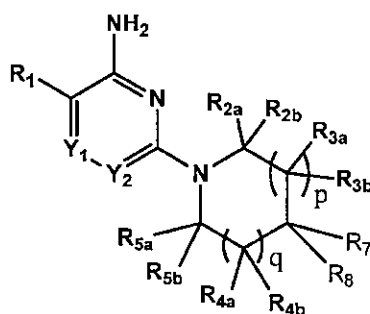


CLAIMS

We Claim:

1. A compound of formula I:



I

in which:

p is selected from 0 and 1;

q is selected from 0 and 1;

Y₁ is selected from CH and N;

Y₂ is selected from CR₆ and N;

R₁ is -XR_{1a}; wherein R_{1a} is selected from C₆₋₁₀aryl, C₃₋₈cycloalkyl, C₃₋₈cycloalkenyl and a 5-9 member heteroaryl group containing from 1 to 4 heteroatoms or groups independently selected from N, C(O), O and S; wherein said aryl or heteroaryl of R_{1a} is substituted with 1 to 5 R₉ groups independently selected from halo, amino, hydroxy, N₃, C₁₋₄alkyl, dimethyl-amino, hydroxy-substituted-C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, amino-substituted-C₁₋₄alkyl, -C(O)OR₁₀ and -NHC(O)R₁₀; and X is selected from a bond, S(O)_m, O, C(O), COR₁₁, CR_{10a}R_{10b}, NR₁₁; wherein m is selected from 0, 1 and 2; each R_{10a} and R_{10b} is independently selected from halo and C₁₋₄alkyl; and R₁₁ is selected from hydrogen and C₁₋₄alkyl;

R_{2a} and R_{2b} are independently selected from hydrogen, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

R_{3a} and R_{3b} are independently selected from halo, carbonyl, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

R_{4a} and R_{4b} are independently selected from hydrogen, halo, carbonyl, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

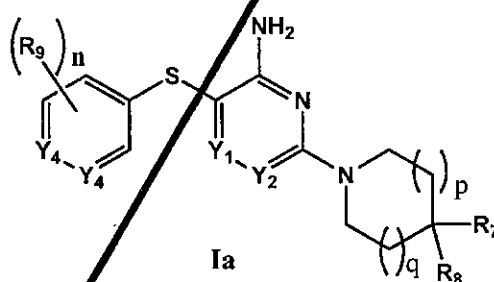
R_{5a} and R_{5b} are independently selected from hydrogen, carbonyl, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

wherein any two groups selected from R_{2a} , R_{2b} , R_{3a} , R_{3b} , R_{4a} , R_{4b} , R_{5a} , R_{5b} and R_7 can form a 5 to 6 member unsaturated or partially saturated ring;

R_6 is selected from hydrogen, halo, cyano, C_{1-4} alkyl, C_{1-4} alkoxy, amino-carbonyl, halo-substituted C_{1-4} alkyl, halo-substituted C_{1-4} alkoxy, hydroxy-substituted C_{1-4} alkyl, amino-substituted C_{1-4} alkyl, $-S(O)_{1-2}R_{6a}$, $-C(S)R_{6a}$, $-C(O)NR_{6a}R_{6b}$, $-C(NH)NR_{6a}R_{6b}$ and $-NR_{6a}C(O)R_{6b}$; wherein R_{6a} and R_{6b} are independently selected from hydrogen and C_{1-4} alkyl;

R_7 and R_8 together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain 1 to 3 heteroatoms or groups independently selected from N, C(O), O and S(O) $_m$; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R_7 and R_8 can be unsubstituted or substituted with 1 to 3 groups independently selected from amino, hydroxy, methoxy, halo, methyl, methyl-amino and isobutyryloxy; or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1 of Formula Ia:



in which:

n is selected from 1, 2, 3 and 4;

p is selected from 0 and 1;

q is selected from 0 and 1;

Y_1 is selected from CH and N;

Y_2 is selected from CR_6 and N; each

Y_4 is independently selected from N, C(O) and CR_9 ; wherein only one Y_4 is C(O);

R₆ is selected from hydrogen, halo, methyl and amino-carbonyl;

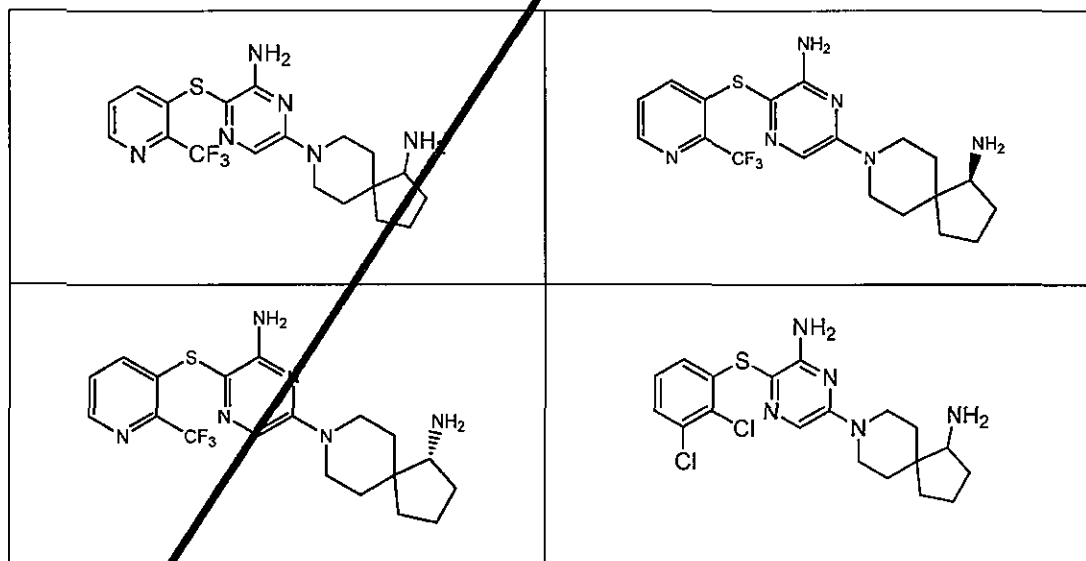
R₇ and R₈ together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ can be unsubstituted or substituted with 1 to 3 groups independently selected from amino, halo, hydroxy, amino-methyl and methyl-amino;

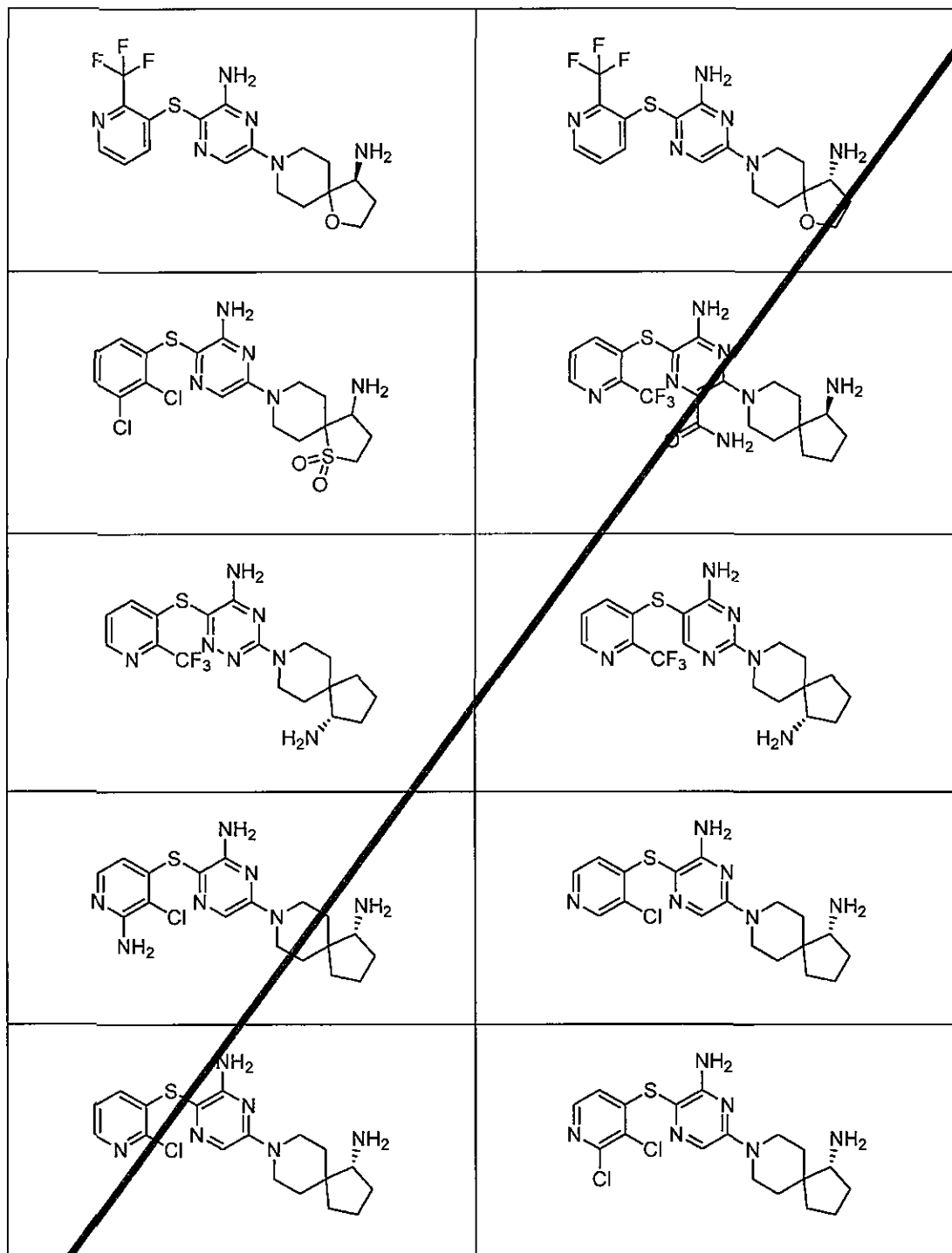
R₉ is selected from halo, amino, hydroxy, N₃, dimethyl-amino, C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, C₁₋₄alkoxy, -C(O)OR₁₀ and -NHC(O)R₁₀;

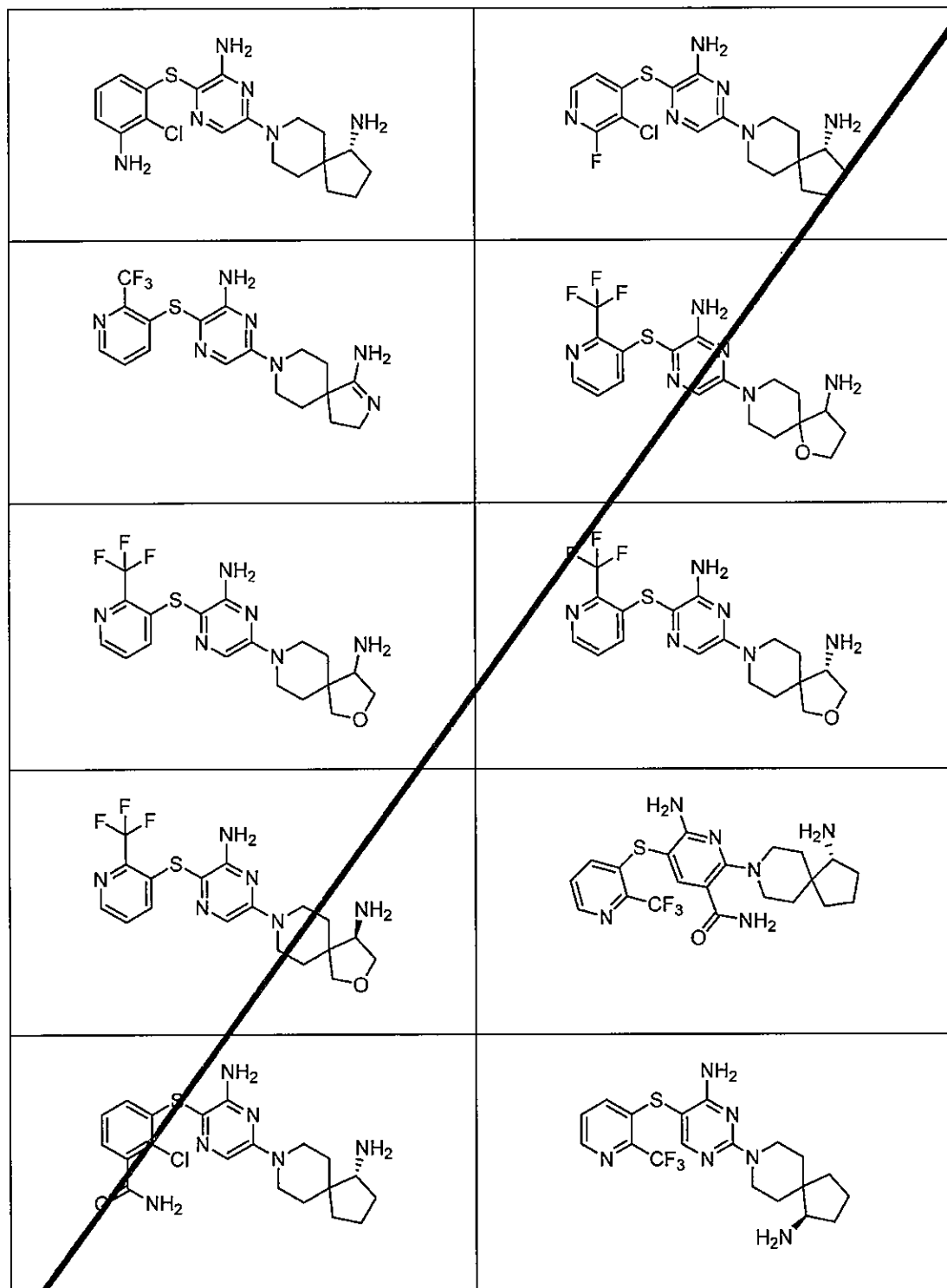
R₁₀ is selected from hydrogen, phenyl and naphthyl; wherein said phenyl of R₁₀ is unsubstituted or substituted with methoxy; or a pharmaceutically acceptable salt thereof.

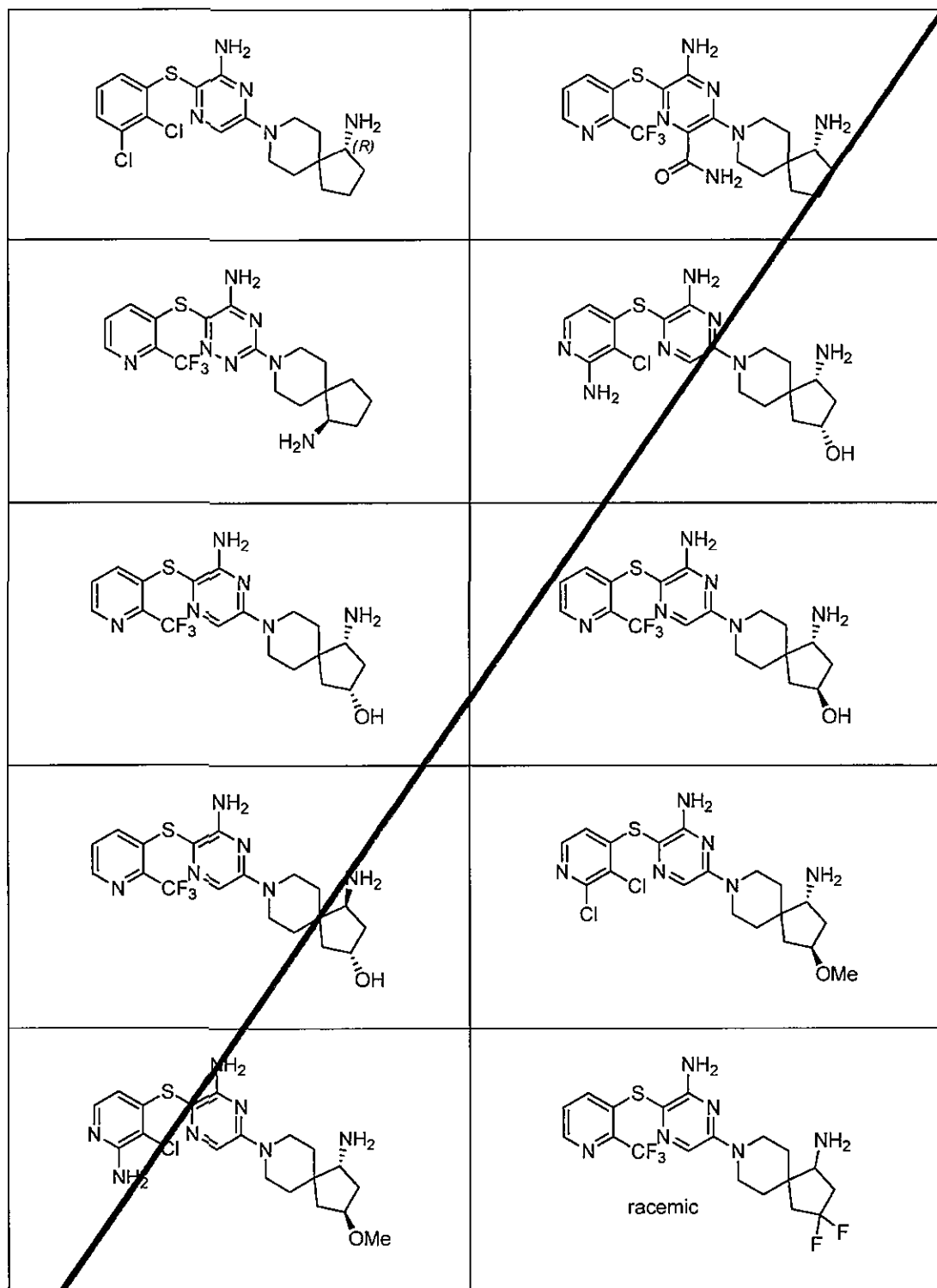
3. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 5 member saturated or partially unsaturated ring that can optionally contain 1 to 2 heteroatoms or groups independently selected from N, O, C(O) and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with 1 to 3 groups independently selected from amino, hydroxy, methoxy, halo, methyl, methyl-amino and isobutyryloxy; or a pharmaceutically acceptable salt thereof.

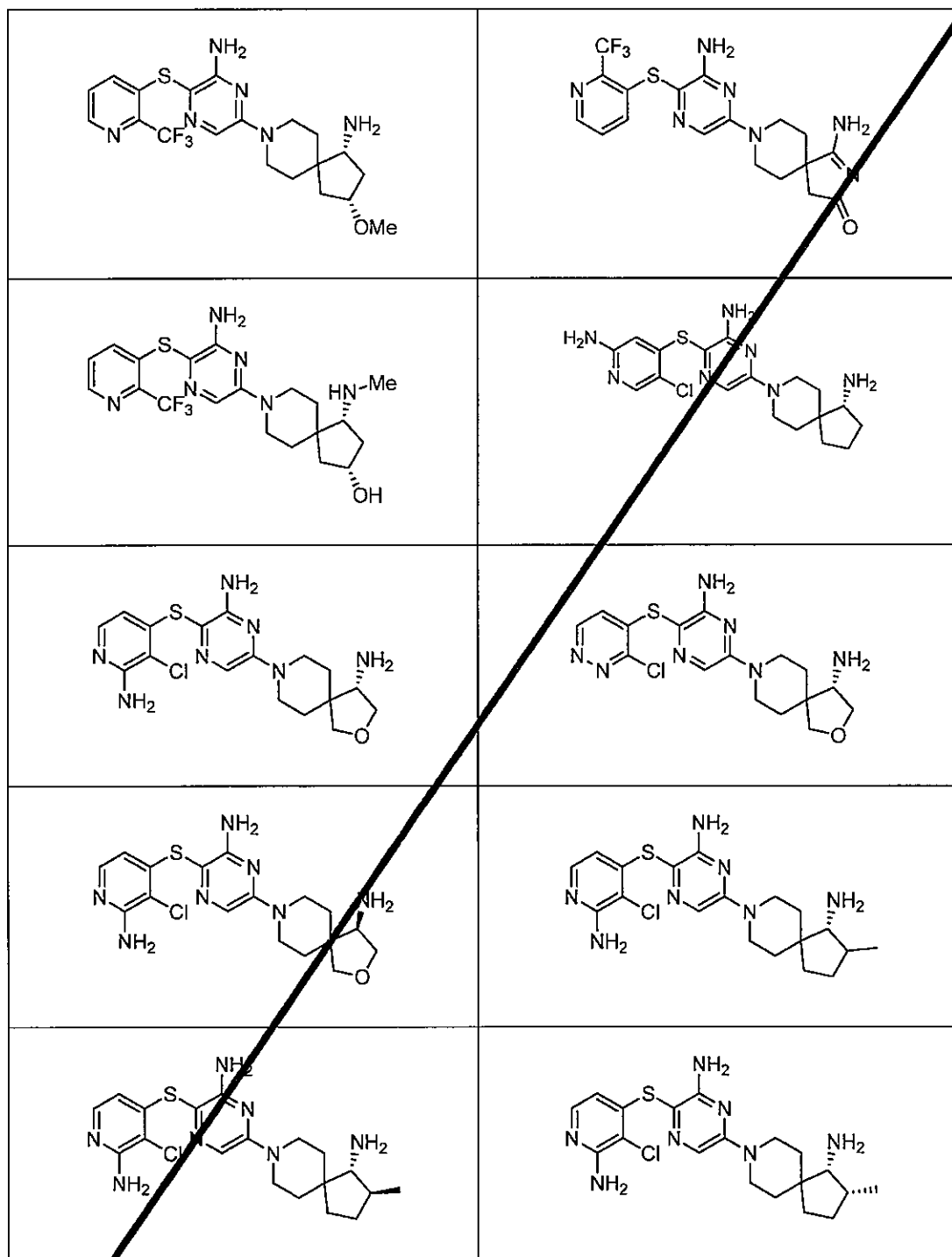
4. The compound of claim 3, or the pharmaceutically acceptable salt thereof, selected from:

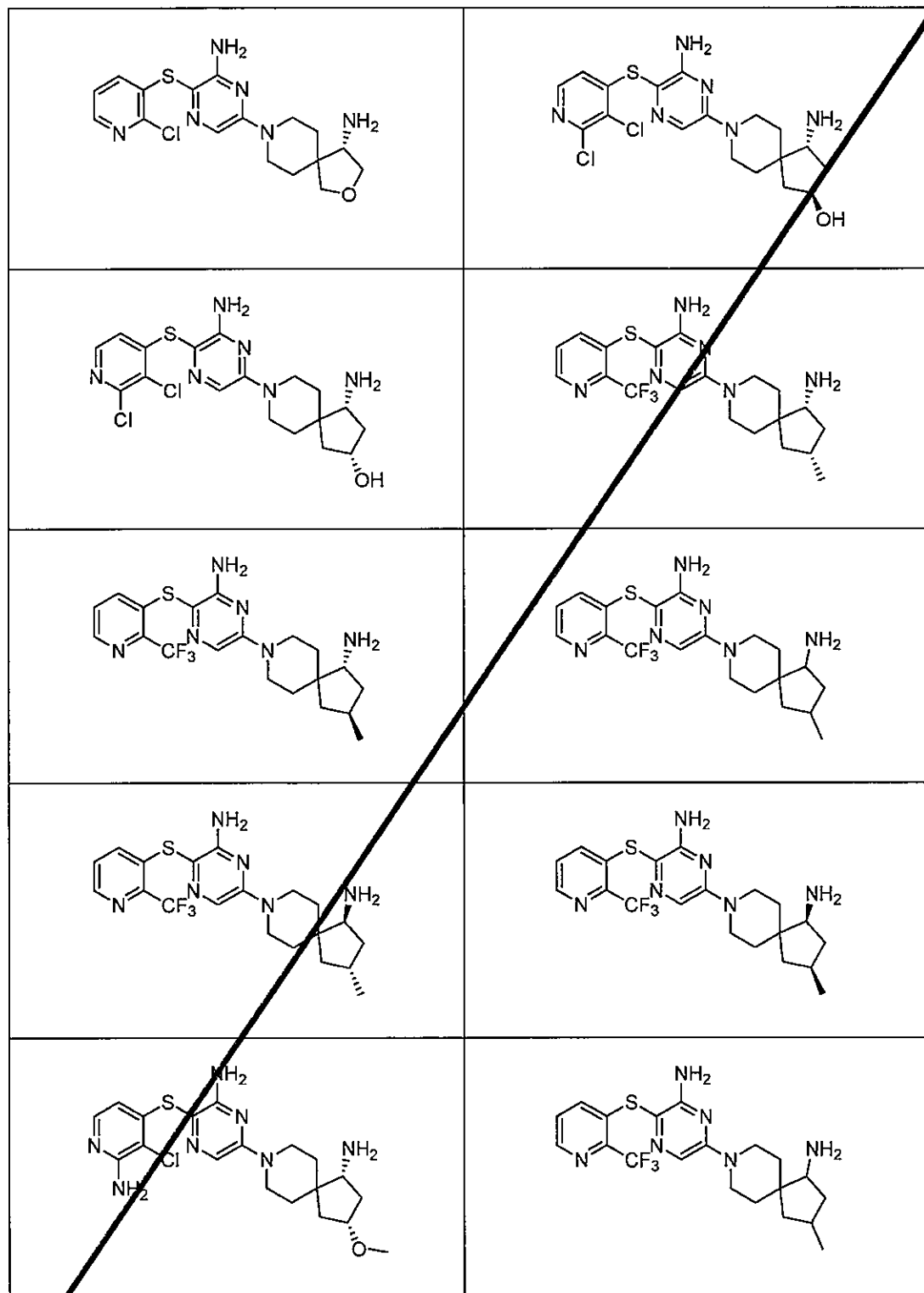


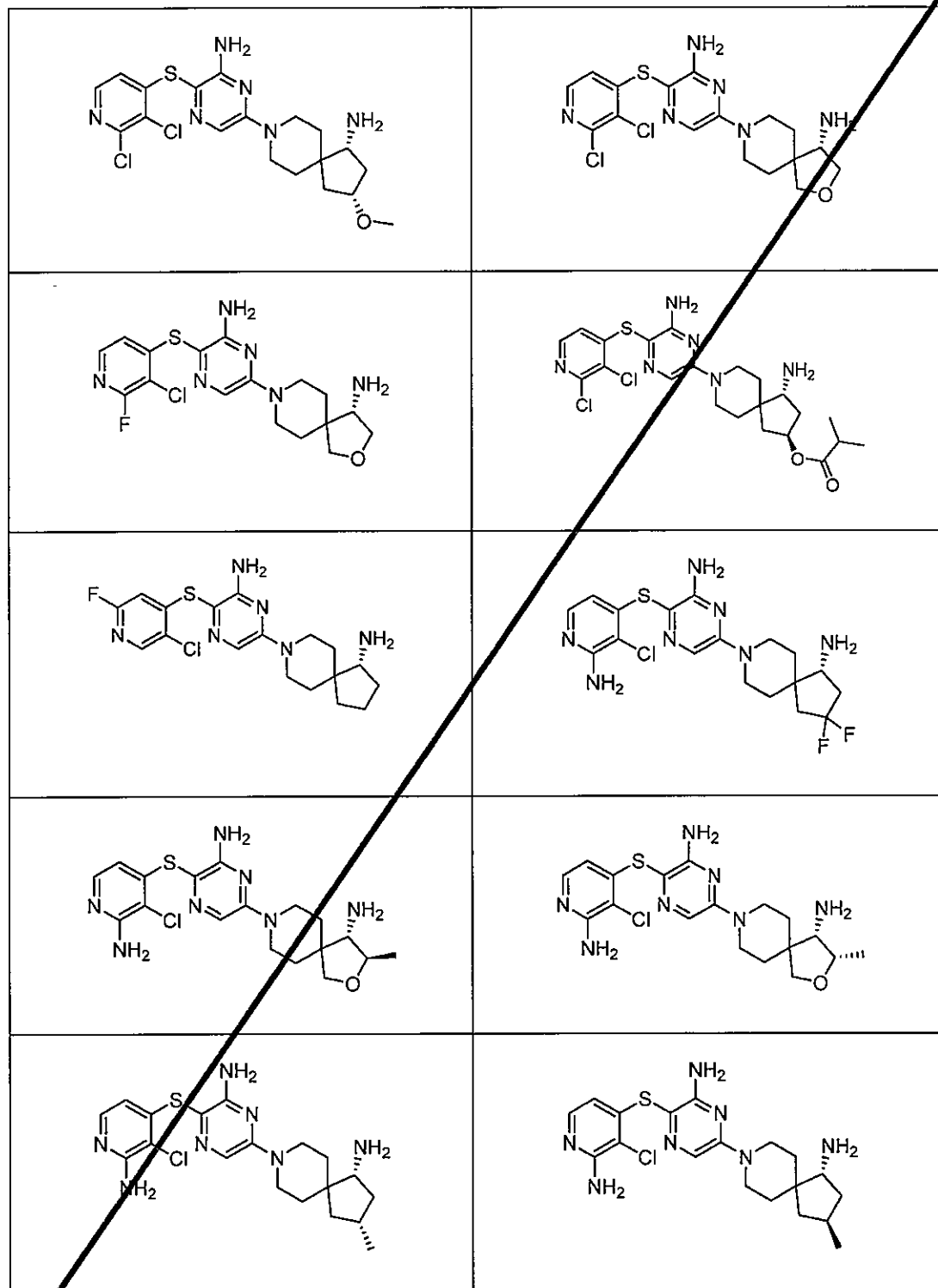


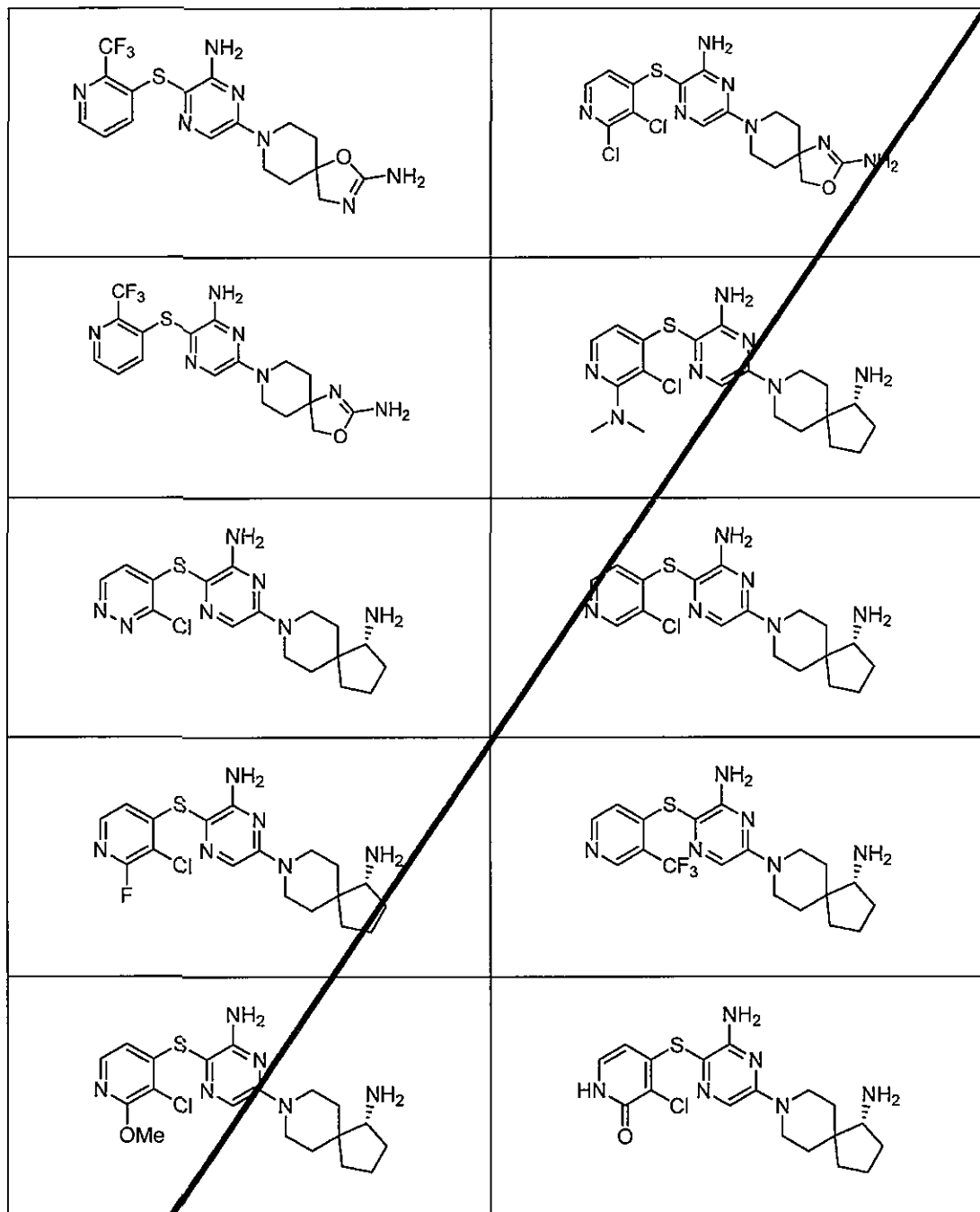


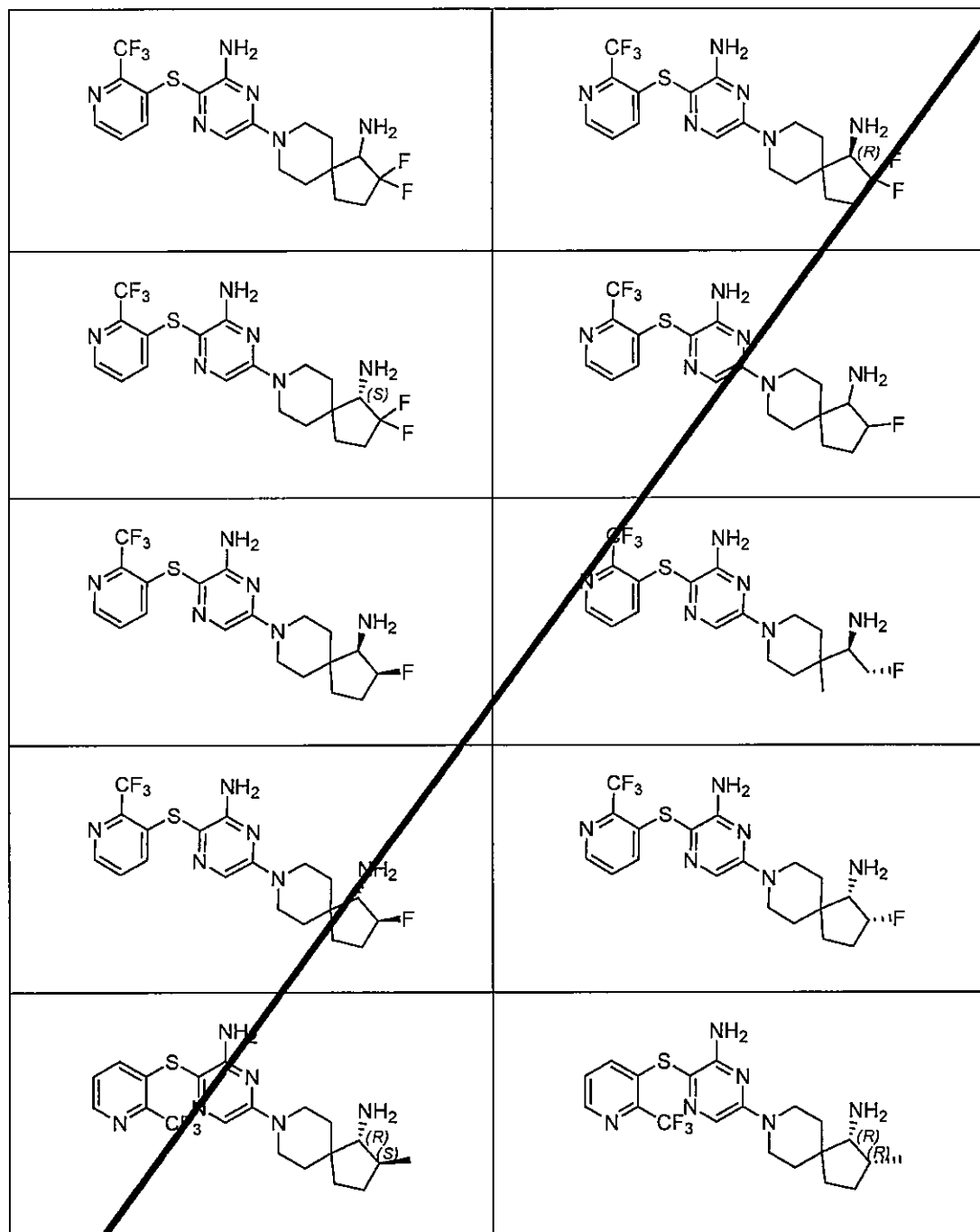


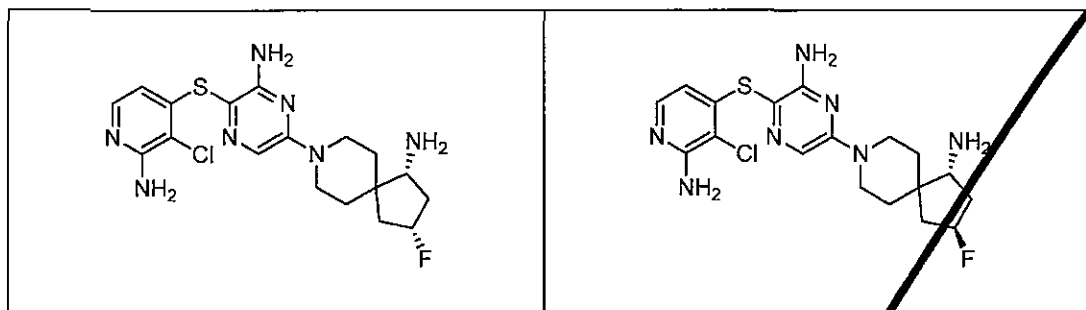






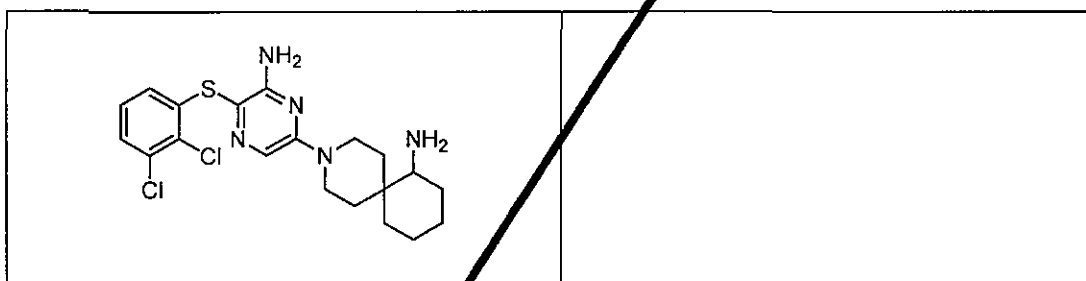






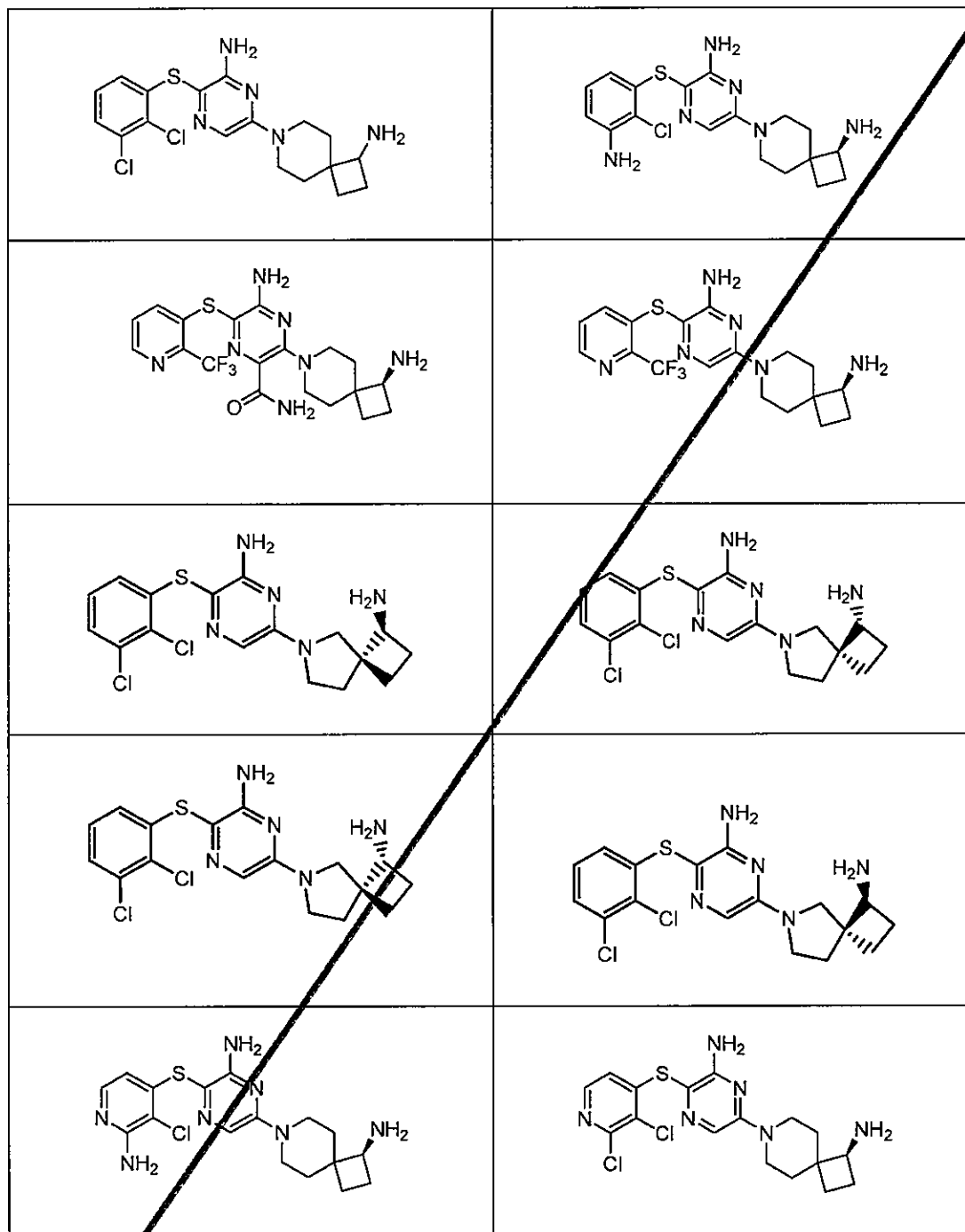
5. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 6 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

6. The compound of claim 5, or the pharmaceutically acceptable salt thereof, selected from:



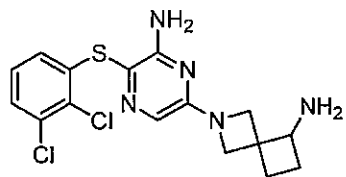
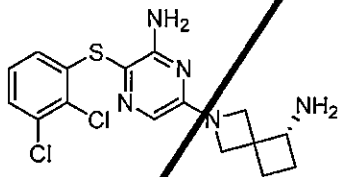
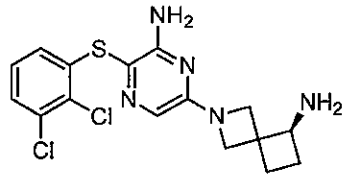
7. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 4 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with a group selected from amino, amino-methyl and methyl-amino; or a pharmaceutically acceptable salt thereof.

8. The compound of claim 7, or the pharmaceutically acceptable salt thereof, selected from:

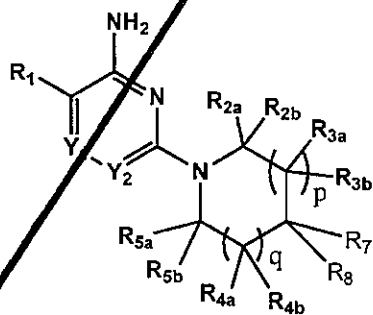


9. The compound of claim 2 in which p and q are both 0; or the pharmaceutically acceptable salt thereof.

10. The compound of claim 9, or the pharmaceutically acceptable salt thereof, selected from:

11. The compound of claim 1 of formula II:



II

in which:

p is selected from 0 and 1;

q is selected from 0 and 1;

Y₁ is selected from CH and N;

Y₂ is selected from CR₆ and N;

R₁ is selected from C₆₋₁₀aryl, C₃₋₈cycloalkyl, C₃₋₈cycloalkenyl and a 5-9 member heteroaryl group containing from 1 to 4 heteroatoms selected from N, O and S; wherein said aryl or heteroaryl of R_{1a} is substituted with 1 to 5 R₉ groups independently selected from halo, amino, hydroxy, N₃, C₁₋₄alkyl, hydroxy-substituted-C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, amino-substituted-C₁₋₄alkyl, -C(O)OR₁₀ and -NHC(O)R₁₀; wherein m is selected from 0, 1 and 2; each R_{10a} and R_{10b} is independently selected from halo and C₁₋₄alkyl; and R₁₁ is selected from hydrogen and C₁₋₄alkyl;

R_{2a} and R_{2b} are independently selected from hydrogen, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

R_{3a} and R_{3b} are independently selected from halo, carbonyl, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

R_{4a} and R_{4b} are independently selected from hydrogen, halo, carbonyl, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

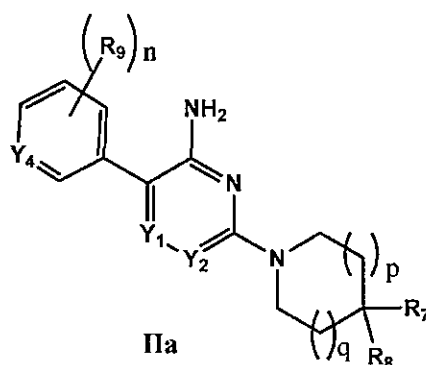
R_{5a} and R_{5b} are independently selected from hydrogen, carbonyl, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

wherein any two groups selected from R_{2a}, R_{3a}, R₄, R₅, R_{6a} and R_{7a} can form a 5 to 6 member unsaturated or partially unsaturated ring;

R₆ is selected from hydrogen, halo, cyano, C₁₋₄alkyl, C₁₋₄alkoxy, amino-carbonyl, halo-substituted C₁₋₄alkyl, halo-substituted C₁₋₄alkoxy, hydroxy-substituted C₁₋₄alkyl and amino-substituted C₁₋₄alkyl;

R₇ and R₈ together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ can be unsubstituted or substituted with 1 to 3 groups independently selected from amino, halo, hydroxy, amino-methyl and methyl-amino; or a pharmaceutically acceptable salt thereof.

12. The compound of claim 11 of Formula IIa:



in which:

n is selected from 1, 2, 3 and 4;

p is selected from 0 and 1;

q is selected from 0 and 1;

Y₁ is selected from CH and N;

Y₂ is selected from CR₆ and N;

Y₄ is selected from N and CR₉;

R₆ is selected from hydrogen, halo, methyl and amino-carbonyl;

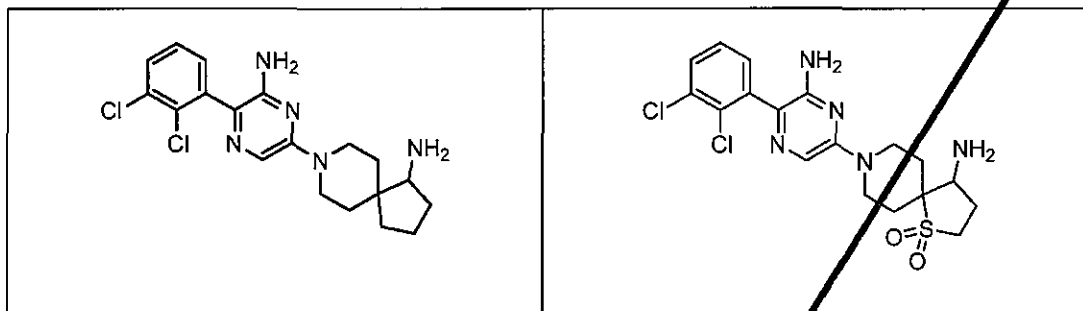
R₇ and R₈ together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ can be unsubstituted or substituted with a group selected from amino, amino-methyl and methyl-amino;

R₉ is selected from halo, amino, hydroxy, N₃, C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, C₁₋₄alkoxy, -C(O)OR₁₀ and -NHC(O)R₁₀;

R₁₀ is selected from hydrogen, phenyl and naphthyl; wherein said phenyl of R₁₀ is unsubstituted or substituted with methoxy, or a pharmaceutically acceptable salt thereof.

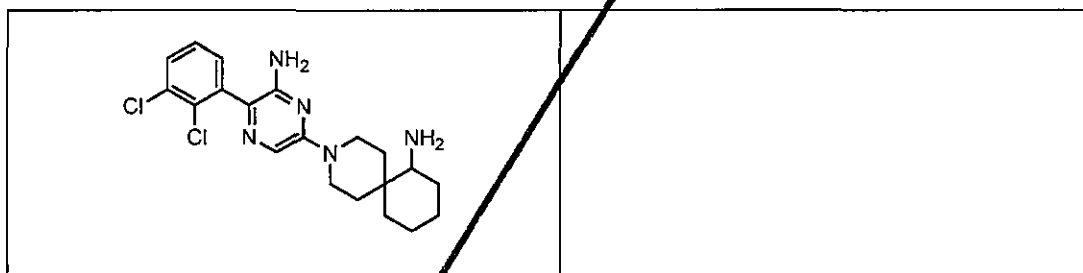
13. The compound of claim 12 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 5 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

14. The compound of claim 13, or the pharmaceutically acceptable salt thereof, selected from:



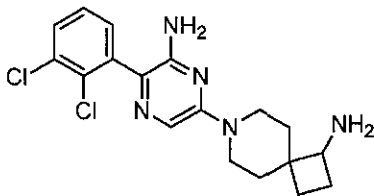
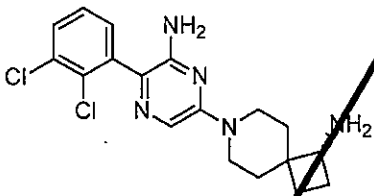
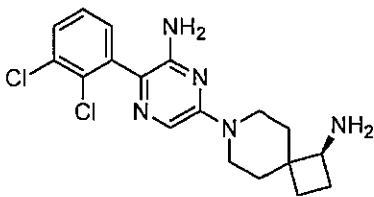
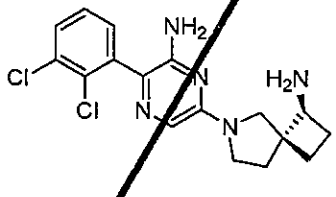
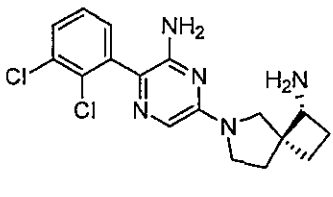
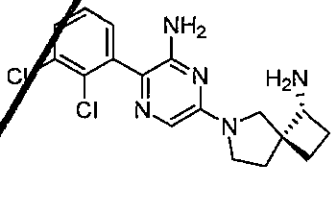
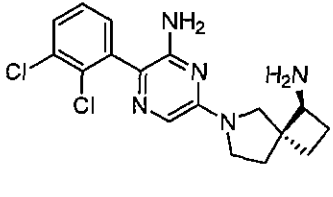
15. The compound of claim 12 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 6 member saturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

16. The compound of claim 15, or the pharmaceutically acceptable salt thereof, selected from:



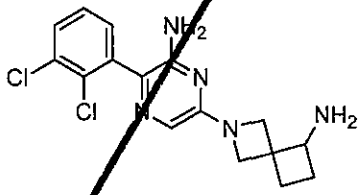
17. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 4 member saturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

18. The compound of claim 17, or the pharmaceutically acceptable salt thereof, selected from:

19. The compound of claim 12 in which p and q are both 0; or the pharmaceutically acceptable salt thereof.

20. The compound of claim 19, or the pharmaceutically acceptable salt thereof, selected from:

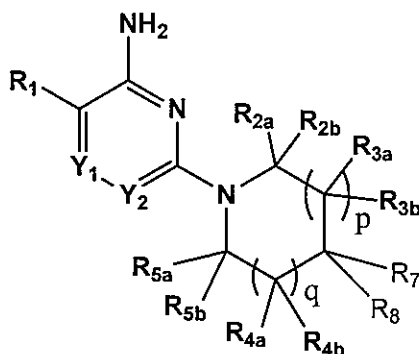
	
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21. A pharmaceutical composition comprising a compound of claim 1 or a pharmaceutically acceptable salt thereof, and at least one pharmaceutically acceptable carrier.
22. A method of treatment comprising administering a compound of claim 1, or a pharmaceutically acceptable salt thereof, to a person in need of such treatment in an effective amount for the prophylactic or therapeutic treatment of a disease or disorder which is mediated by the activity of SHP2.
23. The method of claim 22, wherein the disease or disorder mediated by the activity of SHP2 is selected from Noonan Syndrome, Leopard Syndrome, juvenile myelomonocytic leukemias, neuroblastoma, melanoma, acute myeloid leukemia, breast cancer, esophageal cancer, lung cancer, colon cancer, head cancer, neuroblastoma, squamous-cell carcinoma of the head and neck, gastric carcinoma, anaplastic large-cell lymphoma and glioblastoma.

CLAIMS

We Claim:

1. A compound of formula I:



I

in which:

p is selected from 0 and 1;

q is selected from 0 and 1;

Y₁ is selected from CH and N;

Y₂ is selected from CR₆ and N;

R₁ is -XR_{1a}; wherein R_{1a} is selected from C₆₋₁₀aryl, C₃₋₈cycloalkyl, C₃₋₈cycloalkenyl and a 5-9 member heteroaryl group containing from 1 to 4 heteroatoms or groups independently selected from N, C(O), O and S; wherein said aryl or heteroaryl of R_{1a} is substituted with 1 to 5 R₉ groups independently selected from halo, amino, hydroxy, N₃, C₁₋₄alkyl, dimethyl-amino, hydroxy-substituted-C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, amino-substituted-C₁₋₄alkyl, -C(O)OR₁₀ and -NHC(O)R₁₀; and X is selected from a bond, S(O)_m, O, C(O), COR₁₁, CR_{10a}R_{10b}, NR₁₁; wherein m is selected from 0, 1 and 2; each R_{10a} and R_{10b} is independently selected from halo and C₁₋₄alkyl; and R₁₁ is selected from hydrogen and C₁₋₄alkyl;

R_{2a} and R_{2b} are independently selected from hydrogen, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

R_{3a} and R_{3b} are independently selected from halo, carbonyl, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

R_{4a} and R_{4b} are independently selected from hydrogen, halo, carbonyl, C₁₋₄alkyl, C₁₋₄alkoxy, amino, hydroxy, C₃₋₈cycloalkyl and C₁₋₄alkyl-amino;

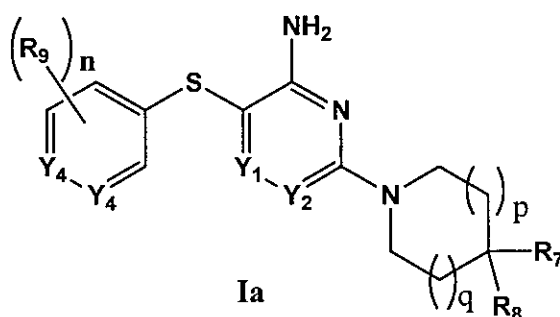
R_{5a} and R_{5b} are independently selected from hydrogen, carbonyl, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

wherein any two groups selected from R_{2a} , R_{2b} , R_{3a} , R_{3b} , R_{4a} , R_{4b} , R_{5a} , R_{5b} and R_7 can form a 5 to 6 member unsaturated or partially saturated ring;

R_6 is selected from hydrogen, halo, cyano, C_{1-4} alkyl, C_{1-4} alkoxy, amino-carbonyl, halo-substituted C_{1-4} alkyl, halo-substituted C_{1-4} alkoxy, hydroxy-substituted C_{1-4} alkyl, amino-substituted C_{1-4} alkyl, $-S(O)_{1-2}R_{6a}$, $-C(S)R_{6a}$, $-C(O)NR_{6a}R_{6b}$, $-C(NH)NR_{6a}R_{6b}$ and $-NR_{6a}C(O)R_{6b}$; wherein R_{6a} and R_{6b} are independently selected from hydrogen and C_{1-4} alkyl;

R_7 and R_8 together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain 1 to 3 heteroatoms or groups independently selected from N, C(O), O and S(O) $_m$; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R_7 and R_8 can be unsubstituted or substituted with 1 to 3 groups independently selected from amino, hydroxy, methoxy, halo, methyl, methyl-amino and isobutyryloxy; or a pharmaceutically acceptable salt thereof.

2. The compound of claim 1 of Formula Ia:



in which:

n is selected from 1, 2, 3 and 4;

p is selected from 0 and 1;

q is selected from 0 and 1;

Y_1 is selected from CH and N;

Y_2 is selected from CR_6 and N; each

Y_4 is independently selected from N, C(O) and CR_9 ; wherein only one Y_4 is C(O);

R_6 is selected from hydrogen, halo, methyl and amino-carbonyl;

R_7 and R_8 together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O

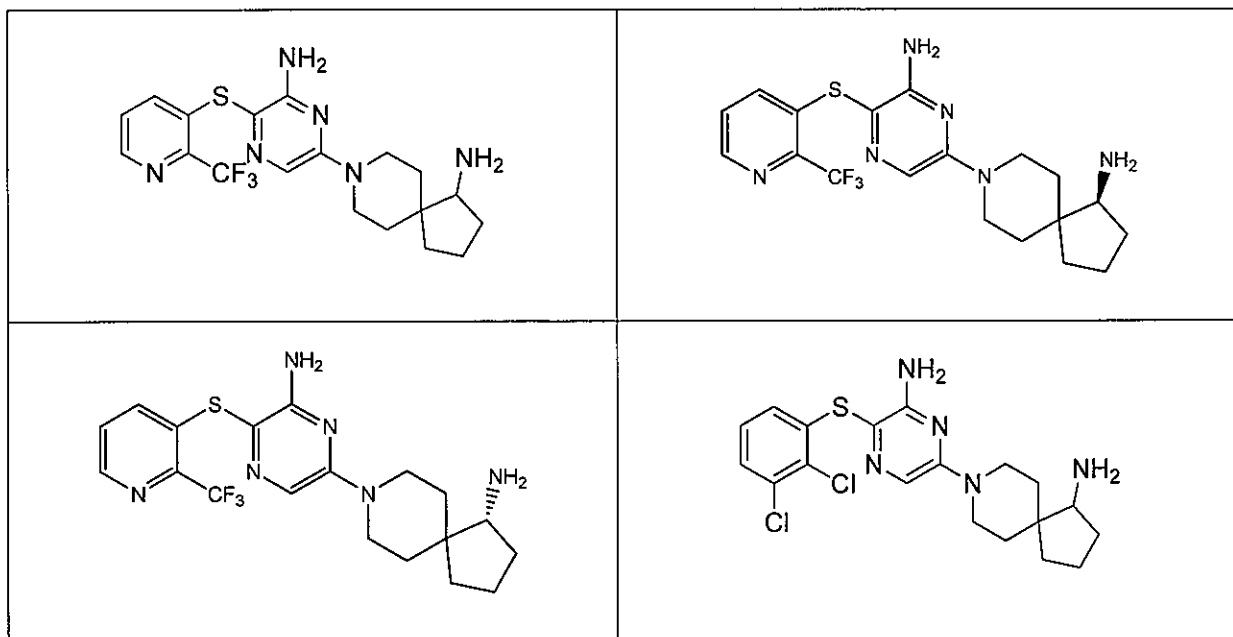
and S(O)m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ can be unsubstituted or substituted with 1 to 3 groups independently selected from amino, halo, hydroxy, amino-methyl and methyl-amino;

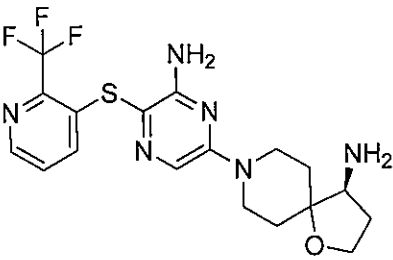
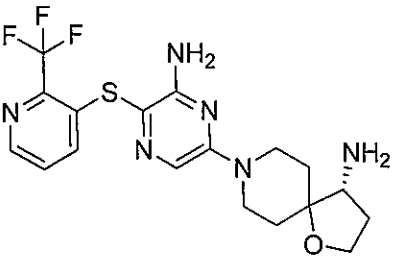
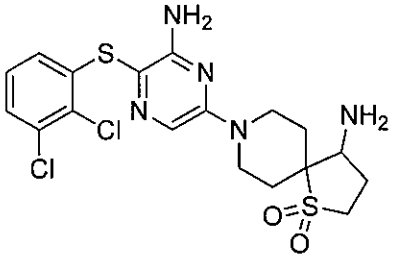
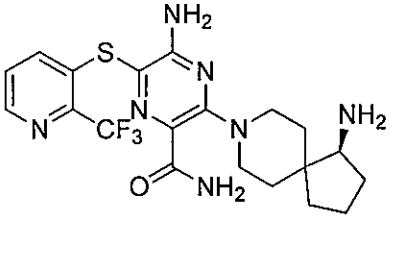
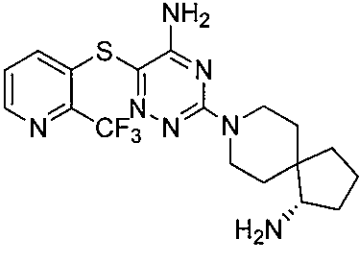
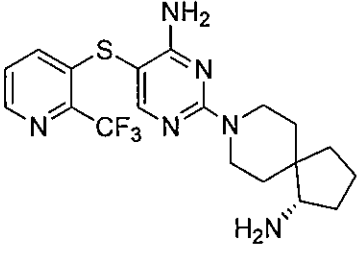
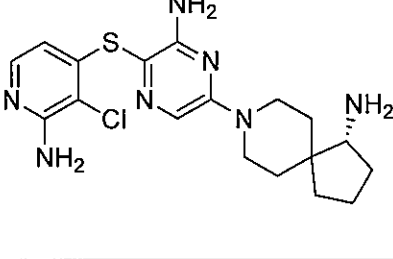
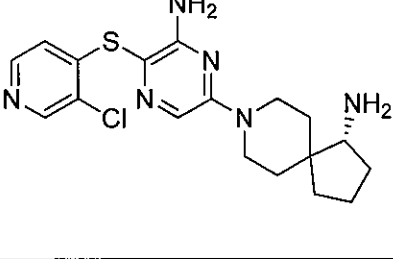
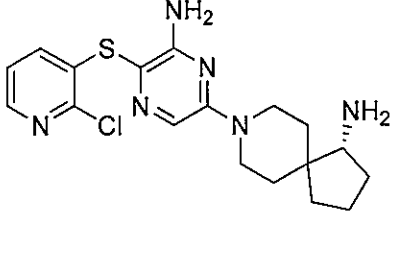
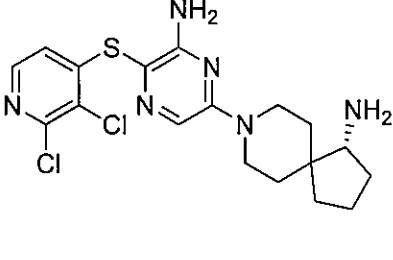
R₉ is selected from halo, amino, hydroxy, N₃, dimethyl-amino, C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, C₁₋₄alkoxy, -C(O)OR₁₀ and -NHC(O)R₁₀;

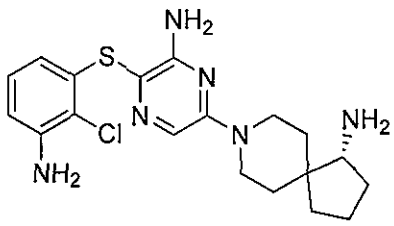
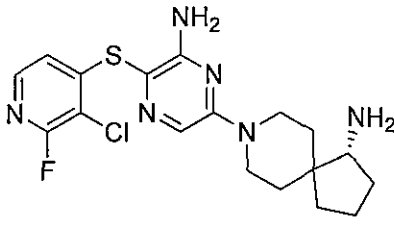
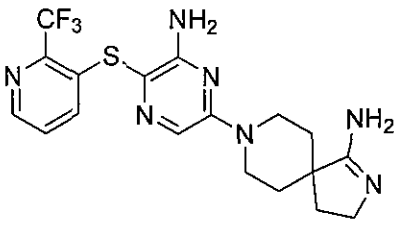
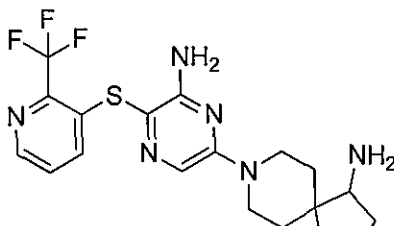
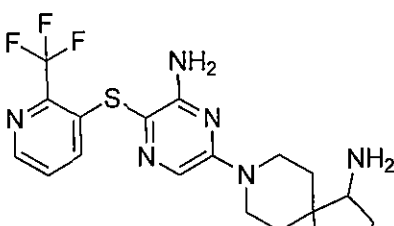
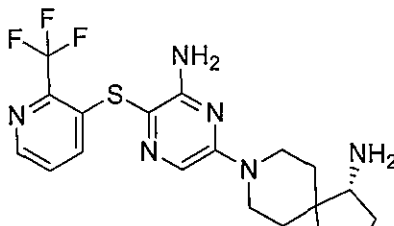
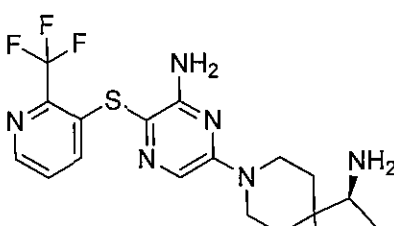
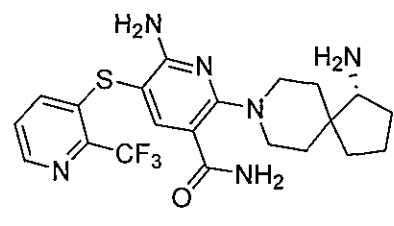
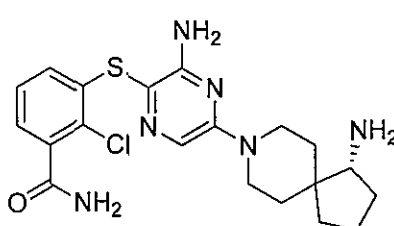
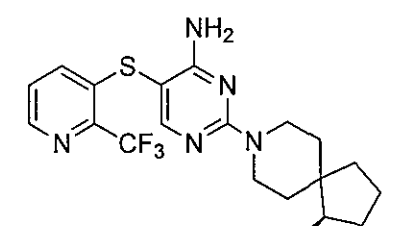
R₁₀ is selected from hydrogen, phenyl and naphthyl; wherein said phenyl of R₁₀ is unsubstituted or substituted with methoxy; or a pharmaceutically acceptable salt thereof.

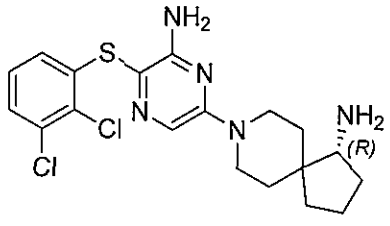
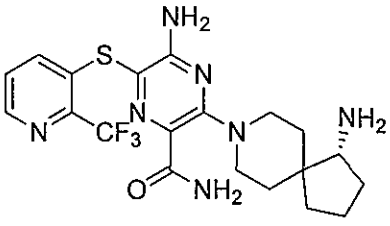
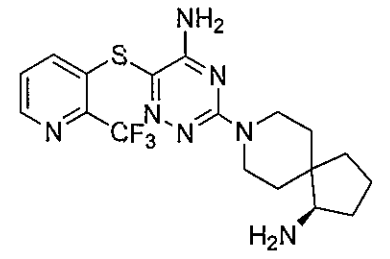
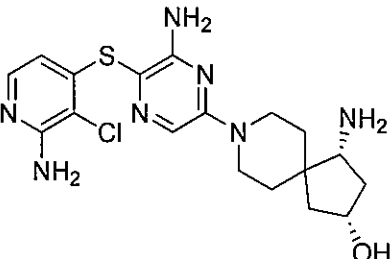
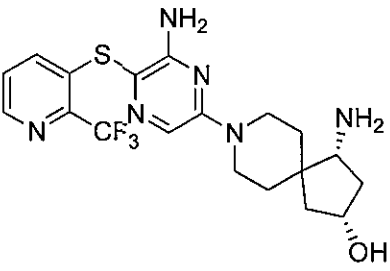
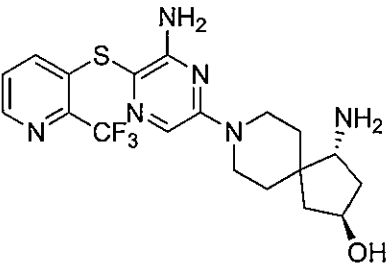
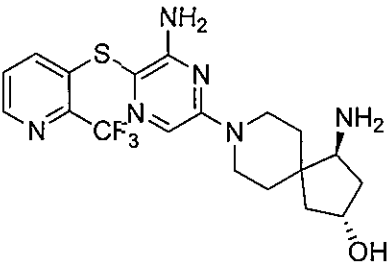
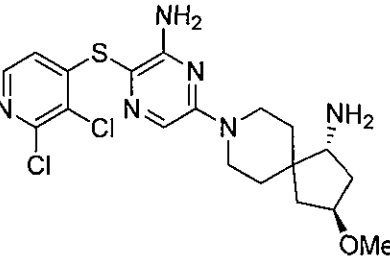
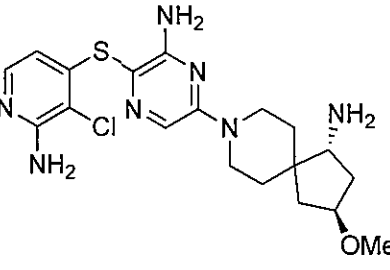
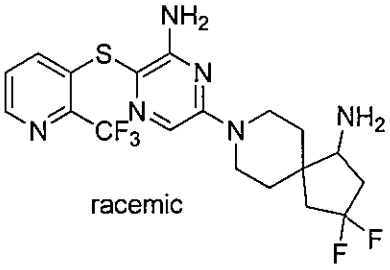
3. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 5 member saturated or partially unsaturated ring that can optionally contain 1 to 2 heteroatoms or groups independently selected from N, O, C(O) and S(O)m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with 1 to 3 groups independently selected from amino, hydroxy, methoxy, halo, methyl, methyl-amino and isobutyryloxy; or a pharmaceutically acceptable salt thereof.

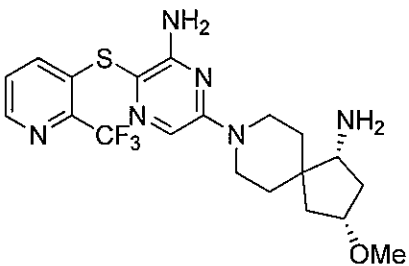
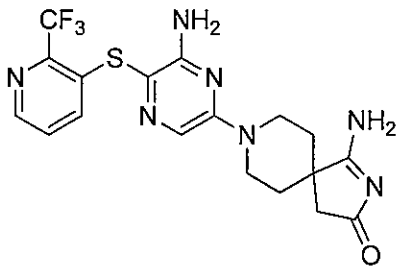
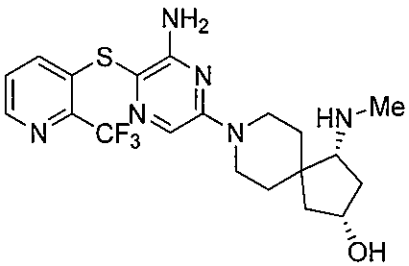
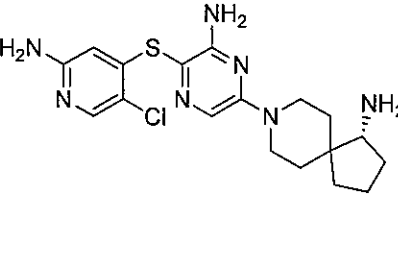
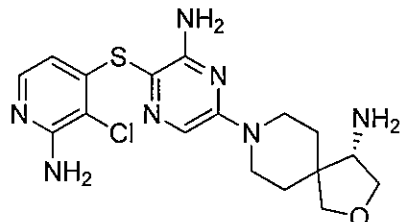
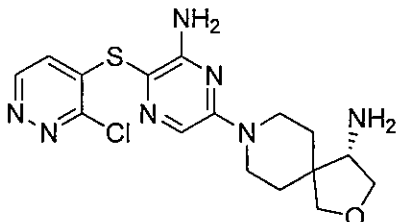
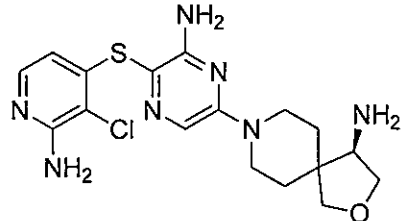
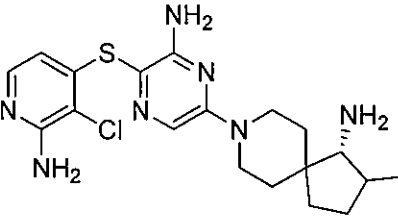
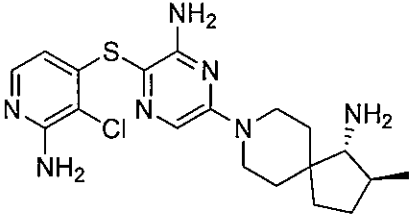
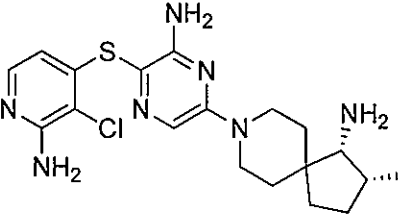
4. The compound of claim 3, or the pharmaceutically acceptable salt thereof, selected from:

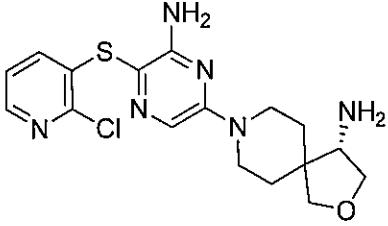
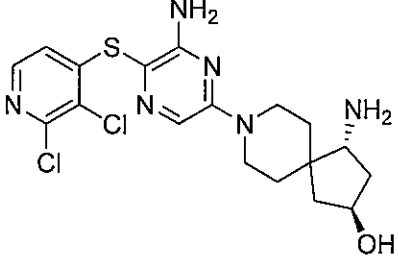
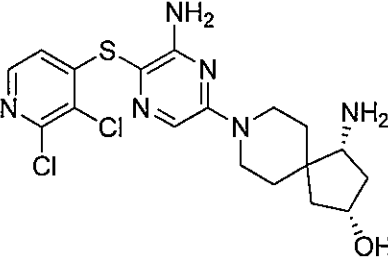
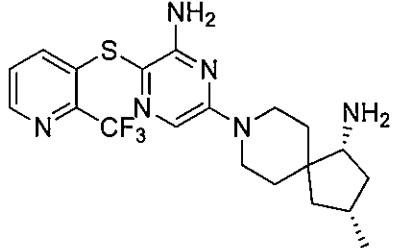
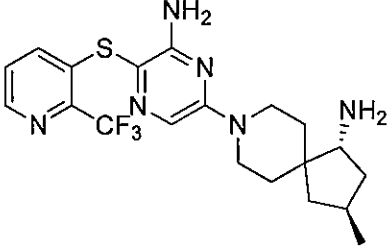
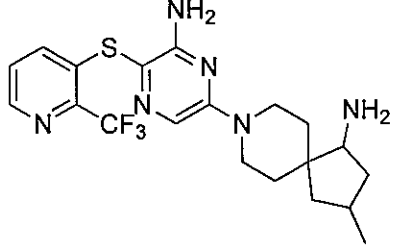
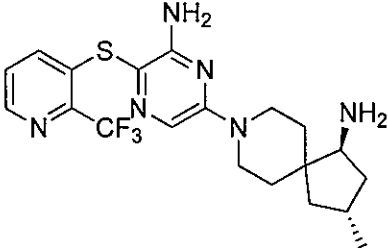
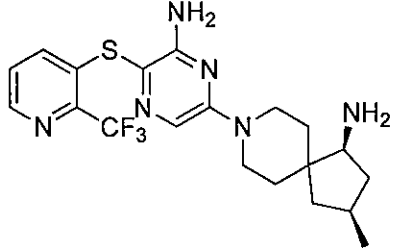
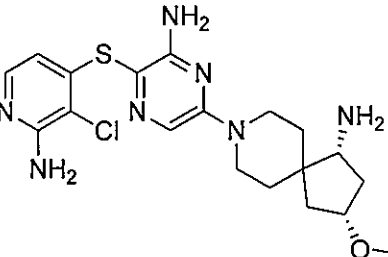
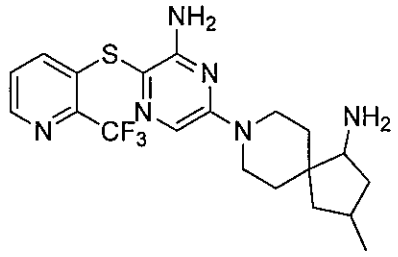


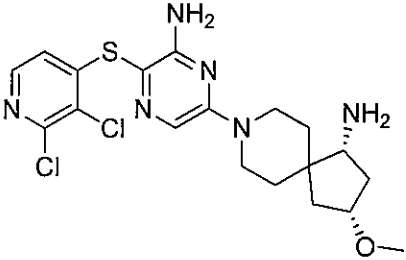
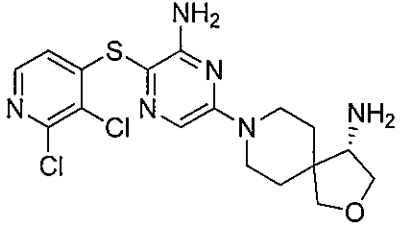
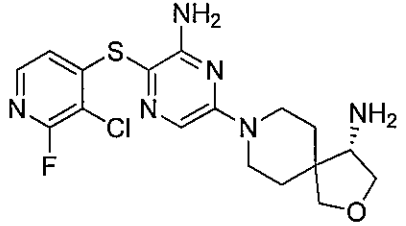
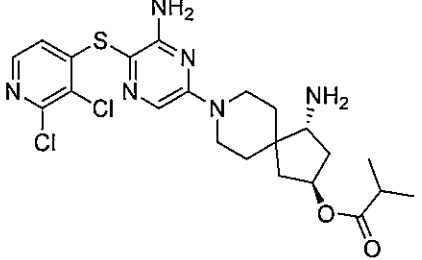
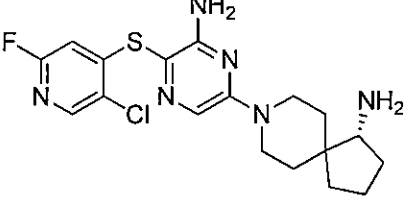
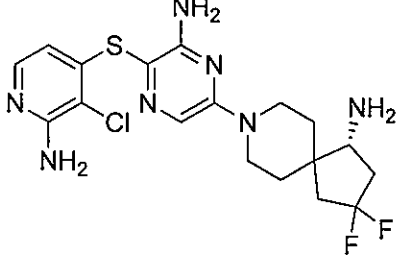
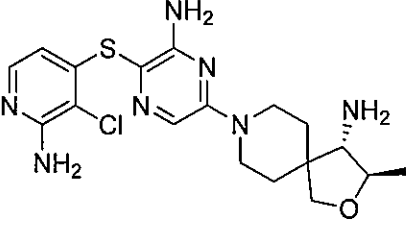
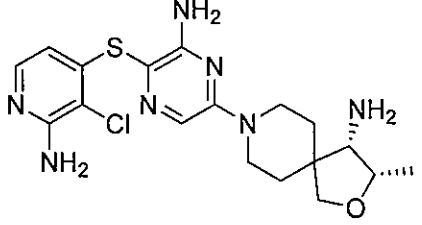
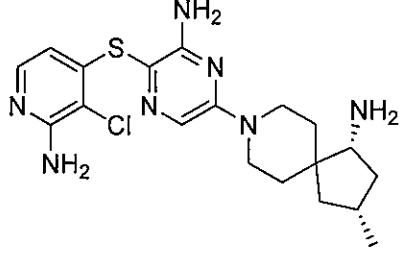
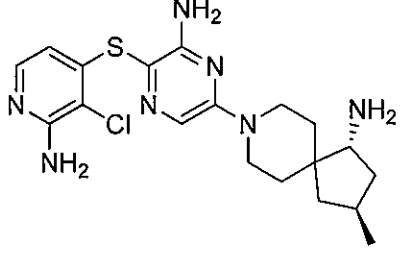
	
	
	
	
	

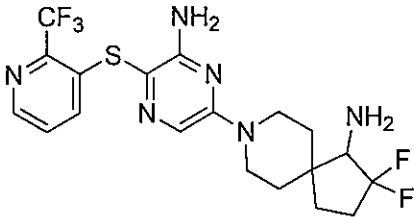
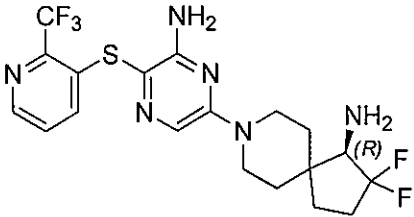
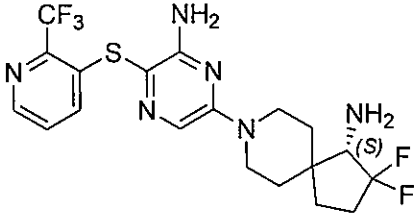
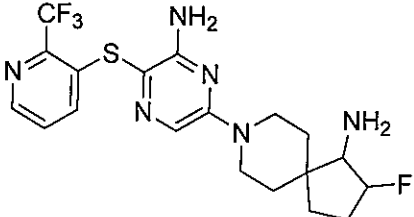
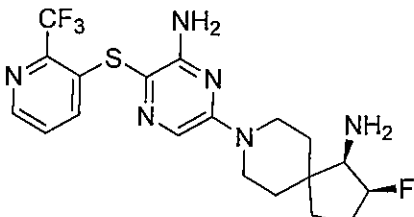
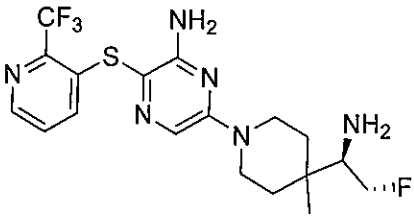
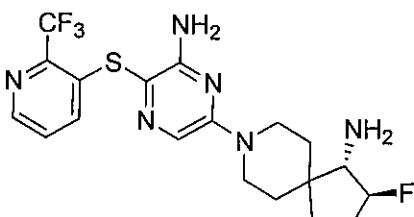
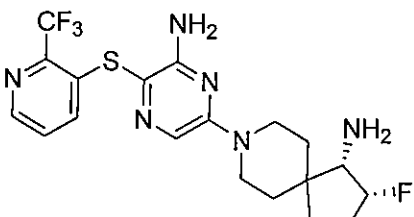
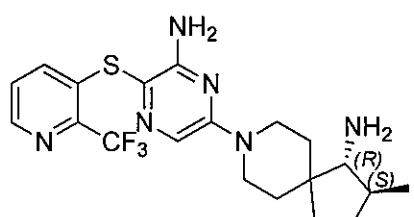
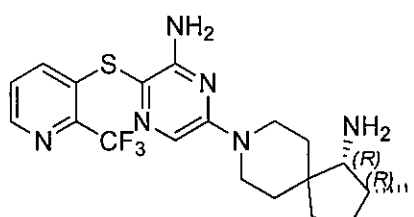
	
	
	
	
	

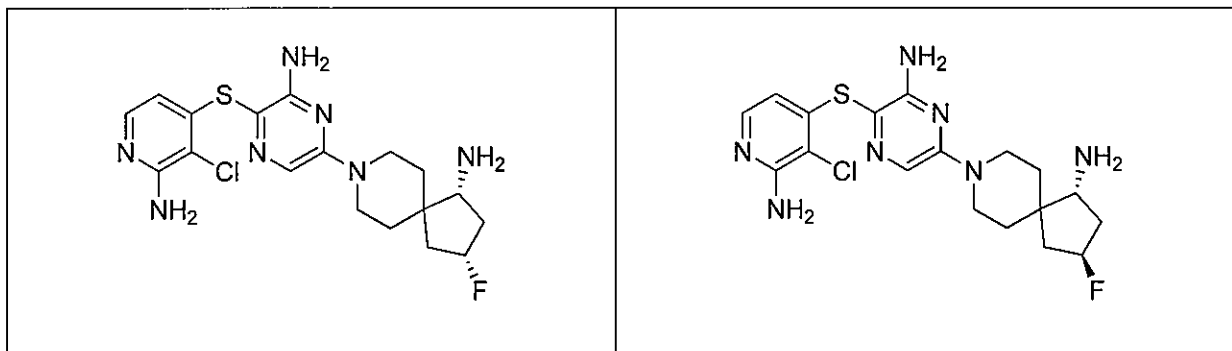
	
	
	
	
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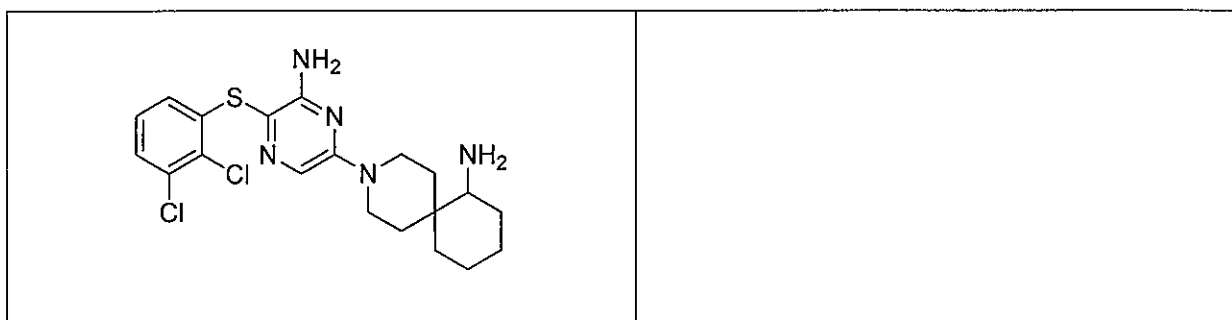
	
	
	
	
	



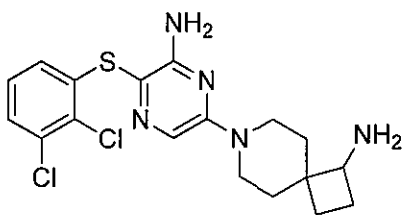
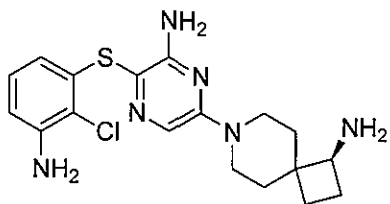
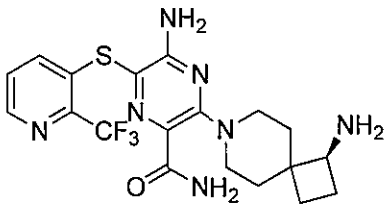
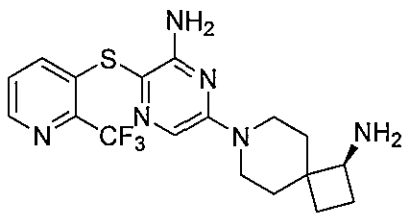
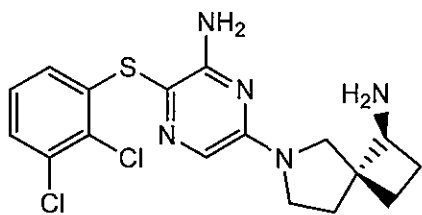
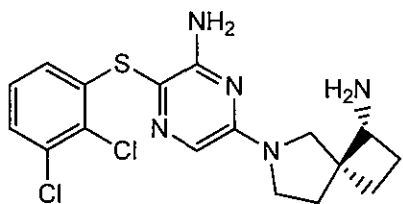
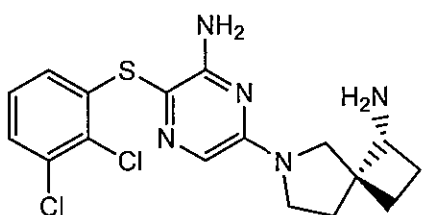
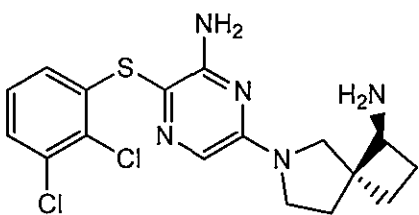
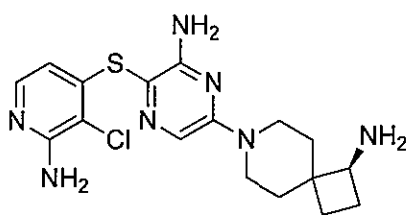
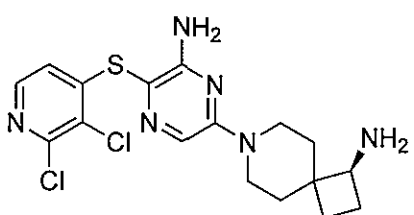
5. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 6 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

6. The compound of claim 5, or the pharmaceutically acceptable salt thereof, selected from:



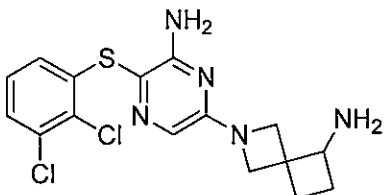
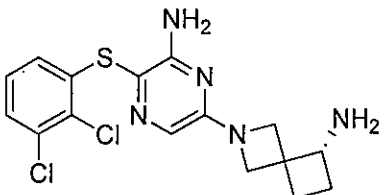
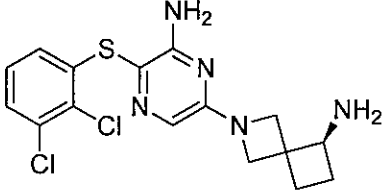
7. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 4 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with a group selected from amino, amino-methyl and methyl-amino; or a pharmaceutically acceptable salt thereof.

8. The compound of claim 7, or the pharmaceutically acceptable salt thereof, selected from:

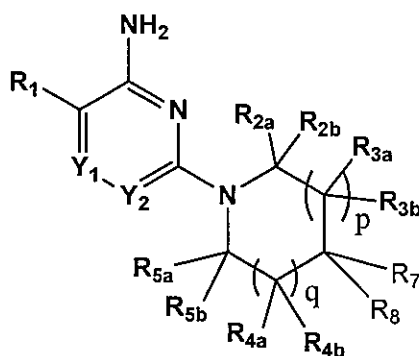
	
	
	
	
	

9. The compound of claim 2 in which p and q are both 0; or the pharmaceutically acceptable salt thereof.

10. The compound of claim 9, or the pharmaceutically acceptable salt thereof, selected from:

11. The compound of claim 1 of formula II:



II

in which:

p is selected from 0 and 1;

q is selected from 0 and 1;

Y₁ is selected from CH and N;

Y₂ is selected from CR₆ and N;

R₁ is selected from C₆₋₁₀aryl, C₃₋₈cycloalkyl, C₃₋₈cycloalkenyl and a 5-9 member heteroaryl group containing from 1 to 4 heteroatoms selected from N, O and S; wherein said aryl or

heteroaryl of R_{1a} is substituted with 1 to 5 R_9 groups independently selected from halo, amino, hydroxy, N_3 , C_{1-4} alkyl, hydroxy-substituted- C_{1-4} alkyl, halo-substituted- C_{1-4} alkyl, amino-substituted- C_{1-4} alkyl, $-C(O)OR_{10}$ and $-NHC(O)R_{10}$; wherein m is selected from 0, 1 and 2; each R_{10a} and R_{10b} is independently selected from halo and C_{1-4} alkyl; and R_{11} is selected from hydrogen and C_{1-4} alkyl;

R_{2a} and R_{2b} are independently selected from hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

R_{3a} and R_{3b} are independently selected from halo, carbonyl, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

R_{4a} and R_{4b} are independently selected from hydrogen, halo, carbonyl, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

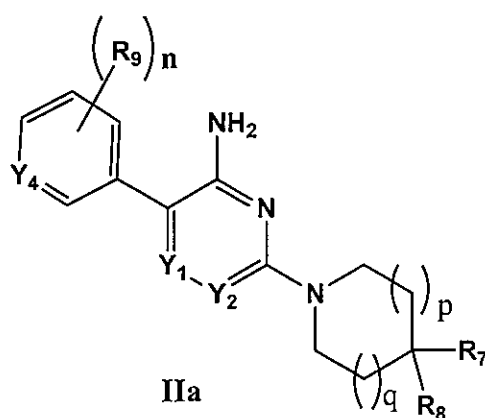
R_{5a} and R_{5b} are independently selected from hydrogen, carbonyl, C_{1-4} alkyl, C_{1-4} alkoxy, amino, hydroxy, C_{3-8} cycloalkyl and C_{1-4} alkyl-amino;

wherein any two groups selected from R_{2a} , R_{3a} , R_4 , R_5 , R_{6a} and R_{7a} can form a 5 to 6 member unsaturated or partially unsaturated ring;

R_6 is selected from hydrogen, halo, cyano, C_{1-4} alkyl, C_{1-4} alkoxy, amino-carbonyl, halo-substituted C_{1-4} alkyl, halo-substituted C_{1-4} alkoxy, hydroxy-substituted C_{1-4} alkyl and amino-substituted C_{1-4} alkyl;

R_7 and R_8 together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and $S(O)_m$; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R_7 and R_8 can be unsubstituted or substituted with 1 to 3 groups independently selected from amino, halo, hydroxy, amino-methyl and methyl-amino; or a pharmaceutically acceptable salt thereof.

12. The compound of claim 11 of Formula IIa:



in which:

n is selected from 1, 2, 3 and 4;

p is selected from 0 and 1;

q is selected from 0 and 1;

Y₁ is selected from CH and N;

Y₂ is selected from CR₆ and N;

Y₄ is selected from N and CR₉;

R₆ is selected from hydrogen, halo, methyl and amino-carbonyl;

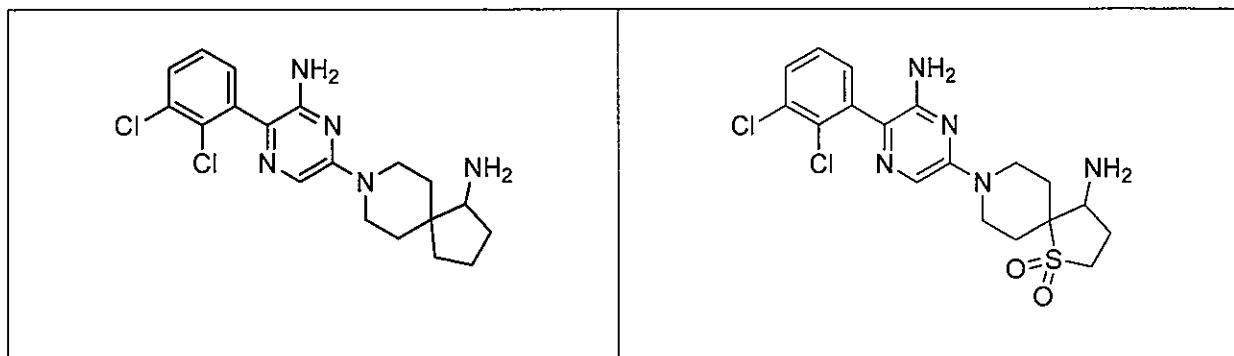
R₇ and R₈ together with the carbon atom to which they are both attached form a 3 to 7 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ can be unsubstituted or substituted with a group selected from amino, amino-methyl and methyl-amino;

R₉ is selected from halo, amino, hydroxy, N₃, C₁₋₄alkyl, halo-substituted-C₁₋₄alkyl, C₁₋₄alkoxy, -C(O)OR₁₀ and -NHC(O)R₁₀;

R₁₀ is selected from hydrogen, phenyl and naphthyl; wherein said phenyl of R₁₀ is unsubstituted or substituted with methoxy; or a pharmaceutically acceptable salt thereof.

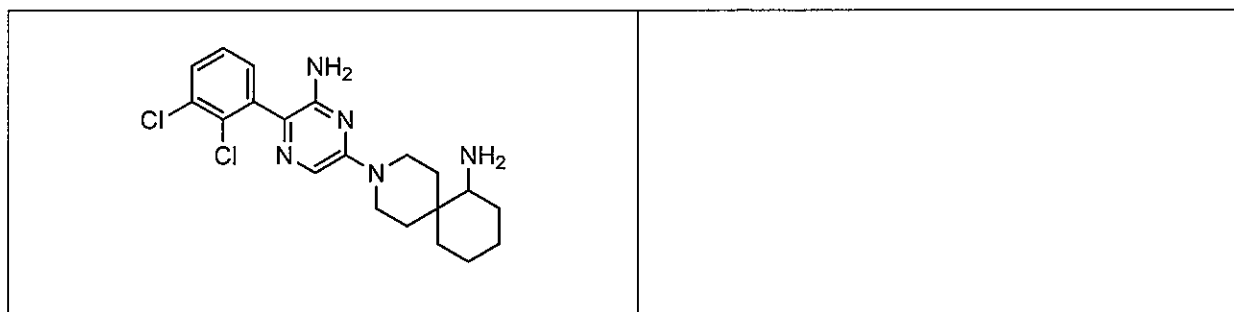
13. The compound of claim 12 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 5 member saturated or partially unsaturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

14. The compound of claim 13, or the pharmaceutically acceptable salt thereof, selected from:



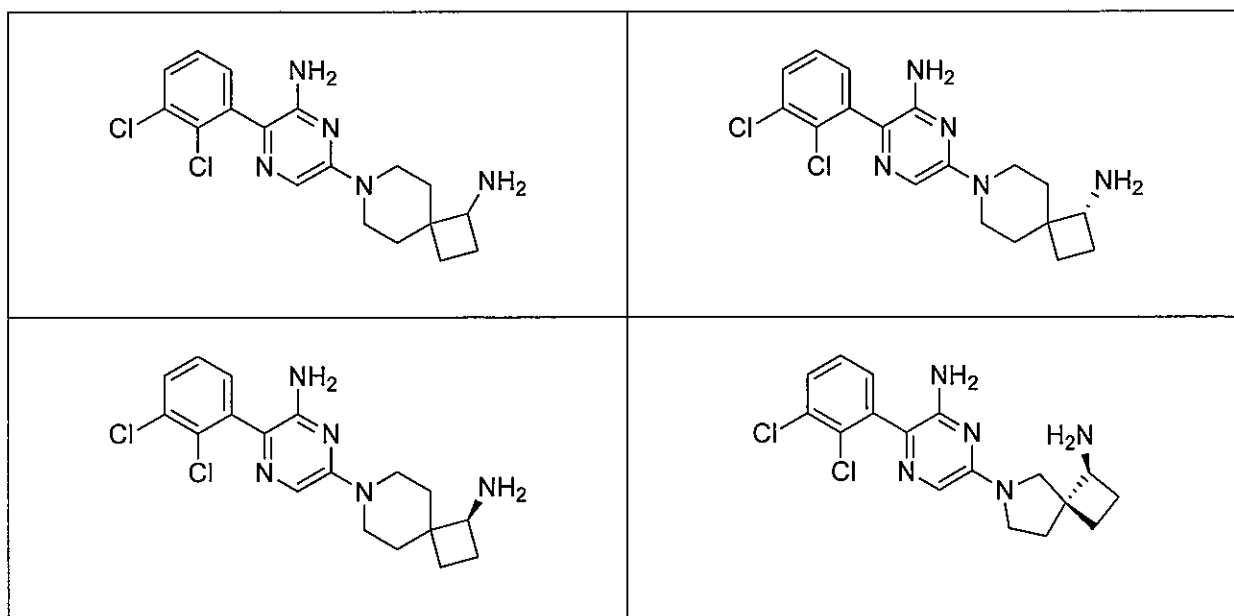
15. The compound of claim 12 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 6 member saturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

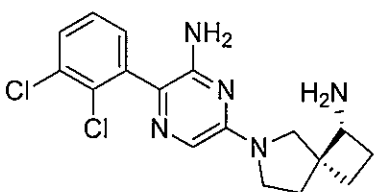
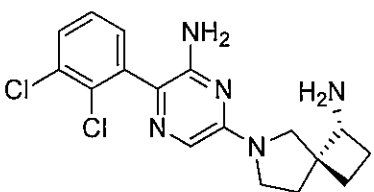
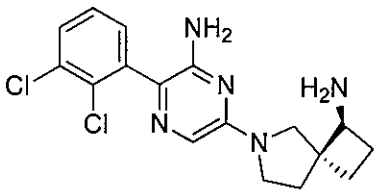
16. The compound of claim 15, or the pharmaceutically acceptable salt thereof, selected from:



17. The compound of claim 2 in which R₇ and R₈ together with the carbon atom to which they are both attached form a 4 member saturated ring that can optionally contain a heteroatom selected from N, O and S(O)_m; wherein m is selected from 0, 1 and 2; wherein said saturated ring formed by R₇ and R₈ is substituted with amino; or a pharmaceutically acceptable salt thereof.

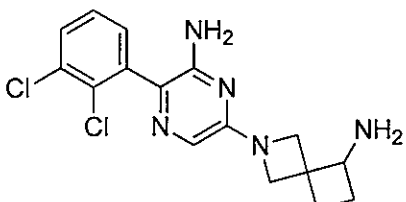
18. The compound of claim 17, or the pharmaceutically acceptable salt thereof, selected from:



19. The compound of claim 12 in which p and q are both 0; or the pharmaceutically acceptable salt thereof.

20. The compound of claim 19, or the pharmaceutically acceptable salt thereof, selected from:

	
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21. A pharmaceutical composition comprising a compound of claim 1 or a pharmaceutically acceptable salt thereof, and at least one pharmaceutically acceptable carrier.

22. The use of an effective amount of a compound of claim 1, or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for the prophylactic or therapeutic treatment of a disease or disorder which is mediated by the activity of SHP2.

23. The use of claim 22, wherein the disease or disorder mediated by the activity of SHP2 is selected from Noonan Syndrome, Leopard Syndrome, juvenile myelomonocytic leukemias, neuroblastoma, melanoma, acute myeloid leukemia, breast cancer, esophageal cancer, lung

cancer, colon cancer, head cancer, neuroblastoma, squamous-cell carcinoma of the head and neck, gastric carcinoma, anaplastic large-cell lymphoma and glioblastoma.