

R^a and R^b are independently of each other selected from the group consisting of hydrogen, C₁-C₆-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylcarbonyl and C₁-C₄-haloalkylcarbonyl;
 or R^a and R^b form, together with the nitrogen atom to which they are bonded, a 3-, 4-, 5-, 6- or 7-membered saturated or unsaturated aromatic or non-aromatic N-heterocyclic ring, which may contain 1 further heteroatom or heteroatom containing group selected from the group consisting of O, S, SO, SO₂ and N as a ring member.

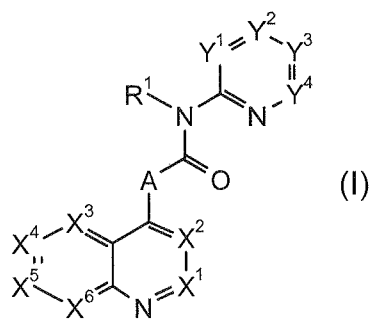
Thus, the present invention relates to compounds of the formula I as defined herein and in the claims, to the stereoisomers, tautomers, prodrugs and/or physiologically tolerated acid addition salts thereof, and also to compounds of the general formula I, wherein at least one of the atoms has been replaced by its stable, non-radioactive isotope.

According to a further aspect, the present invention relates to a pharmaceutical composition comprising at least one compound of the formula I as defined herein, a stereoisomer, a tautomer, a prodrug and/or a physiologically tolerated acid addition salt thereof or comprising at least one heterocyclic compound as defined above, wherein at least one of the atoms has been replaced by its stable, non-radioactive isotope, optionally together with at least one physiologically acceptable carrier and/or auxiliary substance.

According to a further aspect, the present invention relates to the use of at least one compound of the formula I as defined herein, the stereoisomers, tautomers, prodrugs and/or physiologically tolerated acid addition salts thereof, for the preparation of a medicament for the treatment of a medical disorder susceptible to treatment with a compound that modulates glycogen synthase kinase 3 β activity.

According to a further aspect, the present invention relates to a method for treating a medical disorder susceptible to treatment with a compound that modulates glycogen synthase kinase 3 β activity, said method comprising administering an effective amount of at least one compound of the formula I as defined herein, a stereoisomer, a tautomer, a prodrug and/or a physiologically tolerated acid addition salt thereof, to a subject in need thereof.

According to a further aspect, the present invention relates to a heterocyclic compound of the formula (I)



the stereoisomers, N-oxides, prodrugs, tautomers and/or physiologically tolerated acid addition salts thereof, and the compounds of the general formula I, wherein at least one of the atoms has been replaced by its stable, non-radioactive isotope, wherein

A is NR^B; where

R^B is selected from hydrogen, C₁-C₄-alkyl and C₁-C₄-haloalkyl;

X¹ and X² are independently of each other selected from the group consisting of CR² and N;

X³, X⁴, X⁵ and X⁶ are independently of each other selected from the group consisting of CR³, CR⁴ and N;

with the proviso that no more than two of X³, X⁴, X⁵ and X⁶ are CR⁴;

Y¹, Y², Y³ and Y⁴ are independently of each other selected from the group consisting of CR⁴, CR⁵ and N;

with the proviso that at most one of Y¹, Y², Y³ and Y⁴ is N and with the proviso that at most one of Y¹, Y², Y³ and Y⁴ is CR⁴; and

with the proviso that one of Y¹, Y², Y³ and Y⁴ is CR⁴ or C-CF₃ if none of X³,

X⁴, X⁵ and X⁶ is CR⁴;

R¹ is hydrogen;

each R² is hydrogen;

each R³ is independently selected from the group consisting of hydrogen, CN,

OH, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-

halocycloalkyl, C₂-C₄-alkenyl, C₂-C₄-haloalkenyl, C₁-C₆-alkoxy and C₁-C₆-

haloalkoxy;

R⁴ is a C-bound saturated or partially unsaturated monocyclic 5- or 6-

membered heterocyclic ring containing 1, 2 or 3 heteroatoms or heteroa-

tom-containing groups selected from O and N as ring members, where the

heterocyclic ring optionally carries 1, 2 or 3 C- or N-bound substituents R⁸;

R⁵ is selected from the group consisting of hydrogen, CN, OH, halogen, C₁-C₆-

alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-halocycloalkyl, C₂-C₄-alkenyl,

C₂-C₄-haloalkenyl, C₁-C₆-alkoxy and C₁-C₆-haloalkoxy; and

R⁸ independently of each occurrence, is selected from the group consisting of

CN, OH, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-

halocycloalkyl, C₂-C₄-alkenyl, C₂-C₄-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-

haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-

alkoxycarbonyl and C₁-C₆-haloalkoxycarbonyl;

where the prodrugs are selected from compounds of formula I, wherein a secondary

nitrogen ring atom of the ring R⁴ or a nitrogen atom of a primary or secondary

amino group being a substituent R², R³, R⁵, R⁶, R⁷ and/or R⁸ forms an am-

ide/peptide bond in that this nitrogen atom is substituted by a C₁-C₄-alkylcarbonyl

group, by benzoyl, or by glycine, alanine, serine or phenylalanine bonded via CO; or
said nitrogen atom carries a group -C(=O)-O-CHR^x-O-C(=O)-R^y, wherein R^x and
R^y independently of each other are C₁-C₄-alkyl.

According to a further aspect, the present invention relates to a heterocyclic
compound selected from the group consisting of

1-(6-(3,6-dihydro-2H-pyran-4-yl)pyridin-2-yl)-3-(8-fluoroquinolin-4-yl)urea,

1-(8-fluoroquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea,

1-(6-(3,4-dihydro-2H-pyran-5-yl)pyridin-2-yl)-3-(8-fluoroquinolin-4-yl)urea,

1-(6-(3,6-dihydro-2H-pyran-4-yl)pyridin-2-yl)-3-(7-methoxyquinolin-4-yl)urea,

1-(6-(3,4-dihydro-2H-pyran-5-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(7-(3,6-dihydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(6-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea,

1-(7-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(6-(tetrahydro-2H-pyran-3-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(7-(3,6-dihydro-2H-pyran-4-yl)quinolin-4-yl)-3-(pyrazin-2-yl)urea,

1-(6-(3,4-dihydro-2H-pyran-5-yl)pyridin-2-yl)-3-(7-methoxyquinolin-4-yl)urea,

1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-3-yl)pyridin-2-yl)urea,

1-(pyrazin-2-yl)-3-(7-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)urea,

1-(7-(3,4-dihydro-2H-pyran-5-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(6-bromo-quinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(6-(trifluoromethyl)pyridin-2-yl)-3-quinolin-4-yl-urea,

1-(6,8-difluoroquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(7-bromoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(7-trifluoromethylquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(7-methoxyquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(8-trifluoromethylquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(8-cyanoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(8-iodoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(8-cyanoquinolin-4-yl)-3-pyrazin-2-yl-urea,

1-(7-methoxyquinolin-4-yl)-3-pyrazin-2-yl-urea,

tert-butyl 4-{4-[3-(6-trifluoromethyl-pyridin-2-yl)-ureido]-quinolin-6-yl}-3,6-dihydro-
2H-pyridine-1-carboxylate,

1-[6-(1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-
yl)-urea,

1-(6-(piperidin-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)urea,

1-[6-(1-methyl-1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-
pyridin-2-yl)-urea,

1-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-{6-[1-(2-fluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl}-3-(6-trifluoromethyl-pyridin-2-
yl)-urea,

1-[6-[1-(2,2-difluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-[6-(3,6-dihydro-2H-pyran-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-[6-(3,6-dihydro-2H-pyran-4-yl)-quinolin-4-yl]-3-pyrazin-2-yl-urea,

tert-butyl 4-[4-(3-pyrazin-2-ylureido)quinolin-6-yl]-5,6-dihydropyridine-1(2H)-carboxylate,

1-pyrazin-2-yl-3-[6-(1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-urea,

1-(6-piperidin-4-yl-quinolin-4-yl)-3-pyrazin-2-yl-urea,

1-[6-[1-(2-fluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl]-3-pyrazin-2-yl-urea,

1-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-3-pyrazin-2-yl-urea,

tert-butyl 4-[4-[3-(6-cyclopropyl-pyrazin-2-yl)-ureido]-quinolin-6-yl]-3,6-dihydro-2H-pyridine-1-carboxylate,

tert-butyl 4-[4-[3-(6-cyclopropyl-pyrazin-2-yl)-ureido]-quinolin-6-yl]-piperidine-1-carboxylate,

1-(6-cyclopropyl-pyrazin-2-yl)-3-(6-piperidin-4-yl-quinolin-4-yl)-urea,

1-(6-cyclopropyl-pyrazin-2-yl)-3-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-urea,

tert-butyl 3-[4-[3-(6-Trifluoromethyl-pyridin-2-yl)-ureido]-quinolin-6-yl]-2,5-dihydro-pyrrole-1-carboxylate,

1-[6-(2,5-dihydro-1H-pyrrol-3-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-[6-(3,6-dihydro-2H-pyran-4-yl)-pyridin-2-yl]-3-(8-fluoro-quinolin-4-yl)-urea,

1-(8-fluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-(8-chloro-6-methyl-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-(6,8-dichloro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-(6,8-difluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-(8-chloro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-[1,5]naphthyridin-4-yl-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-(5,8-difluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-(8-fluoro-6-methoxy-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

1-[6-(5,6-dihydro-4H-pyran-3-yl)-pyridin-2-yl]-3-(8-fluoro-quinolin-4-yl)-urea,

1-(8-fluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-3-yl)-pyridin-2-yl]-urea,

1-[6-(3,6-dihydro-2H-pyran-4-yl)-pyridin-2-yl]-3-[1,5]naphthyridin-4-yl-urea,

tert-butyl-6-[3-(8-fluoro-quinolin-4-yl)-ureido]-3',6'-dihydro-2'H-[2,4']bipyridinyl-1'-
carboxylate,

1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',6'-tetrahydro-[2,4']bipyridinyl-6-yl)-urea,

tert-butyl-6-[3-(8-fluoro-quinolin-4-yl)-ureido]-3',4',5',6'-tetrahydro-2'H-

[2,4']bipyridinyl-1'-carboxylate,

1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl)-urea,

1-(8-fluoro-quinolin-4-yl)-3-(1'-methyl-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-
yl)-urea,

1-[1'-(2-fluoro-ethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-fluoro-
quinolin-4-yl)-urea,

1-[1'-(2,2-difluoro-ethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-fluoro-
quinolin-4-yl)-urea,

1-(8-fluoro-quinolin-4-yl)-3-(1'-isopropyl-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-
6-yl)-urea,

1-(8-fluoro-quinolin-4-yl)-3-[5-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

tert-butyl-3-[4-(3-pyrazin-2-yl-ureido)-quinolin-6-yl]-2,5-dihydro-pyrrole-1-

carboxylate,

tert-butyl-3-[4-(3-pyrazin-2-yl-ureido)-quinolin-6-yl]-pyrrolidine-1-carboxylate,

1-pyrazin-2-yl-3-(6-pyrrolidin-3-yl-quinolin-4-yl)-urea,

the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid addition salts thereof.

According to a further aspect, the present invention relates to a pharmaceutical composition comprising at least one heterocyclic compound as defined herein, a stereoisomer, N-oxide, prodrug, tautomer and/or physiologically tolerated acid addition salt thereof or comprising at least one heterocyclic compound as defined herein wherein at least one of the atoms has been replaced by its stable, non-radioactive isotope, preferably wherein at least one hydrogen atom has been replaced by a deuterium atom, and at least one physiologically acceptable carrier and/or auxiliary substance.

According to a further aspect, the present invention relates to the heterocyclic compounds as defined herein or the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid addition salts thereof for use as a medicament.

According to a further aspect, the present invention relates to the heterocyclic compounds as defined herein or the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid addition salts thereof for use in the treatment of a neurodegenerative disorder or an inflammatory disorder.

According to a further aspect, the present invention relates to the use of the heterocyclic compound as defined herein or of a stereoisomer, N-oxide, prodrug, tautomer or physiologically tolerated acid addition salt thereof for the preparation of a medicament for the treatment of a neurodegenerative disorder or an inflammatory disorder.

Detailed description of the invention

$$\begin{array}{c}
 \text{Y}^1 = \text{Y}^2 \\
 \text{Y}^3 \\
 \text{Y}^4 \\
 \text{R}^1 - \text{N} = \text{N} \\
 \text{C} = \text{O} \\
 \text{A} \\
 \text{X}^3 \\
 \text{X}^2 \\
 \text{X}^1 \\
 \text{X}^6 \\
 \text{X}^5 \\
 \text{X}^4
 \end{array}
 \quad (I)$$

with the proviso that at most one of Y^1, Y^2, Y^3 and Y^4 is N and with the proviso that at most one of Y^1, Y^2, Y^3 and Y^4 is CR^4 ; and

with the proviso that one of Y¹, Y², Y³ and Y⁴ is CR⁴ or C-CF₃ if none of X³, X⁴, X⁵ and X⁶ is CR⁴;

R¹ is selected from hydrogen, C₁-C₄-alkyl and C₁-C₄-haloalkyl;

each R² is independently selected from the group consisting of hydrogen, OH, halogen, CN, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy and NR^aR^b;

or two radicals R² bonded at the carbon atoms of groups X¹ and X², together with the carbon atoms to which they are bonded, form a 5- or 6-membered saturated or unsaturated ring which may contain 1 or 2 heteroatoms as ring members selected from the group consisting of N, O and S and which optionally carries 1, 2 or 3 substituents R⁶;

each R³ is independently selected from the group consisting of hydrogen, CN, NR^aR^b, OH, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-halocycloalkyl, C₂-C₄-alkenyl, C₂-C₄-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl, C₁-C₆-haloalkoxycarbonyl, C₁-C₆-alkyl-NR^aR^b and an aromatic radical Ar, which is selected from the group consisting of phenyl and a 5- or 6-membered N- or C-bound heteroaromatic radical comprising one nitrogen atom and optionally 1, 2 or 3 further heteroatoms independently selected from O, S and N as ring members, wherein Ar is unsubstituted or carries one or two radicals R⁷ and wherein Ar may also be bonded via a CH₂ group;

R⁴ is a C-bound saturated or partially unsaturated monocyclic 3-, 4-, 5-, 6- or 7-membered heterocyclic ring containing 1, 2 or 3 heteroatoms or heteroatom-containing groups selected from O, N, S, NO, SO and SO₂ as ring members, where the heterocyclic ring optionally carries 1, 2 or 3 C- or N-bound substituents R⁸;

R⁵ is selected from the group consisting of hydrogen, CN, NR^aR^b, OH, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-halocycloalkyl, C₂-C₄-alkenyl, C₂-C₄-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl, C₁-C₆-haloalkoxycarbonyl, C₁-C₆-alkyl-NR^aR^b and an aromatic radical Ar, which is selected from the group consisting of phenyl and a 5- or 6-membered N- or C-bound heteroaromatic radical comprising one nitrogen atom and option-

ally 1, 2 or 3 further heteroatoms independently selected from O, S and N as ring members, wherein Ar is unsubstituted or carries one or two radicals R⁷ and wherein Ar may also be bonded via a CH₂ group;

5 R⁶ and R⁸, independently of each other and independently of each occurrence, are selected from the group consisting of CN, NR^aR^b, OH, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-halocycloalkyl, C₂-C₄-alkenyl, C₂-C₄-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl, C₁-C₆-haloalkoxycarbonyl, C₁-C₆-alkyl-NR^aR^b and an aromatic radical Ar, which is
10 selected from the group consisting of phenyl and a 5- or 6-membered N- or C-bound heteroaromatic radical comprising one nitrogen atom and optionally 1, 2 or 3 further heteroatoms independently selected from O, S and N as ring members, wherein Ar is unsubstituted or carries one or two radicals R⁷ and wherein Ar may also be bonded via a CH₂ group;

each R⁷ is independently selected from the group consisting of halogen, CN, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₆-cycloalkyl, C₃-C₆-halocycloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, NR^aR^b, a phenyl group and a 5- or 6-membered heteroaromatic radical comprising one nitrogen atom and optionally 1, 2 or 3 further heteroatoms independently selected from O, S and N as ring members, wherein phenyl and the heteroaromatic radical are, independently of each other, unsubstituted or substituted by 1, 2, 3 or 4 radicals selected from halogen, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy and C₁-C₄-haloalkoxy; and
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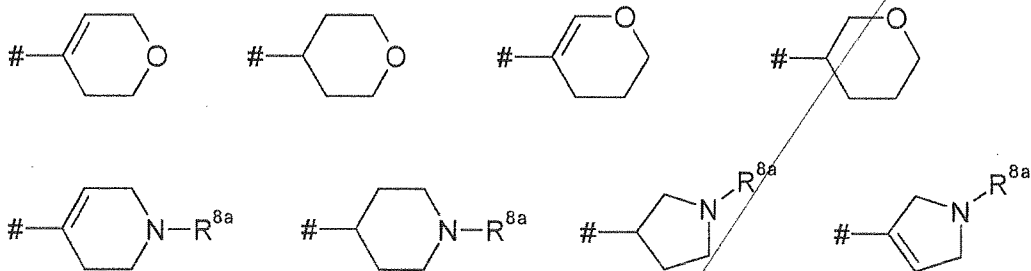
R^a and R^b are independently of each other selected from the group consisting of hydrogen, C₁-C₆-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, C₁-C₄-alkylcarbonyl and C₁-C₄-haloalkylcarbonyl;
30 or R^a and R^b form, together with the nitrogen atom to which they are bonded, a 3-, 4-, 5-, 6- or 7-membered saturated or unsaturated aromatic or non-aromatic N-heterocyclic ring, which may contain 1 further heteroatom or heteroatom containing group selected from the group consisting of O, S, SO, SO₂ and N as a ring member.

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2. The heterocyclic compound according to claim 1, wherein either one of X³, X⁴, X⁵ and X⁶ is CR⁴ and none of Y¹, Y², Y³ and Y⁴ is CR⁴, or one of Y¹, Y², Y³ and Y⁴ is CR⁴ and none of X³, X⁴, X⁵ and X⁶ is CR⁴.

3. The heterocyclic compound according to claim 1, wherein one of Y¹, Y², Y³ and Y⁴ is CR⁴ if none of X³, X⁴, X⁵ and X⁶ is CR⁴.
4. The heterocyclic compound according to claim 1, wherein one of Y¹, Y², Y³ and Y⁴ is C-CF₃ if none of X³, X⁴, X⁵ and X⁶ is CR⁴.
5. The heterocyclic compound according to any of the preceding claims, where R⁴ is selected from a C-bound saturated or partially unsaturated monocyclic 4-, 5- or 6-membered heterocyclic ring containing 1 or 2 or 3 heteroatoms selected from O, N, S and SO, as ring members, where the heterocyclic ring optionally carries 1, 2 or 3 substituents R⁸.
6. The heterocyclic compound according to claim 5, where R⁴ is selected from C-bound oxetanyl, thietanyl, azetidiny, tetrahydrofuranyl, tetrahydrothienyl, tetrahydrothienyl-1-oxide, pyrrolidinyl, pyrrolinyl, pyrazolidinyl, pyrazolinyl, imidazolidinyl, imidazoliny, tetrahydropyranyl, dihydropyranyl, piperidinyl, tetrahydropyridinyl, dihydropyridinyl, piperazinyl and morpholinyl, where the heterocyclic ring optionally carries 1, 2 or 3 substituents R⁸.
7. The heterocyclic compound according to claim 6, where R⁴ is selected from C-bound oxetanyl, azetidiny, tetrahydrofuranyl, tetrahydrothienyl, tetrahydrothienyl-1-oxide, pyrrolidinyl, pyrrolinyl, tetrahydropyranyl, dihydropyranyl, piperidinyl, tetrahydropyridinyl, dihydropyridinyl, piperazinyl and morpholinyl, where the heterocyclic ring optionally carries 1, 2 or 3 substituents R⁸.
8. The heterocyclic compound according to claim 7, where R⁴ is selected from azetidin-3-yl, tetrahydrofuran-3-yl, pyrrolidin-3-yl, pyrrolin-3-yl, tetrahydropyran-4-yl, tetrahydropyran-3-yl, dihydropyran-4-yl, dihydropyran-3-yl, piperidin-4-yl, 1,2,5,6-tetrahydropyridin-4-yl and 1,2-dihydropyridin-4-yl, where the heterocyclic ring optionally carries 1, 2 or 3 substituents R⁸.
9. The heterocyclic compound according to any of the preceding claims, where R⁸ is selected from C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-halocycloalkyl, C₂-C₄-alkenyl, C₂-C₄-haloalkenyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl, C₁-C₆-haloalkoxycarbonyl and benzyl and is preferably C₁-C₆-alkyl, C₁-C₆-haloalkyl or C₁-C₆-alkoxycarbonyl.

10. The heterocyclic compound according to any of the preceding claims, where R^8 is N-bound.

11. The heterocyclic compound according to any of the preceding claims, where R^4 is selected from following structures:



where

R^{8a} is hydrogen or has one of the meanings given in claims 1 or 9 for R^8 ; and

is the attachment point to the remainder of the molecule.

12. The heterocyclic compound according to any of the preceding claims, where at most one of X^1 , X^2 , X^3 , X^4 , X^5 and X^6 is N.

13. The heterocyclic compound according to claim 12, where X^1 and X^2 are CR^2 and X^3 , X^4 , X^5 and X^6 are CR^3 or CR^4 , or where X^1 and X^2 are CR^2 , X^3 is N and X^4 , X^5 and X^6 are CR^3 or CR^4 .

14. The heterocyclic compound according to any of the preceding claims, where Y^1 , Y^2 , Y^3 and Y^4 are CR^4 or CR^5 or Y^2 is N and Y^1 , Y^3 and Y^4 are CR^4 or CR^5 .

15. The heterocyclic compound according to any of the preceding claims, where A is NR^B , preferably NH.

16. The heterocyclic compound according to any of the preceding claims, where R^1 is hydrogen or methyl, preferably hydrogen.

17. The heterocyclic compound according to any of the preceding claims, where R^2 is hydrogen.

18. The heterocyclic compound according to any of the preceding claims, where R^3 is selected from hydrogen, CN, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_7 -

cycloalkyl, C₃-C₇-halocycloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl and C₁-C₆-haloalkoxycarbonyl and is preferably selected from hydrogen, CN, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy and C₁-C₆-haloalkoxy.

5

19. The heterocyclic compound according to any of the preceding claims, where 0, 1 or 2 of the radicals R³ are different from hydrogen.

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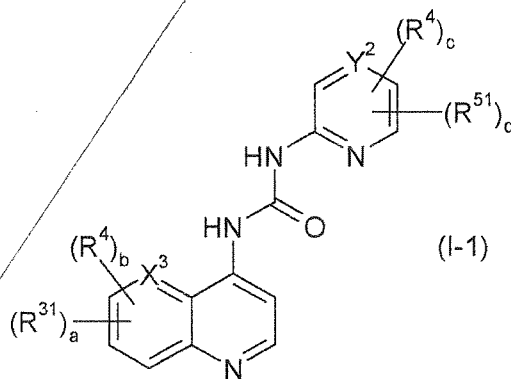
20. The heterocyclic compound according to any of the preceding claims, where R⁵ is selected from hydrogen, CN, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₃-C₇-cycloalkyl, C₃-C₇-halocycloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, formyl, C₁-C₆-alkylcarbonyl, C₁-C₆-haloalkylcarbonyl, C₁-C₆-alkoxycarbonyl and C₁-C₆-haloalkoxycarbonyl and is preferably selected from hydrogen, halogen, C₁-C₄-haloalkyl, C₃-C₇-cycloalkyl and C₃-C₇-halocycloalkyl and in particular from hydrogen, fluorinated C₁-C₂-alkyl and C₃-C₆-cycloalkyl.

15

21. The heterocyclic compound according to any of the preceding claims, where at most one of the radicals R⁵ is different from hydrogen.

20

22. The heterocyclic compound according to any of the preceding claims, of formula I-1



where

25

X³ is N or CH;

Y² is N or CH;

R³¹ has one of the meanings given in claims 1, 18 or 19 for R³ except for hydrogen, and is preferably halogen, C₁-C₄-alkyl or C₁-C₄-alkoxy;

R⁴ has one of the meanings given in claims 1 or 5 to 11;

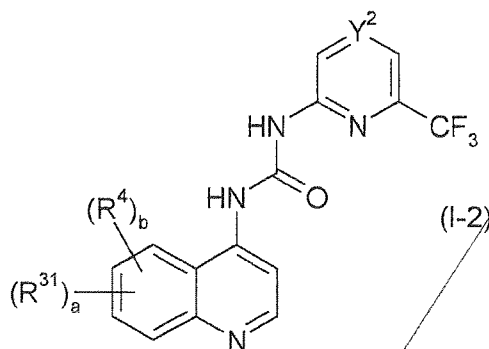
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R⁵¹ has one of the meanings given in claims 1, 20 or 21 for R⁵ except for hydrogen;

a is 0, 1 or 2; and

b, c and d are independently of each other 0 or 1, with the proviso that one of b and c is 1.

23. The heterocyclic compound according to any of the preceding claims, of formula I-2



where

Y^2 is N or preferably CH;

R^{31} has one of the meanings given in claims 1, 18 or 19 for R^3 except for hydrogen, and is preferably selected from the group consisting of halogen, trifluoromethyl, cyano or methoxy;

R^4 has one of the meanings given in claims 1 or 5 to 11;

a is 0, 1 or 2;

b is 0 or 1.

24. The heterocyclic compound according to claim 23, where Y^2 is CH, b is 0 and a is 0, 1 or 2 and where R^{31} , if present, is selected from the group consisting of halogen, trifluoromethyl, cyano and methoxy.

25. A heterocyclic compound selected from the group consisting of
- 1-(6-(3,6-dihydro-2H-pyran-4-yl)pyridin-2-yl)-3-(8-fluoroquinolin-4-yl)urea,
 - 1-(8-fluoroquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea,
 - 1-(6-(3,4-dihydro-2H-pyran-5-yl)pyridin-2-yl)-3-(8-fluoroquinolin-4-yl)urea,
 - 1-(6-(3,6-dihydro-2H-pyran-4-yl)pyridin-2-yl)-3-(7-methoxyquinolin-4-yl)urea,
 - 1-(6-(3,4-dihydro-2H-pyran-5-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-urea,
 - 1-(7-(3,6-dihydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-urea,
 - 1-(6-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-urea,
 - 1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea,

- 1-(7-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-urea,
 1-(6-(tetrahydro-2H-pyran-3-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-urea,
 5 1-(7-(3,6-dihydro-2H-pyran-4-yl)quinolin-4-yl)-3-(pyrazin-2-yl)urea,
 1-(6-(3,4-dihydro-2H-pyran-5-yl)pyridin-2-yl)-3-(7-methoxyquinolin-4-yl)urea,
 1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-3-yl)pyridin-2-yl)urea,
 1-(pyrazin-2-yl)-3-(7-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)urea,
 1-(7-(3,4-dihydro-2H-pyran-5-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
 10 urea,
 1-(6-bromo-quinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 1-(6-(trifluoromethyl)pyridin-2-yl)-3-quinolin-4-yl-urea,
 1-(6,8-difluoroquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 1-(7-bromoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 15 1-(7-trifluoromethylquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 1-(7-methoxyquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 1-(8-trifluoromethylquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 1-(8-cyanoquinolin-4-yl)-3-(6-trifluoromethyl)pyridin-2-yl)-urea,
 1-(8-iodoquinolin-4-yl)-3-(6-trifluoromethyl)pyridin-2-yl)-urea,
 20 1-(8-cyanoquinolin-4-yl)-3-pyrazin-2-yl-urea,
 1-(7-methoxyquinolin-4-yl)-3-pyrazin-2-yl-urea,
 tert-butyl 4-{4-[3-(6-trifluoromethyl-pyridin-2-yl)-ureido]-quinolin-6-yl}-3,6-dihydro-
 2H-pyridine-1-carboxylate,
 1-[6-(1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-
 25 yl)-urea,
 1-(6-(piperidin-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)urea,
 1-[6-(1-methyl-1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-
 pyridin-2-yl)-urea,
 1-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
 30 1-[6-[1-(2-fluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-
 yl)-urea,
 1-[6-[1-(2,2-difluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-
 2-yl)-urea,
 1-[6-(3,6-dihydro-2H-pyran-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-
 35 urea,
 1-[6-(3,6-dihydro-2H-pyran-4-yl)-quinolin-4-yl]-3-pyrazin-2-yl-urea,
 tert-butyl 4-[4-(3-pyrazin-2-ylureido)quinolin-6-yl]-5,6-dihydropyridine-1(2H)-
 carboxylate,
 1-pyrazin-2-yl-3-[6-(1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-urea,

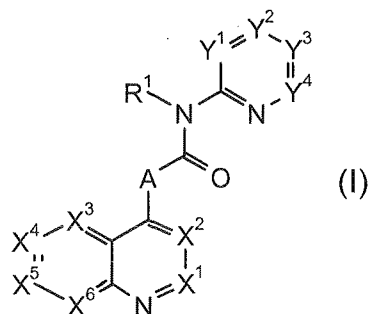
- 1-(6-piperidin-4-yl-quinolin-4-yl)-3-pyrazin-2-yl-urea,
 1-{6-[1-(2-fluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl}-3-pyrazin-2-yl-urea,
 1-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-3-pyrazin-2-yl-urea,
 5 tert-butyl 4-{4-[3-(6-cyclopropyl-pyrazin-2-yl)-ureido]-quinolin-6-yl}-3,6-dihydro-
 2H-pyridine-1-carboxylate,
 tert-butyl 4-{4-[3-(6-cyclopropyl-pyrazin-2-yl)-ureido]-quinolin-6-yl}-piperidine-1-
 carboxylate,
 1-(6-cyclopropyl-pyrazin-2-yl)-3-(6-piperidin-4-yl-quinolin-4-yl)-urea,
 1-(6-cyclopropyl-pyrazin-2-yl)-3-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-urea,
 10 tert-butyl 3-{4-[3-(6-Trifluoromethyl-pyridin-2-yl)-ureido]-quinolin-6-yl}-2,5-dihydro-
 pyrrole-1-carboxylate,
 1-[6-(2,5-dihydro-1H-pyrrol-3-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-
 urea,
 1-[6-(3,6-dihydro-2H-pyran-4-yl)-pyridin-2-yl]-3-(8-fluoro-quinolin-4-yl)-urea,
 15 1-(8-fluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(8-chloro-6-methyl-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(6,8-dichloro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(6,8-difluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(8-chloro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 20 1-[1,5]naphthyridin-4-yl-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(5,8-difluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(8-fluoro-6-methoxy-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-[6-(5,6-dihydro-4H-pyran-3-yl)-pyridin-2-yl]-3-(8-fluoro-quinolin-4-yl)-urea,
 1-(8-fluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-3-yl)-pyridin-2-yl]-urea,
 25 1-[6-(3,6-dihydro-2H-pyran-4-yl)-pyridin-2-yl]-3-[1,5]naphthyridin-4-yl-urea,
 tert-butyl 6-[3-(8-fluoro-quinolin-4-yl)-ureido]-3',6'-dihydro-2'H-[2,4']bipyridinyl-1'-
 carboxylate,
 1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',6'-tetrahydro-[2,4']bipyridinyl-6-yl)-urea,
 tert-butyl 6-[3-(8-fluoro-quinolin-4-yl)-ureido]-3',4',5',6'-tetrahydro-2'H-
 30 [2,4']bipyridinyl-1'-carboxylate,
 1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl)-urea,
 1-(8-fluoro-quinolin-4-yl)-3-(1'-methyl-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-
 yl)-urea,
 1-[1'-(2-fluoro-ethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-fluoro-
 35 quinolin-4-yl)-urea,
 1-[1'-(2,2-difluoro-ethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-fluoro-
 quinolin-4-yl)-urea,
 1-(8-fluoro-quinolin-4-yl)-3-(1'-isopropyl-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-
 6-yl)-urea,

- 1-(8-fluoro-quinolin-4-yl)-3-[5-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
tert-butyl-3-[4-(3-pyrazin-2-yl-ureido)-quinolin-6-yl]-2,5-dihydro-pyrrole-1-
carboxylate,
tert-butyl-3-[4-(3-pyrazin-2-yl-ureido)-quinolin-6-yl]-pyrrolidine-1-carboxylate,
1-pyrazin-2-yl-3-(6-pyrrolidin-3-yl-quinolin-4-yl)-urea,
the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated
acid addition salts thereof.
26. The heterocyclic compound according to claim 25, selected from 1-(7-
methoxyquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea, the stereoisomers,
N-oxides, prodrugs, tautomers or physiologically tolerated acid addition salts
thereof.
27. The heterocyclic compound according to any of the preceding claims, wherein at
least one of the atoms has been replaced by its stable, non-radioactive isotope,
and preferably wherein at least one hydrogen atom has been replaced by a
deuterium atom.
28. A pharmaceutical composition comprising at least one heterocyclic compound as
defined in any of the preceding claims, a stereoisomer, N-oxide, prodrug,
tautomer and/or physiologically tolerated acid addition salt thereof or comprising
at least one heterocyclic compound as defined in any of the preceding claims
wherein at least one of the atoms has been replaced by its stable, non-
radioactive isotope, preferably wherein at least one hydrogen atom has been
replaced by a deuterium atom, and at least one physiologically acceptable carrier
and/or auxiliary substance.
29. The heterocyclic compounds as defined in any of claims 1 to 27 or the
stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid
addition salts thereof for use as a medicament.
30. The heterocyclic compounds as defined in any of claims 1 to 27 or the
stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid
addition salts thereof for the treatment of a medical disorder susceptible to the
treatment with a compound that modulates, preferably inhibits, the activity of
glycogen synthase kinase 3 β .
31. The use of the heterocyclic compound as defined in any of claims 1 to 27 or of a
stereoisomer, N-oxide, prodrug, tautomer or physiologically tolerated acid
addition salt thereof for the preparation of a medicament for the treatment of a
medical disorder susceptible to the treatment with a compound that modulates,
preferably inhibits, the activity of glycogen synthase kinase 3 β .

32. A method for treating a medical disorder susceptible to treatment with a compound that modulates, preferably inhibits, glycogen synthase kinase 3 β activity, said method comprising administering an effective amount of at least one heterocyclic compound as defined in any of claims 1 to 27 or of a stereoisomer, prodrug, N-oxide, tautomer or physiologically tolerated acid addition salt thereof or of a pharmaceutical composition as defined in claim 28 to a subject in need thereof.
33. The heterocyclic compounds according to claim 30 or the use according to claim 31 or the method according to claim 32, where the medical disorder is a neurodegenerative disorder or an inflammatory disorder.
34. The heterocyclic compounds or the use or the method according to claim 33, where the medical disorder is selected from schizophrenia, Alzheimer's disease, behavioural and psychiatric symptoms of dementia, Parkinson's disease, tauopathies, vascular dementia, acute stroke and other traumatic injuries, cerebrovascular accidents, brain and spinal cord trauma, peripheral neuropathies, bipolar disorders, retinopathies, glaucoma, pain, rheumatoid arthritis and osteoarthritis.

We claim:

1. A heterocyclic compound of the formula (I)



5

the stereoisomers, N-oxides, prodrugs, tautomers and/or physiologically tolerated acid addition salts thereof, and the compounds of the general formula I, wherein at least one of the atoms has been replaced by its stable, non-radioactive isotope, wherein

10

A is NR^B; where

R^B is selected from hydrogen, C₁-C₄-alkyl and C₁-C₄-haloalkyl;

15

X¹ and X² are independently of each other selected from the group consisting of CR² and N;

X³, X⁴, X⁵ and X⁶ are independently of each other selected from the group consisting of CR³, CR⁴ and N;

20

with the proviso that no more than two of X^3 , X^4 , X^5 and X^6 are CR^4 ;

Y^1 , Y^2 , Y^3 and Y^4 are independently of each other selected from the group consisting of CR^4 , CR^5 and N;

5

with the proviso that at most one of Y^1 , Y^2 , Y^3 and Y^4 is N and with the proviso that at most one of Y^1 , Y^2 , Y^3 and Y^4 is CR^4 ; and

10

with the proviso that one of Y^1 , Y^2 , Y^3 and Y^4 is CR^4 or $C-CF_3$ if none of X^3 , X^4 , X^5 and X^6 is CR^4 ;

R^1 is hydrogen;

each R^2 is hydrogen;

15

each R^3 is independently selected from the group consisting of hydrogen, CN, OH, halogen, C_1-C_6 -alkyl, C_1-C_6 -haloalkyl, C_3-C_7 -cycloalkyl, C_3-C_7 -halocycloalkyl, C_2-C_4 -alkenyl, C_2-C_4 -haloalkenyl, C_1-C_6 -alkoxy and C_1-C_6 -haloalkoxy;

20

R^4 is a C-bound saturated or partially unsaturated monocyclic 5- or 6-membered heterocyclic ring containing 1, 2 or 3 heteroatoms or heteroatom-containing groups selected from O and N as ring members, where

the heterocyclic ring optionally carries 1, 2 or 3 C- or N-bound substituents R^8 ;

5 R^5 is selected from the group consisting of hydrogen, CN, OH, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_7 -cycloalkyl, C_3 - C_7 -halocycloalkyl, C_2 - C_4 -alkenyl, C_2 - C_4 -haloalkenyl, C_1 - C_6 -alkoxy and C_1 - C_6 -haloalkoxy; and

10 R^8 independently of each occurrence, is selected from the group consisting of CN, OH, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_7 -cycloalkyl, C_3 - C_7 -halocycloalkyl, C_2 - C_4 -alkenyl, C_2 - C_4 -haloalkenyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, formyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -haloalkylcarbonyl, C_1 - C_6 -alkoxycarbonyl and C_1 - C_6 -haloalkoxycarbonyl;

15 where the prodrugs are selected from compounds of formula I, wherein a secondary nitrogen ring atom of the ring R^4 or a nitrogen atom of a primary or secondary amino group being a substituent R^2 , R^3 , R^5 , R^6 , R^7 and/or R^8 forms an amide/peptide bond in that this nitrogen atom is substituted by a C_1 - C_4 -alkylcarbonyl group, by benzoyl, or by glycine, alanine, serine or phenylalanine bonded via CO; or said nitrogen atom carries a group $-C(=O)-O-CH(R^x)-O-$
20 $C(=O)-R^y$, wherein R^x and R^y independently of each other are C_1 - C_4 -alkyl.

2. The heterocyclic compound according to claim 1, wherein either one of X^3 , X^4 , X^5 and X^6 is CR^4 and none of Y^1 , Y^2 , Y^3 and Y^4 is CR^4 , or one of Y^1 , Y^2 , Y^3 and

Y^4 is CR^4 and none of X^3 , X^4 , X^5 and X^6 is CR^4 .

3. The heterocyclic compound according to claim 1, wherein one of Y^1 , Y^2 , Y^3 and Y^4 is CR^4 if none of X^3 , X^4 , X^5 and X^6 is CR^4 .

5

4. The heterocyclic compound according to claim 1, wherein one of Y^1 , Y^2 , Y^3 and Y^4 is $C-CF_3$ if none of X^3 , X^4 , X^5 and X^6 is CR^4 .

10

5. The heterocyclic compound according to any of the preceding claims, where R^4 is selected from C-bound pyrrolidinyl, pyrrolinyl, tetrahydropyranyl, dihydropyranyl, piperidinyl, tetrahydropyridinyl and dihydropyridinyl, where the heterocyclic ring optionally carries 1, 2 or 3 substituents R^8 .

15

6. The heterocyclic compound according to claim 5, where R^4 is selected from pyrrolidin-3-yl, pyrrolin-3-yl, tetrahydropyran-4-yl, tetrahydropyran-3-yl, dihydropyran-4-yl, dihydropyran-3-yl, piperidin-4-yl, 1,2,5,6-tetrahydropyridin-4-yl and 1,2-dihydropyridin-4-yl, where the heterocyclic ring optionally carries 1, 2 or 3 substituents R^8 .

20

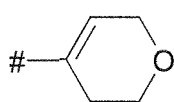
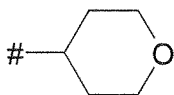
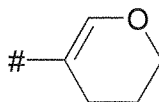
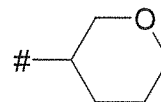
7. The heterocyclic compound according to any of the preceding claims, where R^8 is selected from C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_7 -cycloalkyl, C_3 - C_7 -halocycloalkyl, C_2 - C_4 -alkenyl, C_2 - C_4 -haloalkenyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, formyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -haloalkylcarbonyl, C_1 - C_6 -alkoxycarbonyl and C_1 - C_6 -haloalkoxycarbonyl, and is preferably C_1 - C_6 -alkyl, C_1 -

C₆-haloalkyl or C₁-C₆-alkoxycarbonyl.

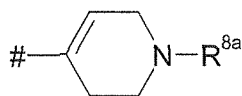
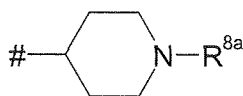
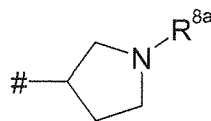
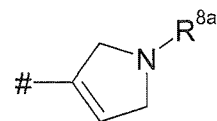
8. The heterocyclic compound according to any of the preceding claims, where R⁸ is N-bound.

5

9. The heterocyclic compound according to any of the preceding claims, where R⁴ is selected from following structures:



10



where

- 15 R^{8a} is hydrogen or has one of the meanings given in claims 1, 7 or 8 for R⁸;
and

is the attachment point to the remainder of the molecule.

10. The heterocyclic compound according to any of the preceding claims, where at
20 most one of X¹, X², X³, X⁴, X⁵ and X⁶ is N.

11. The heterocyclic compound according to claim 10, where X¹ and X² are CR² and X³, X⁴, X⁵ and X⁶ are CR³ or CR⁴, or where X¹ and X² are CR², X³ is N and

X^4 , X^5 and X^6 are CR^3 or CR^4 .

12. The heterocyclic compound according to any of the preceding claims, where Y^1 , Y^2 , Y^3 and Y^4 are CR^4 or CR^5 or Y^2 is N and Y^1 , Y^3 and Y^4 are CR^4 or CR^5 .

5

13. The heterocyclic compound according to any of the preceding claims, where A is NH.

14. The heterocyclic compound according to any of the preceding claims, where R^3 is selected from hydrogen, CN, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_7 -cycloalkyl, C_3 - C_7 -halocycloalkyl, C_1 - C_6 -alkoxy and C_1 - C_6 -haloalkoxy, and is preferably selected from hydrogen, CN, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy and C_1 - C_6 -haloalkoxy.

15. The heterocyclic compound according to any of the preceding claims, where 0, 1 or 2 of the radicals R^3 are different from hydrogen.

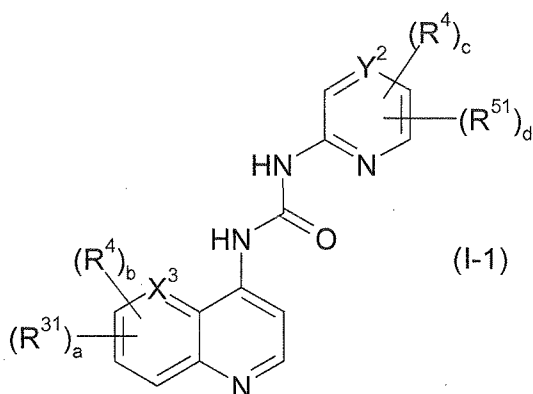
16. The heterocyclic compound according to any of the preceding claims, where R^5 is selected from hydrogen, CN, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_7 -cycloalkyl, C_3 - C_7 -halocycloalkyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, formyl, C_1 - C_6 -alkylcarbonyl, C_1 - C_6 -haloalkylcarbonyl, C_1 - C_6 -alkoxycarbonyl and C_1 - C_6 -haloalkoxycarbonyl and is preferably selected from hydrogen, halogen, C_1 - C_4 -haloalkyl, C_3 - C_7 -cycloalkyl and C_3 - C_7 -halocycloalkyl and in particular from hy-

drogen, fluorinated C₁-C₂-alkyl and C₃-C₆-cycloalkyl.

17. The heterocyclic compound according to any of the preceding claims, where at most one of the radicals R⁵ is different from hydrogen.

5

18. The heterocyclic compound according to any of the preceding claims, of formula I-1



10

where

X³ is N or CH;

Y² is N or CH;

R³¹ has one of the meanings given in claims 1, 14 or 15 for R³ except for hydrogen, and is preferably halogen, C₁-C₄-alkyl or C₁-C₄-alkoxy;

15

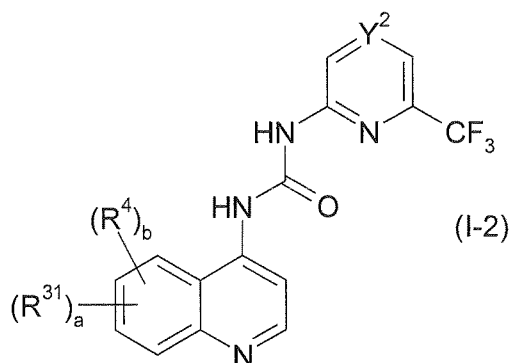
R⁴ has one of the meanings given in claims 1 or 5 to 9;

R⁵¹ has one of the meanings given in claims 1, 16 or 17 for R⁵ except for hydrogen;

a is 0, 1 or 2; and

b, c and d are independently of each other 0 or 1, with the proviso that one of b and c is 1.

19. The heterocyclic compound according to any of the preceding claims, of formula I-2



where

Y^2 is N or preferably CH;

- 10 R^{31} has one of the meanings given in claims 1, 14 or 15 for R^3 except for hydrogen, and is preferably selected from the group consisting of halogen, trifluoromethyl, cyano or methoxy;

R^4 has one of the meanings given in claims 1 or 5 to 9;

a is 0, 1 or 2;

- 15 b is 0 or 1.

20. The heterocyclic compound according to claim 19, where Y^2 is CH, b is 0 and a is 0, 1 or 2 and where R^{31} , if present, is selected from the group consisting of halogen, trifluoromethyl, cyano and methoxy.

21. A heterocyclic compound selected from the group consisting of

1-(6-(3,6-dihydro-2H-pyran-4-yl)pyridin-2-yl)-3-(8-fluoroquinolin-4-yl)urea,

1-(8-fluoroquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea,

1-(6-(3,4-dihydro-2H-pyran-5-yl)pyridin-2-yl)-3-(8-fluoroquinolin-4-yl)urea,

5 1-(6-(3,6-dihydro-2H-pyran-4-yl)pyridin-2-yl)-3-(7-methoxyquinolin-4-yl)urea,

1-(6-(3,4-dihydro-2H-pyran-5-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(7-(3,6-dihydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

10 1-(6-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea,

1-(7-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

15 1-(6-(tetrahydro-2H-pyran-3-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(7-(3,6-dihydro-2H-pyran-4-yl)quinolin-4-yl)-3-(pyrazin-2-yl)urea,

1-(6-(3,4-dihydro-2H-pyran-5-yl)pyridin-2-yl)-3-(7-methoxyquinolin-4-yl)urea,

1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-3-yl)pyridin-2-yl)urea,

20 1-(pyrazin-2-yl)-3-(7-(tetrahydro-2H-pyran-4-yl)quinolin-4-yl)urea,

1-(7-(3,4-dihydro-2H-pyran-5-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)-
urea,

1-(6-bromo-quinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

1-(6-(trifluoromethyl)pyridin-2-yl)-3-quinolin-4-yl-urea,

- 1-(6,8-difluoroquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(7-bromoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(7-trifluoromethylquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(7-methoxyquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 5 1-(8-trifluoromethylquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(8-cyanoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(8-iodoquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(8-cyanoquinolin-4-yl)-3-pyrazin-2-yl-urea,
- 1-(7-methoxyquinolin-4-yl)-3-pyrazin-2-yl-urea,
- 10 tert-butyl 4-{4-[3-(6-trifluoromethyl-pyridin-2-yl)-ureido]-quinolin-6-yl}-3,6-dihydro-2H-pyridine-1-carboxylate,
- 1-[6-(1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-(6-(piperidin-4-yl)quinolin-4-yl)-3-(6-(trifluoromethyl)pyridin-2-yl)urea,
- 15 1-[6-(1-methyl-1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-{6-[1-(2-fluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl}-3-(6-trifluoromethyl-pyridin-
- 20 2-yl)-urea,
- 1-{6-[1-(2,2-difluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl}-3-(6-trifluoromethyl-pyridin-2-yl)-urea,
- 1-[6-(3,6-dihydro-2H-pyran-4-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-urea,

- 1-[6-(3,6-dihydro-2H-pyran-4-yl)-quinolin-4-yl]-3-pyrazin-2-yl-urea,
tert-butyl 4-[4-(3-pyrazin-2-ylureido)quinolin-6-yl]-5,6-dihydropyridine-1(2H)-
carboxylate,
- 5 1-pyrazin-2-yl-3-[6-(1,2,3,6-tetrahydro-pyridin-4-yl)-quinolin-4-yl]-urea,
1-(6-piperidin-4-yl-quinolin-4-yl)-3-pyrazin-2-yl-urea,
1-{6-[1-(2-fluoro-ethyl)-piperidin-4-yl]-quinolin-4-yl}-3-pyrazin-2-yl-urea,
1-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-3-pyrazin-2-yl-urea,
tert-butyl 4-{4-[3-(6-cyclopropyl-pyrazin-2-yl)-ureido]-quinolin-6-yl}-3,6-dihydro-
2H-pyridine-1-carboxylate,
- 10 tert-butyl 4-{4-[3-(6-cyclopropyl-pyrazin-2-yl)-ureido]-quinolin-6-yl}-piperidine-1-
carboxylate,
1-(6-cyclopropyl-pyrazin-2-yl)-3-(6-piperidin-4-yl-quinolin-4-yl)-urea,
1-(6-cyclopropyl-pyrazin-2-yl)-3-[6-(1-methyl-piperidin-4-yl)-quinolin-4-yl]-urea,
tert-butyl 3-{4-[3-(6-Trifluoromethyl-pyridin-2-yl)-ureido]-quinolin-6-yl}-2,5-
- 15 dihydro-pyrrole-1-carboxylate,
1-[6-(2,5-dihydro-1H-pyrrol-3-yl)-quinolin-4-yl]-3-(6-trifluoromethyl-pyridin-2-yl)-
urea,
1-[6-(3,6-dihydro-2H-pyran-4-yl)-pyridin-2-yl]-3-(8-fluoro-quinolin-4-yl)-urea,
1-(8-fluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
- 20 1-(8-chloro-6-methyl-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-
urea,
1-(6,8-dichloro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
1-(6,8-difluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
1-(8-chloro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,

- 1-[1,5]naphthyridin-4-yl-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(5,8-difluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 1-(8-fluoro-6-methoxy-quinolin-4-yl)-3-[6-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-
 urea,
- 5 1-[6-(5,6-dihydro-4H-pyran-3-yl)-pyridin-2-yl]-3-(8-fluoro-quinolin-4-yl)-urea,
 1-(8-fluoro-quinolin-4-yl)-3-[6-(tetrahydro-pyran-3-yl)-pyridin-2-yl]-urea,
 1-[6-(3,6-dihydro-2H-pyran-4-yl)-pyridin-2-yl]-3-[1,5]naphthyridin-4-yl-urea,
 tert-butyl-6-[3-(8-fluoro-quinolin-4-yl)-ureido]-3',6'-dihydro-2'H-[2,4']bipyridinyl-
 1'-carboxylate,
- 10 1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',6'-tetrahydro-[2,4']bipyridinyl-6-yl)-urea,
 tert-butyl-6-[3-(8-fluoro-quinolin-4-yl)-ureido]-3',4',5',6'-tetrahydro-2'H-
 [2,4']bipyridinyl-1'-carboxylate,
 1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl)-urea,
 1-(8-fluoro-quinolin-4-yl)-3-(1'-methyl-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-
- 15 6-yl)-urea,
 1-[1'-(2-fluoro-ethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-fluoro-
 quinolin-4-yl)-urea,
 1-[1'-(2,2-difluoro-ethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-
 fluoro-quinolin-4-yl)-urea,
- 20 1-(8-fluoro-quinolin-4-yl)-3-(1'-isopropyl-1',2',3',4',5',6'-hexahydro-
 [2,4']bipyridinyl-6-yl)-urea,
 1-(8-fluoro-quinolin-4-yl)-3-[5-(tetrahydro-pyran-4-yl)-pyridin-2-yl]-urea,
 tert-butyl-3-[4-(3-pyrazin-2-yl-ureido)-quinolin-6-yl]-2,5-dihydro-pyrrole-1-
 carboxylate,

tert-butyl-3-[4-(3-pyrazin-2-yl-ureido)-quinolin-6-yl]-pyrrolidine-1-carboxylate,
 1-pyrazin-2-yl-3-(6-pyrrolidin-3-yl-quinolin-4-yl)-urea,
 the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated
 acid addition salts thereof.

5

22. The heterocyclic compound according to claim 21, selected from 1-(7-methoxyquinolin-4-yl)-3-(6-trifluoromethyl-pyridin-2-yl)-urea the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid addition salts thereof.

10

23. The heterocyclic compound according to claim 21, selected from 1-(8-fluoroquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-4-yl)pyridin-2-yl)urea, the stereoisomers, N-oxides, prodrugs, tautomers and physiologically tolerated acid addition salts thereof.

15

24. The heterocyclic compound according to claim 21, selected from 1-[1'-(2-fluoroethyl)-1',2',3',4',5',6'-hexahydro-[2,4']bipyridinyl-6-yl]-3-(8-fluoro-quinolin-4-yl)-urea, the stereoisomers, N-oxides, prodrugs, tautomers and physiologically tolerated acid addition salts thereof.

20

25. The heterocyclic compound according to claim 21, selected from 1-(7-methoxyquinolin-4-yl)-3-(6-(tetrahydro-2H-pyran-3-yl)pyridin-2-yl)urea, the stereoisomers, tautomers and physiologically tolerated acid addition salts thereof.

26. The heterocyclic compound according to claim 21, selected from 1-(8-fluoro-quinolin-4-yl)-3-(1',2',3',6'-tetrahydro-[2,4']bipyridinyl-6-yl)-urea, the stereoisomers, tautomers and physiologically tolerated acid addition salts thereof.
- 5 27. The heterocyclic compound according to any of the preceding claims, wherein at least one of the atoms has been replaced by its stable, non-radioactive isotope, and preferably wherein at least one hydrogen atom has been replaced by a deuterium atom.
- 10 28. A pharmaceutical composition comprising at least one heterocyclic compound as defined in any of the preceding claims, a stereoisomer, N-oxide, prodrug, tautomer and/or physiologically tolerated acid addition salt thereof or comprising at least one heterocyclic compound as defined in any of the preceding
- 15 radioactive isotope, preferably wherein at least one hydrogen atom has been replaced by a deuterium atom, and at least one physiologically acceptable carrier and/or auxiliary substance.
- 20 29. The heterocyclic compounds as defined in any of claims 1 to 27 or the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid addition salts thereof for use as a medicament.
30. The heterocyclic compounds as defined in any of claims 1 to 27 or the stereoisomers, N-oxides, prodrugs, tautomers or physiologically tolerated acid addi-

tion salts thereof for use in the treatment of a neurodegenerative disorder or an inflammatory disorder.

31. The use of the heterocyclic compound as defined in any of claims 1 to 27 or of
5 a stereoisomer, N-oxide, prodrug, tautomer or physiologically tolerated acid addition salt thereof for the preparation of a medicament for the treatment of a neurodegenerative disorder or an inflammatory disorder.

32. The heterocyclic compounds according to claim 30, where the medical disorder
10 is selected from schizophrenia, Alzheimer's disease, behavioural and psychiatric symptoms of dementia, Parkinson's disease, tauopathies, vascular dementia, acute stroke and other traumatic injuries, cerebrovascular accidents, brain and spinal cord trauma, peripheral neuropathies, bipolar disorders, retinopathies, glaucoma, pain, rheumatoid arthritis and osteoarthritis.

15

33. The use according to claim 31, where the medical disorder is selected from
schizophrenia, Alzheimer's disease, behavioural and psychiatric symptoms of
dementia, Parkinson's disease, tauopathies, vascular dementia, acute stroke
and other traumatic injuries, cerebrovascular accidents, brain and spinal cord
20 trauma, peripheral neuropathies, bipolar disorders, retinopathies, glaucoma,
pain, rheumatoid arthritis and osteoarthritis.