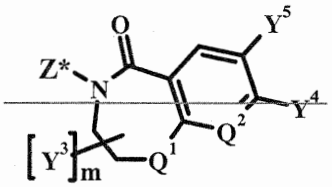
Claims

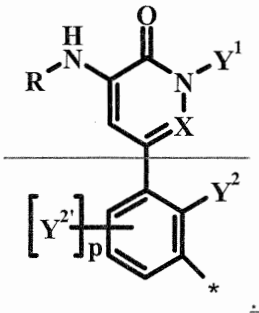
1. A compound of Formula A,



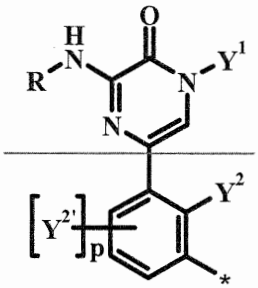
(A)

wherein:

Z* is selected from the group consisting of:



;



;

and wherein:

Q^1 is NH or O;

Q^2 is N or $C(Y^6)$;

R is H, R^1, R^1-R^2-R^3, R^1-R^3, or R^2-R^3;

R^1 is aryl, heteroaryl, cycloalkyl, or heterocycloalkyl, and is optionally substituted with one or more lower alkyl, hydroxy, hydroxy lower alkyl, lower alkoxy, halo, nitro, amino, amido, cyano, oxo, or halo-lower alkyl;

R^2 is C(=O), C(=O)O, $C(=O)NR^{2'}$, NHC(=O)O, $C(=NH)NR^{2'}$, or $S(=O)_2$;

$R^{2'}$ is H or lower alkyl;

R^3 is H or R^4;

R^4 is lower alkyl, amino, aryl, arylalkyl, alkylaryl, heteroaryl, alkyl heteroaryl, heteroaryl alkyl, cycloalkyl, alkyl cycloalkyl, cycloalkyl alkyl, heterocycloalkyl, alkyl heterocycloalkyl, or heterocycloalkyl alkyl, and is optionally substituted with one or more lower alkyl, hydroxy, lower alkoxy, hydroxy lower alkyl, hydroxy lower alkoxy, lower alkyl sulfonyl, lower alkyl sulfonamido, carbamate, carboxy, ester, amido, acyl, halo, nitro, amino, cyano, oxo, or halo-lower alkyl;

X is CH or N;

Y^1 is H, lower alkyl, or lower haloalkyl;

Y^2 is Y^{2a} or Y^{2b};

Y^{2a} is H or halogen;

Y^{2b} is lower alkoxy or lower alkyl, optionally substituted with one or more $Y^{2b'}$;

$Y^{2b'}$ is hydroxy or halogen;

each $Y^{2'}$ is independently $Y^{2'a}$ or $Y^{2'b}$;

$Y^{2'a}$ is halogen or hydroxy;

$Y^{2'b}$ is lower alkoxy or lower alkyl, optionally substituted with one or more $Y^{2'b'}$;

$Y^{2'b'}$ is hydroxy or halogen;

p is 0, 1, or 2;

Y^3 is Y^{3a} or Y^{3b};

Y^{3a} is halogen or hydroxy;

Y^{3b} is lower alkoxy or lower alkyl, optionally substituted with one or more substituents selected from the group consisting of hydroxy, lower alkoxy, amino, and halogen;

m is 0 or 1;

Y^4 is Y^{4a}, Y^{4b}, Y^{4c}, or Y^{4d};

Y^{4a} is hydroxy or halogen;

Y^{4b} is lower alkoxy or lower alkyl, optionally substituted with one or more substituents selected from the group consisting of lower haloalkyl, halogen, hydroxy, amino, cyano, and lower alkoxy;

Y^{4c} is lower cycloalkyl, optionally substituted with one or more substituents selected from the group consisting of lower alkyl, lower haloalkyl, halogen, hydroxy, amino, cyano, and lower alkoxy;

Y^{4d} is amino, optionally substituted with one or more lower alkyl, alkoxy lower alkyl, or hydroxy lower alkyl;

Y^5 is halogen, hydroxy, lower alkyl, lower alkoxy, lower haloalkoxy, lower hydroxyalkyl, or lower haloalkyl; and

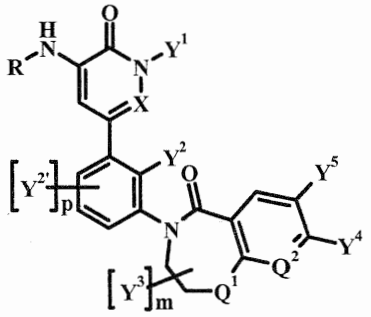
Y^6 is H, hydroxy, halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower thioalkyl, amino, or lower hydroxyalkyl;

or a pharmaceutically acceptable salt thereof.

2. A compound of Formula I according to claim 1,

Claims

1. A compound of Formula I,



I

wherein:

Q^1 is NH or O;

Q^2 is N or $C(Y^6)$;

R is H, $-R^1$, $-R^1-R^2-R^3$, $-R^1-R^3$, or $-R^2-R^3$;

R^1 is aryl, heteroaryl, cycloalkyl, or heterocycloalkyl, and is optionally substituted with one or more ~~lower~~ C_{1-6} alkyl, hydroxy, hydroxy C_{1-6} ~~lower~~ alkyl, C_{1-6} ~~lower~~ alkoxy, halo, nitro, amino, amido, cyano, oxo, or halo- C_{1-6} ~~lower~~ alkyl;

R^2 is $-C(=O)$, $-C(=O)O$, $-C(=O)NR^{2'}$, $-NHC(=O)O$, $-C(=NH)NR^{2'}$, or $-S(=O)_2$;

$R^{2'}$ is H or C_{1-6} ~~lower~~ alkyl;

R^3 is H or R^4;

R^4 is C_{1-6} ~~lower~~ alkyl, amino, aryl, arylalkyl, alkylaryl, heteroaryl, alkyl heteroaryl, heteroaryl alkyl, cycloalkyl, alkyl cycloalkyl, cycloalkyl alkyl, heterocycloalkyl, alkyl heterocycloalkyl, or heterocycloalkyl alkyl, and is optionally substituted with one or more C_{1-6} ~~lower~~ alkyl, hydroxy, C_{1-6} ~~lower~~ alkoxy, hydroxy C_{1-6} ~~lower~~ alkyl, hydroxy C_{1-6} ~~lower~~ alkoxy, C_{1-6} ~~lower~~ alkyl sulfonyl, C_{1-6} ~~lower~~ alkyl sulfonamido, carbamate, carboxy, ester, amido, acyl, halo, nitro, amino, cyano, oxo, or halo- C_{1-6} ~~lower~~ alkyl;

X is CH or N;

Y^1 is H, C_{1-6} ~~lower~~ alkyl, or C_{1-6} ~~lower~~ haloalkyl;

Y^2 is Y^{2a} or Y^{2b};

Y^{2a} is H or halogen;

Y^{2b} is C_{1-6} ~~lower~~ alkoxy or C_{1-6} ~~lower~~ alkyl, optionally substituted with one or more $Y^{2b'}$;

$Y^{2b'}$ is hydroxy or halogen;

each $Y^{2'}$ is independently $Y^{2'a}$ or $Y^{2'b}$;

$Y^{2'a}$ is halogen or hydroxy;

$Y^{2'b}$ is C_{1-6} ~~lower~~ alkoxy or C_{1-6} ~~lower~~ alkyl, optionally substituted with one or more $Y^{2'b'}$;

$Y^{2'b'}$ is hydroxy or halogen;

p is 0, 1, or 2;

Y^3 is Y^{3a} or Y^{3b};

Y^{3a} is halogen or hydroxy;

Y^{3b} is C_{1-6} ~~lower~~ alkoxy or C_{1-6} ~~lower~~ alkyl, optionally substituted with one or more substituents selected from the group consisting of hydroxy, C_{1-6} ~~lower~~ alkoxy, amino, and halogen;

m is 0 or 1;

Y^4 is Y^{4a}, Y^{4b}, Y^{4c}, or Y^{4d};

Y^{4a} is hydroxy or halogen;

Y^{4b} is C_{1-6} ~~lower~~ alkoxy or C_{1-6} ~~lower~~ alkyl, optionally substituted with one or more substituents selected from the group consisting of C_{1-6} ~~lower~~ haloalkyl, halogen, hydroxy, amino, cyano, and C_{1-6} ~~lower~~ alkoxy;

Y^{4c} is C_{3-6} ~~lower~~ cycloalkyl, optionally substituted with one or more substituents selected from the group consisting of C_{1-6} ~~lower~~ alkyl, C_{1-6} ~~lower~~ haloalkyl, halogen, hydroxy, amino, cyano, and C_{1-6} ~~lower~~ alkoxy;

Y^{4d} is amino, optionally substituted with one or more C_{1-6} ~~lower~~ alkyl, alkoxy C_{1-6} ~~lower~~ alkyl, or hydroxy C_{1-6} ~~lower~~ alkyl;

Y^5 is halogen, hydroxy, C_{1-6} ~~lower~~ alkyl, C_{1-6} ~~lower~~ alkoxy, C_{1-6} ~~lower~~ haloalkoxy, C_{1-6} ~~lower~~ hydroxyalkyl, or C_{1-6} ~~lower~~ haloalkyl; and

Y^6 is H, hydroxy, halogen, C_{1-6} ~~lower~~ alkyl, C_{1-6} ~~lower~~ haloalkyl, C_{1-6} ~~lower~~ alkoxy, C_{1-6} ~~lower~~ thioalkyl, amino, or C_{1-6} ~~lower~~ hydroxyalkyl;

or a pharmaceutically acceptable salt thereof.

~~3~~2. The compound of claim ~~2~~1, wherein Y^1 is methyl.

~~4~~3. The compound of claim ~~3~~2, wherein m is 0.

~~5~~4. The compound of claim ~~4~~3, wherein p is 0.

~~6~~5. The compound of claim ~~5~~4, wherein Y^2 is hydroxymethyl.

~~7~~6. The compound of claim ~~6~~5, wherein Y^4 is *tert*-butyl, dimethylamine, or cyclopropyl.

~~8~~7. The compound of claim ~~7~~6, wherein R is $-R^1-R^2-R^3$; R^1 is phenyl or pyridyl; R^2 is –C(=O); R^3 is R^4; and R^4 is morpholine or piperazine, optionally substituted with one or more C_{1-6} ~~lower~~ alkyl.

~~98~~. The compound of claim ~~87~~, wherein Y^5 is fluorine.

~~109~~. The compound of claim ~~7~~ 8 wherein X is CH.

~~1110~~. The compound of claim ~~109~~, wherein Q^1 is NH

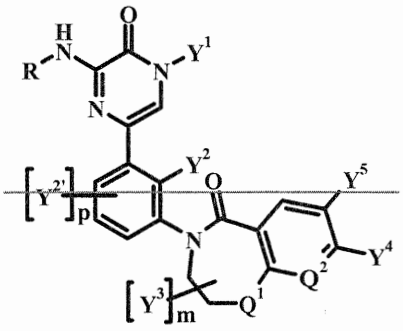
~~1211~~. The compound of claim ~~109~~, wherein Q^1 is O.

~~1312~~. The compound of claim ~~76~~, wherein X is N.

~~1413~~. The compound of claim ~~1312~~, wherein Q^1 is NH

~~1514~~. The compound of claim ~~1312~~, wherein Q^1 is O.

~~16. A compound of Formula II according to claim 1,~~



II

~~wherein:~~

~~Q^1 is NH or O;~~

~~Q^2 is N or C(Y^6);~~

~~R is H, R^1, R^1-R^2-R^3, R^1-R^3, or R^2-R^3;~~

~~R^1 is aryl, heteroaryl, cycloalkyl, or heterocycloalkyl, and is optionally substituted with one or more lower alkyl, hydroxy, hydroxy lower alkyl, lower alkoxy, halo, nitro, amino, amido, cyano, oxo, or halo-lower alkyl;~~

~~R^2 is C(=O), C(=O)O, C(=O)$NR^{2'}$, NHC(=O)O, C(=NH)$NR^{2'}$, or $S(=O)_2$;~~

~~$R^{2'}$ is H or lower alkyl;~~

~~R^3 is H or R^4;~~

~~R^4 is lower alkyl, amino, aryl, arylalkyl, alkylaryl, heteroaryl, alkyl heteroaryl, heteroaryl alkyl, cycloalkyl, alkyl cycloalkyl, cycloalkyl alkyl, heterocycloalkyl,~~

alkyl heterocycloalkyl, or heterocycloalkyl alkyl, and is optionally substituted with one or more lower alkyl, hydroxy, lower alkoxy, hydroxy lower alkyl, hydroxy lower alkoxy, lower alkyl sulfonyl, lower alkyl sulfonamido, carbamate, carboxy, ester, amido, acyl, halo, nitro, amino, cyano, oxo, or halo lower alkyl;

Y^1 is H, lower alkyl, or lower haloalkyl;

Y^2 is Y^{2a} or Y^{2b};

Y^{2a} is H or halogen;

Y^{2b} is lower alkoxy or lower alkyl, optionally substituted with one or more $Y^{2b'}$;

$Y^{2b'}$ is hydroxy or halogen;

each $Y^{2'}$ is independently $Y^{2'a}$ or $Y^{2'b}$;

$Y^{2'a}$ is halogen or hydroxy;

$Y^{2'b}$ is lower alkoxy or lower alkyl, optionally substituted with one or more $Y^{2'b'}$;

$Y^{2'b'}$ is hydroxy or halogen;

p is 0, 1, or 2;

Y^3 is Y^{3a} or Y^{3b};

Y^{3a} is halogen or hydroxy;

Y^{3b} is lower alkoxy or lower alkyl, optionally substituted with one or more substituents selected from the group consisting of hydroxy, lower alkoxy, amino, and halogen;

m is 0 or 1;

Y^4 is Y^{4a}, Y^{4b}, Y^{4c}, or Y^{4d};

Y^{4a} is hydroxy or halogen;

Y^{4b} is lower alkoxy or lower alkyl, optionally substituted with one or more substituents selected from the group consisting of lower haloalkyl, halogen, hydroxy, amino, cyano, and lower alkoxy;

Y^{4c} is lower cycloalkyl, optionally substituted with one or more substituents selected from the group consisting of lower alkyl, lower haloalkyl, halogen, hydroxy, amino, cyano, and lower alkoxy;

Y^{4d} is amino, optionally substituted with one or more lower alkyl, alkoxy lower alkyl, or hydroxy lower alkyl;

Y^5 is halogen, hydroxy, lower alkyl, lower alkoxy, lower haloalkoxy, lower hydroxyalkyl, or lower haloalkyl; and

Y^6 is H, hydroxy, halogen, lower alkyl, lower haloalkyl, lower alkoxy, lower thioalkyl, amino, or lower hydroxyalkyl;

~~or a pharmaceutically acceptable salt thereof.~~

~~17~~15. A pharmaceutical composition comprising the Btk inhibitor compound of any one of claims 1-~~16~~14, admixed with at least one pharmaceutically acceptable carrier, excipient or diluent.

~~18~~16. A compound of any one of claims 1-~~16~~14 for use in treating an inflammatory and/or autoimmune condition.