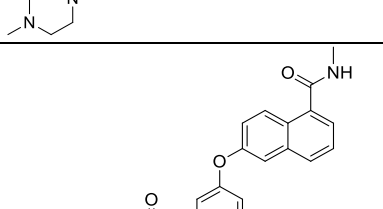
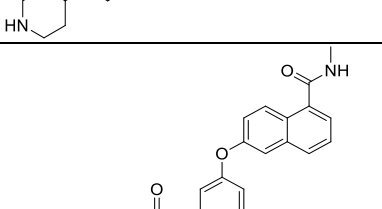
naphthalene ring, pyridine ring, pyrazine ring, thiophene ring, furan ring, imidazole ring, pyrrole ring, oxazole ring, thiazole ring, pyrazole ring, indole ring, pyrimidine ring, benzofuran ring, benzo thiazole ring, benzimidazole ring, quinoline ring, isoquinoline ring.

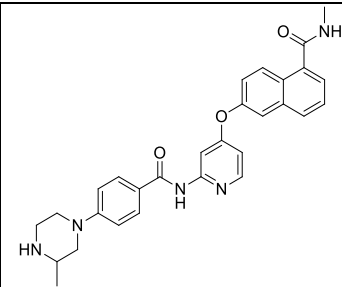
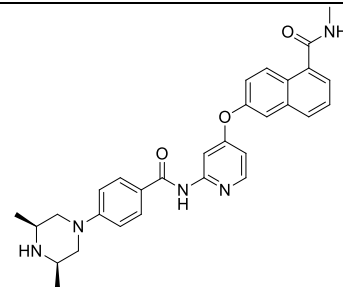
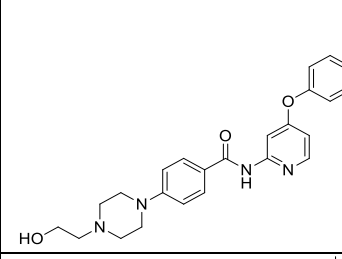
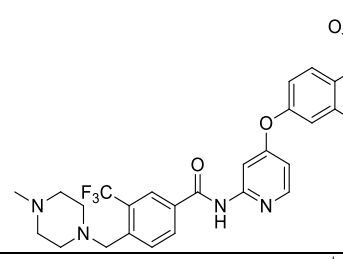
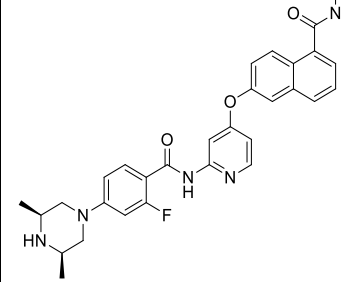
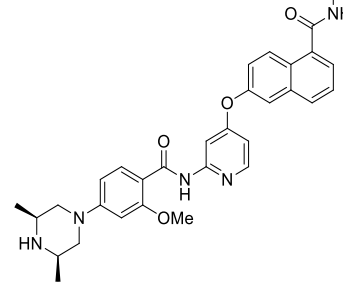
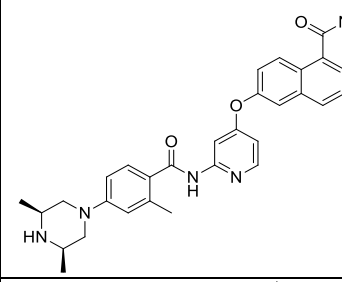
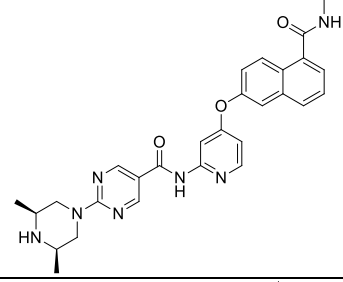
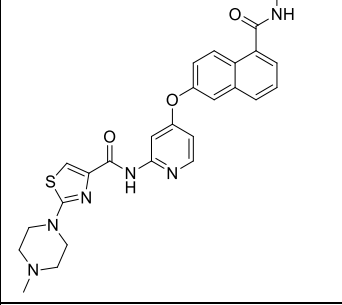
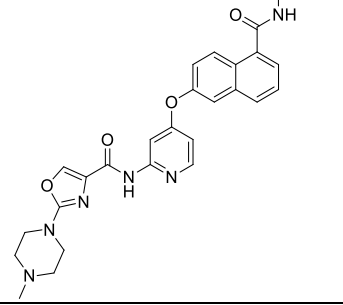
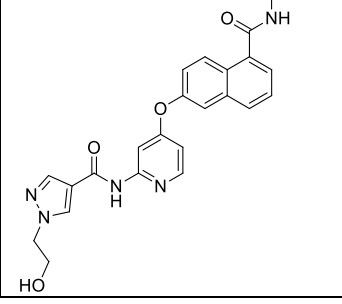
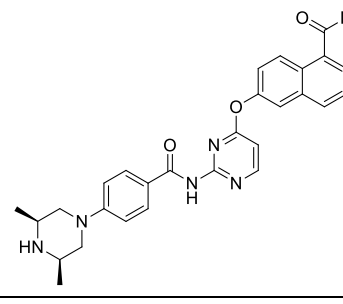
5 5. The compound of claim 1, wherein R₃ is selected from hydrogen, C1-C4 alkyl, or C2-C4 alkenyl.

6. The compound of claim 1, wherein, in the formula I compound, ring A is selected from the group consisting of a substituted or unsubstituted benzene ring, substituted or unsubstituted thiazole ring, substituted or unsubstituted oxazole ring, substituted or unsubstituted pyrimidine ring.

10 7. The compound of claim 1, wherein, in the formula I compound, R₃ is selected from the group consisting of hydrogen, methyl and vinyl.

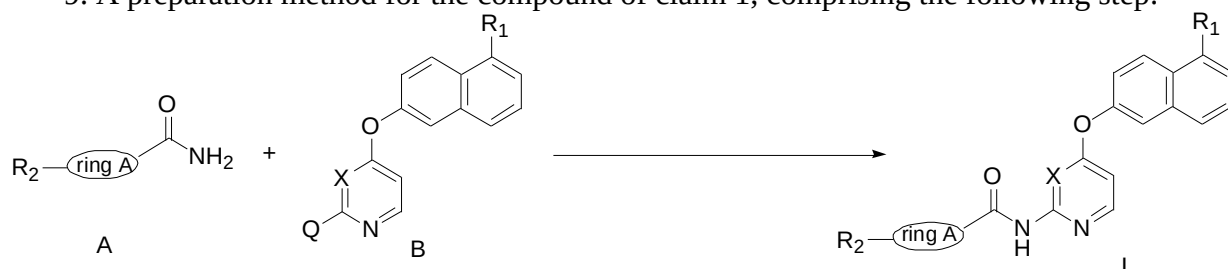
8. The compound of claim 1, wherein the compound is selected from the following group:

Compound	Structure	Compound	Structure
S1		S2	
S3		S4	
S5		S6	
S7		S8	

S9		S10	
S11		S12	
S13		S14	
S15		S16	
S17		S18	
S19		S20	

S21		S22	
S23		S24	

9. A preparation method for the compound of claim 1, comprising the following step:



In an inert solvent, reacting formula A compound with formula B compound to obtain formula I compound;

5 wherein Q is a leaving group; ring A, X, R1 and R2 are defined as in claim 1.

10. A pharmaceutical composition, comprising: therapeutically effective amount of the compound of any of claims 1-8, or a pharmaceutically acceptable salt, prodrug, hydrate or solvate thereof, and optionally a pharmaceutically acceptable carrier or excipient.

10 11. Use of the compound I of claim 1, or a pharmaceutically acceptable salt, prodrug, hydrate or solvate thereof in the preparation of medicament for the prevention and / or treatment of FGFR-related diseases.

15 12. The use of claim 11, wherein the tumor-related disease is selected from the group consisting of breast cancer, lung cancer, bladder cancer, gastric cancer, pancreatic cancer, prostate cancer, colon cancer, myeloma, liver cancer, Melanoma, head and neck cancer, thyroid cancer, renal cell carcinoma, glioblastoma and testicular cancer.

13. A protein tyrosine kinase enzyme activity inhibitor comprising an inhibitory effective amount of the compound according to any of claims 1-4, or a pharmaceutically acceptable salt, prodrug, hydrate or solvent thereof.

20 14. A pharmaceutical composition for treating cancer or diseases associated with protein tyrosine kinase activity, wherein the pharmaceutical composition comprises a therapeutically effective amount of a compound according to any of claims 1-8, or a pharmaceutically acceptable salt, prodrug, hydrate or solvent thereof as an active ingredient.