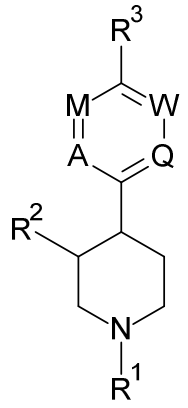
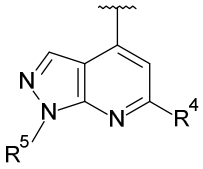
CLAIMS

1. A compound of formula (I),



(I),

wherein

R^1 is  ;wherein R^4 is H or $C_{1\text{-}6}$alkyl; R^5 is $C_{1\text{-}6}$alkyl;

R^2 is H or $C_{1\text{-}6}$alkyl;

R^3 is piperazinyl, ($C_{1\text{-}6}$alkoxy$C_{1\text{-}6}$alkyl)piperazinyl, 3,4,4a,5,7,7a-hexahydro-2H-pyrrolo[3,4-b][1,4]oxazinyl, 4,7-diazaspiro[2.5]octanyl, 5-oxa-2,8-diazaspiro[3.5]nonanyl, amino-1,4-oxazepanyl, amino($C_{1\text{-}6}$alkoxy)piperidinyl, amino($C_{1\text{-}6}$alkoxy)pyrrolidinyl, amino($C_{1\text{-}6}$alkyl)azetidinyl or aminohalopiperidinyl;

A is N or CR^6; wherein R^6 is H, $C_{1\text{-}6}$alkyl or $C_{1\text{-}6}$alkoxy;

M is N or CR^7; wherein R^7 is H or $C_{1\text{-}6}$alkyl;

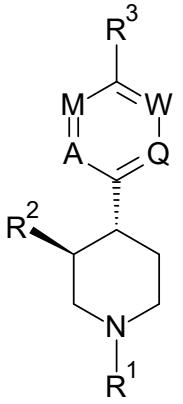
W is N or CH;

Q is N or CH;

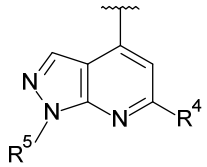
with the condition that no more than two of A, M, W and Q are N simultaneously;

or a pharmaceutically acceptable salt thereof.

2. A compound of formula (Ia),


(Ia),

wherein

R^1 is  ;wherein R^4 is H or $C_{1\text{-}6}$alkyl; R^5 is $C_{1\text{-}6}$alkyl;

R^2 is H or $C_{1\text{-}6}$alkyl;

R^3 is piperazinyl, ($C_{1\text{-}6}$alkoxy$C_{1\text{-}6}$alkyl)piperazinyl, 3,4,4a,5,7,7a-hexahydro-2H-pyrrolo[3,4-b][1,4]oxazinyl, 4,7-diazaspiro[2.5]octanyl, 5-oxa-2,8-diazaspiro[3.5]nonanyl, amino-1,4-oxazepanyl, amino($C_{1\text{-}6}$alkoxy)piperidinyl, amino($C_{1\text{-}6}$alkoxy)pyrrolidinyl, amino($C_{1\text{-}6}$alkyl)azetidinyl or aminohalopiperidinyl;

A is N or CR^6; wherein R^6 is H, $C_{1\text{-}6}$alkyl or $C_{1\text{-}6}$alkoxy;

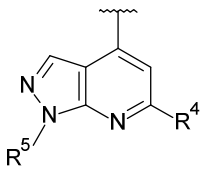
M is N or CR^7; wherein R^7 is H or $C_{1\text{-}6}$alkyl;

W is N or CH;

Q is N or CH;

with the condition that no more than two of A, M, W and Q are N simultaneously;

or a pharmaceutically acceptable salt thereof.

3. A compound according to claim 1 or 2, wherein R^1 is  ;wherein R^4 is $C_{1\text{-}6}$alkyl; R^5 is $C_{1\text{-}6}$alkyl.

4. A compound according to claims 3, wherein R^4 is methyl; R^5 is methyl.

5. A compound according to claim 3, wherein A is CR^6; wherein R^6 is H or C_{1-6}alkyl.

6. A compound according to claim 5, wherein A is CR^6; wherein R^6 is H or methyl.

7. A compound according to claim 5, wherein M is CR^7; wherein R^7 is H.

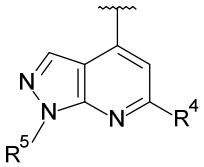
8. A compound according to claim 7, wherein W is CH.

9. A compound according to claim 8, wherein Q is N.

10. A compound according to claim 9, wherein R^3 is amino-1,4-oxazepanyl, amino(C_{1-6}alkoxy)pyrrolidinyl or piperazinyl.

11. A compound according to claim 10, wherein R^3 is 6-amino-1,4-oxazepan-4-yl, 3-amino-4-methoxy-pyrrolidin-1-yl or piperazin-1-yl.

12. A compound according to claim 1 or 2, wherein

R^1 is  ;wherein R^4 is C_{1-6}alkyl; R^5 is C_{1-6}alkyl;

R^2 is H or C_{1-6}alkyl;

R^3 is amino-1,4-oxazepanyl, amino(C_{1-6}alkoxy)pyrrolidinyl or piperazinyl;

A is CR^6; wherein R^6 is H or C_{1-6}alkyl;

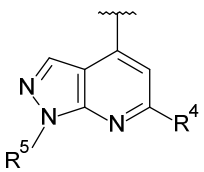
M is CR^7; wherein R^7 is H;

W is CH;

Q is N;

or a pharmaceutically acceptable salt thereof.

13. A compound according to claim 13, wherein

R^1 is  ;wherein R^4 is methyl; R^5 is methyl;

R^2 is H or methyl;

R^3 is 6-amino-1,4-oxazepan-4-yl, 3-amino-4-methoxy-pyrrolidin-1-yl or piperazin-1-yl;

A is CR^6; wherein R^6 is H or methyl;

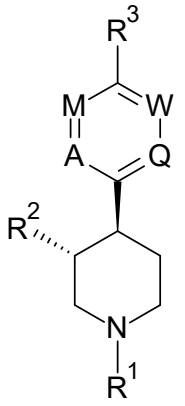
M is CR^7; wherein R^7 is H;

W is CH;

Q is N;

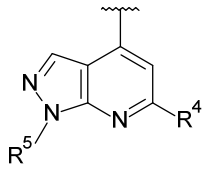
or a pharmaceutically acceptable salt thereof.

14. A compound of formula (Ib),



(Ib),

wherein

R^1 is 

;wherein R^4 is $C_{1\text{-}6}$alkyl; R^5 is $C_{1\text{-}6}$alkyl;

R^2 is $C_{1\text{-}6}$alkyl;

R^3 is piperazinyl, ($C_{1\text{-}6}$alkoxy$C_{1\text{-}6}$alkyl)piperazinyl, 4,7-diazaspiro[2.5]octanyl, 5-oxa-2,8-diazaspiro[3.5]nonanyl, amino-1,4-oxazepanyl, amino($C_{1\text{-}6}$alkoxy)piperidinyl, amino($C_{1\text{-}6}$alkoxy)pyrrolidinyl, amino($C_{1\text{-}6}$alkyl)azetidinyl or aminohalopiperidinyl;

A is CH;

M is CH;

W is CH;

Q is N;

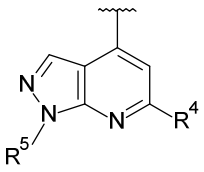
or a pharmaceutically acceptable salt thereof.

15. A compound according to claims 14, wherein R^4 is methyl; R^5 is methyl; R^2 is methyl.

16. A compound according to claim 14 or 15, wherein R^3 is amino-1,4-oxazepanyl.

17. A compound according to any one of claims 14 to 16, wherein R^3 is 6-amino-1,4-oxazepan-4-yl.

18. A compound according to claim 14, wherein

R^1 is  ;wherein R^4 is $C_{1\text{-}6}$alkyl; R^5 is $C_{1\text{-}6}$alkyl;

R^2 is $C_{1\text{-}6}$alkyl;

R^3 is amino-1,4-oxazepanyl;

A is CH;

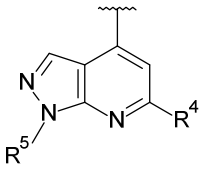
M is CH;

W is CH;

Q is N;

or a pharmaceutically acceptable salt thereof.

19. A compound according to claim 18, wherein

R^1 is  ;wherein R^4 is methyl; R^5 is methyl;

R^2 is methyl;

R^3 is 6-amino-1,4-oxazepan-4-yl;

A is CH;

M is CH;

W is CH;

Q is N;

or a pharmaceutically acceptable salt thereof.

20. A compound selected from:

1,6-dimethyl-4-[4-(4-piperazin-1-ylphenyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(5-piperazin-1-ylpyrazin-2-yl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(5-piperazin-1-ylpyrimidin-2-yl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1-methyl-4-[4-(3-methyl-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1-methyl-4-[4-(4-methyl-6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(3-methyl-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(4-methyl-6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(4-methyl-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(2-methyl-6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(4-methyl-2-piperazin-1-yl-pyrimidin-5-yl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[4-(3-methyl-5-piperazin-1-yl-pyrazin-2-yl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

4-[4-(3-ethyl-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine;

4-[4-(3-methoxy-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine;

(3*S*,4*R*)-1-[6-[1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-4-piperidyl]-5-methyl-3-pyridyl]-3-fluoro-piperidin-4-amine;

4-[4-[5-[(3*R*)-3-(methoxymethyl)piperazin-1-yl]-3-methyl-2-pyridyl]-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine;

(3*S*,4*S*)-1-[6-[1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-4-piperidyl]-5-methyl-3-pyridyl]-3-methoxy-piperidin-4-amine;

1-methyl-4-[*cis*-3-methyl-4-(6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1-methyl-4-[*trans*-3-methyl-4-(6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[*cis*-3-methyl-4-(4-methyl-6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[*trans*-3-methyl-4-(4-methyl-6-piperazin-1-yl-3-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[*cis*-3-methyl-4-(3-methyl-5-piperazin-1-yl-pyrazin-2-yl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[*trans*-3-methyl-4-(3-methyl-5-piperazin-1-yl-pyrazin-2-yl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[*cis*-3-methyl-4-(3-methyl-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[*trans*-3-methyl-4-(3-methyl-5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

(3*R*,4*R*)-1-[6-[(3*S*,4*R*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-5-methyl-3-pyridyl]-4-methoxy-pyrrolidin-3-amine;

2-[6-[(3*S*,4*R*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-5-methyl-3-pyridyl]-5-oxa-2,8-diazaspiro[3.5]nonane;

(6*S*)-4-[6-[(3*S*,4*R*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-5-methyl-3-pyridyl]-1,4-oxazepan-6-amine;

4-[(3*S*,4*R*)-4-[5-[(3*R*)-3-(methoxymethyl)piperazin-1-yl]-3-methyl-2-pyridyl]-3-methyl-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine;

4-[(3*S*,4*R*)-4-[5-(4,7-diazaspiro[2.5]octan-7-yl)-3-methyl-2-pyridyl]-3-methyl-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine;

(3*R*,4*R*)-1-[6-[(3*S*,4*R*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-5-methyl-3-pyridyl]-3-fluoro-piperidin-4-amine;

1-[6-[(3*S*,4*R*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-5-methyl-3-pyridyl]-3-methyl-azetidin-3-amine;

(4*aR*,7*aR*)-6-[6-[(3*S*,4*R*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-5-methyl-3-pyridyl]-3,4,4a,5,7,7a-hexahydro-2H-pyrrolo[3,4-b][1,4]oxazine;

1,6-dimethyl-4-[(3*R*,4*S*)-3-methyl-4-(5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

1,6-dimethyl-4-[(3*S*,4*R*)-3-methyl-4-(5-piperazin-1-yl-2-pyridyl)-1-piperidyl]pyrazolo[3,4-b]pyridine;

(3*R*,4*R*)-1-[6-[(3*R*,4*S*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-3-pyridyl]-4-methoxy-pyrrolidin-3-amine;

4-[(3*R*,4*S*)-4-[5-[(3*R*)-3-(methoxymethyl)piperazin-1-yl]-2-pyridyl]-3-methyl-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine;

2-[6-[(3*R*,4*S*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-3-pyridyl]-5-oxa-2,8-diazaspiro[3.5]nonane;

(3*S*,4*S*)-1-[6-[(3*R*,4*S*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-3-pyridyl]-3-methoxy-piperidin-4-amine;

(6*S*)-4-[6-[(3*R*,4*S*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-3-pyridyl]-1,4-oxazepan-6-amine;

(3*R*,4*R*)-1-[6-[(3*R*,4*S*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-3-pyridyl]-3-fluoro-piperidin-4-amine;

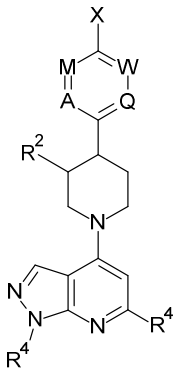
4-[(3*R*,4*S*)-4-[5-(4,7-diazaspiro[2.5]octan-7-yl)-2-pyridyl]-3-methyl-1-piperidyl]-1,6-dimethyl-pyrazolo[3,4-b]pyridine; and

1-[6-[(3*R*,4*S*)-1-(1,6-dimethylpyrazolo[3,4-b]pyridin-4-yl)-3-methyl-4-piperidyl]-3-pyridyl]-3-methyl-azetidin-3-amine;

or a pharmaceutically acceptable salt thereof.

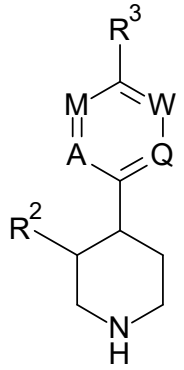
21. A process for the preparation of a compound according to any one of claims 1 to 20 comprising the following step:

a) the Buchwald-Hartwig C-N bond formation reaction between compound of formula (IV),

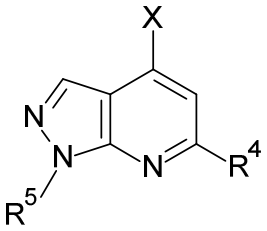


(IV), and R^3-H , in the presence of a catalyst and a base;

b) the Buchwald-Hartwig C-N bond formation reaction between compound of formula



(VI), (VI), and compound of formula (II),



(II), in the presence of a catalyst and a base;

c) the direct substation reaction between compound of formula (VI) and compound of formula (II) at in the presence of a base;

wherein

X is halogen;

in step a) and b), the catalyst is RuPhos Pd G2 or $Pd_2(dba)_3$/XantPhos; the base is Cs_2CO_3 or *t*-BuONa;

in step c), the base is DIPEA or CsF;

wherein R^1 to R^5, A, M, W and Q are defined as in any one of claims 1 to 19.

22. A compound or pharmaceutically acceptable salt according to any one of claims 1 to 20 for use as therapeutically active substance.

23. A pharmaceutical composition comprising a compound in accordance with any one of claims 1 to 20 and a therapeutically inert carrier.

24. The use of a compound according to any one of claims 1 to 20 for the treatment or prophylaxis of systemic lupus erythematosus or lupus nephritis.

25. The use of a compound according to any one of claims 1 to 20 for the preparation of a medicament for the treatment or prophylaxis of systemic lupus erythematosus or lupus nephritis.

26. The use of a compound according to any one of claims 1 to 20 for the preparation of a medicament for TLR7 and TLR8 and TLR9 antagonist.

27. A compound or pharmaceutically acceptable salt according to any one of claims 1 to 20 for the treatment or prophylaxis of systemic lupus erythematosus or lupus nephritis.

28. A compound or pharmaceutically acceptable salt according to any one of claims 1 to 20, when manufactured according to a process of claim 21.

29. A method for the treatment or prophylaxis of systemic lupus erythematosus or lupus nephritis, which method comprises administering a therapeutically effective amount of a compound as defined in any one of claims 1 to 20.