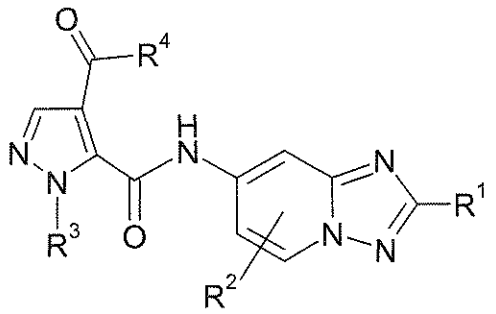
Alzheimer's disease, Huntington's disease, Parkinson's disease, multiple sclerosis, stroke or spinal cord injury.

The growth of cancer cells is inhibited by cAMP and cGMP. Thus by raising cAMP and cGMP, PDE10A inhibitors can also be used for the treatment of different solid tumors and hematological malignancies such as renal cell carcinoma or breast cancer.

In a first aspect, there is provided a compound of formula (I)



(I)

wherein

$R^1$ is halogen, $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl, $C_{1-7}$-hydroxyalkyl, $C_{1-7}$-alkoxy, $C_{1-7}$-alkoxy-$C_{1-7}$-alkyl, -C(O)-$NR^9R^{10}$, aryl, heteroaryl or $NR^7R^8$, wherein said aryl and said heteroaryl can be substituted by 1 to 3 substituents independently selected from the group consisting of hydroxyl, halogen, $C_{1-7}$-alkyl, $C_{1-7}$-alkoxy, $C_{1-7}$-alkoxy-$C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl and $C_{1-7}$-haloalkoxy;

$R^2$ is hydrogen, halogen, $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl, $C_{1-7}$-hydroxyalkyl, $C_{1-7}$-alkoxy or $C_{1-7}$-alkoxy-$C_{1-7}$-alkyl;

$R^3$ is hydrogen, $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl, $C_{1-7}$-hydroxyalkyl, $C_{1-7}$-alkoxy or $C_{1-7}$-alkoxy- $C_{1-7}$-alkyl;

$R^4$ is hydroxyl, $C_{1-7}$-alkoxy or $NR^5R^6$;

$R^5$ and $R^6$ are independently hydrogen, $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl, $C_{1-7}$-hydroxyalkyl, $C_{1-7}$-alkoxy-$C_{1-7}$-alkyl, cycloalkyl or heterocyclyl, or $R^5$ and/or $R^6$ are $C_{1-7}$-alkyl substituted by a substituent selected from the group consisting of heteroaryl, $C_{1-7}$-alkyl-heteroaryl and $C_{1-7}$-alkoxy-C(O)-, or

$R^5$ and $R^6$, together with the nitrogen atom to which they are attached, form a heterocyclyl, bicyclo-heterocyclyl or spiro-heterocyclyl, wherein said heterocyclyl can be substituted by 1 to 3 substituents independently selected from the group consisting of hydroxyl, halogen, $C_{1-7}$-alkyl, $C_{1-7}$-alkoxy, $C_{1-7}$-alkoxy- $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl and oxo;

$R^7$ and $R^8$ are independently hydrogen, $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl, $C_{1-7}$-hydroxyalkyl, $C_{1-7}$-alkoxy-$C_{1-7}$-alkyl or cycloalkyl, or

$R^7$ and $R^8$, together with the nitrogen atom to which they are attached, form a heterocyclyl optionally substituted by a substituent selected from the group consisting of hydroxyl, halogen and oxo; and

$R^9$ and $R^{10}$ are independently hydrogen, $C_{1-7}$-alkyl, $C_{1-7}$-haloalkyl, $C_{1-7}$-hydroxyalkyl or $C_{1-7}$-alkoxy-lower-alkyl,

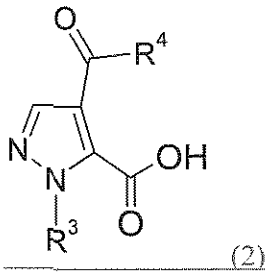
wherein heteroaryl refers to an aromatic 5- or 6-membered monocyclic ring or 9- or 10-membered bicyclic ring which comprises 1, 2 or 3 atoms independently selected from nitrogen, oxygen and/or sulphur,

wherein heterocyclyl refers to a monovalent saturated 4- to 6-membered monocyclic ring containing one, two or three ring heteroatoms independently selected from N, O and S,

or a pharmaceutically acceptable salt thereof.

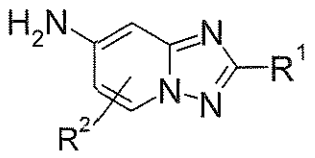
In a second aspect, there is provided a process for the manufacture of a compound of formula (I) as defined above, which process comprises

reacting a compound of formula (2)



(2)

with a compound of formula (3)



(3)

wherein $R^1$, $R^2$, $R^3$ and $R^4$ are as defined above and, if desired, converting the compound into a pharmaceutically acceptable salt thereof.

In a third aspect, there is provided the compound as defined above for use as therapeutically active substance.

In a fourth aspect, there is provided a pharmaceutical composition comprising a compound as defined above and a therapeutically inert carrier.

In a fifth aspect, there is provided the compound as defined above for use in the treatment or prophylaxis of psychotic disorders, schizophrenia, positive, negative and/or cognitive symptoms associated with schizophrenia, delusional disorder, substance-induced psychotic disorder, anxiety disorders, panic disorder, obsessive/compulsive disorders, acute stress disorder, generalized anxiety disorder, drug addictions, movement disorders, Parkinson's disease, restless leg syndrome, cognition deficiency disorders, Alzheimer's disease, multi-infarct dementia, mood disorders, depression, bipolar disorders, neuropsychiatric conditions, psychosis, attention-deficit/hyperactivity disorder, attentional disorders, diabetes and related disorders, type 2 diabetes mellitus, neurodegenerative disorders, Huntington's disease, multiple sclerosis, stroke, spinal cord injury, solid tumors, hematological malignancies, renal cell carcinoma or breast cancer.

Unless otherwise indicated, the following definitions are set forth to illustrate and define the meaning and scope of the various terms used to describe the invention herein.

It must be noted that, as used in the specification and the claims, the singular forms "a", "an" and "the" include plural referents unless the context clearly dictates otherwise.

When indicating the number of subsituents, the term "one or more" means from one substituent to the highest possible number of substitution, i.e. replacement of one hydrogen up to replacement of all hydrogens by substituents.

In this specification the term "lower" is used to mean a group consisting of one to seven, more specifically of one to four carbon atom(s).

The term "halogen" refers to fluorine, chlorine, bromine and iodine, more speficially fluorine, chlorine and bromine.

The term "alkyl" refers to a branched or straight-chain monovalent saturated aliphatic hydrocarbon radical of one to twenty carbon atoms, more specifically one to sixteen carbon atoms, yet more specifically one to ten carbon atoms.

The term "lower-alkyl", alone or in combination with other groups, refers to a branched or straight-chain monovalent alkyl radical of one to seven carbon atoms, more specifically one to four carbon atoms. This term is further exemplified by such radicals as methyl, ethyl, n-propyl, isopropyl, n-butyl, s-butyl, t-butyl and the like.