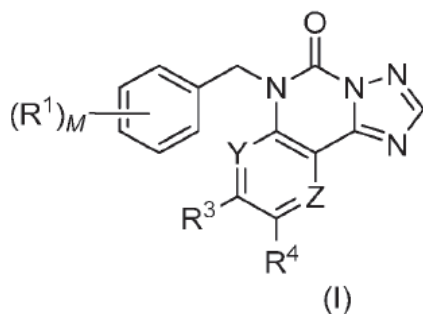


CLAIMS

1. A pharmaceutical composition comprising an effective amount of at least one compound of

Formula I:



wherein:

Y and Z are each independently -CH- or -N-, with the proviso that at least one Y or Z member is -N-;

M is 0-5;

R¹ is each independently selected from H, halo, -CN, -C₁₋₆alkyl, -C₁₋₆alkynyl, -C₁₋₆haloalkyl, -C₁₋₆thioalkyl, -C₁₋₆thiohaloalkyl, -C₁₋₆alkoxy, -C₁₋₆haloalkoxy, -SO₂alkyl, aryl, pyrazole, and 2-oxopyrrolidine; or

two R¹ members are on adjacent carbons and taken together with the carbons to which they are attached form a 5-6 member saturated or unsaturated monocyclic ring system comprising one or more oxygen or nitrogen atoms, wherein the ring system is optionally substituted with one or more groups selected from halo, -C₁₋₆alkyl, -C₁₋₆alkoxy, and -C₁₋₆haloalkoxy;

and wherein

(a) R³ and R⁴ are each independently selected from the group consisting of H, halo, -CN, -OH, -C₁₋₆alkyl, -C₁₋₆haloalkyl, -C₁₋₆alkenyl, -CH₂O-aryl, -C₁₋₆alkoxy, -C₁₋₆haloalkoxy, -C(O)CH₃, -CH(OH)(CF₃), -(CR¹⁰R¹¹)₀₋₃NR¹²R¹³, aryl, heteroaryl, heterocycloalkyl, wherein each aryl, heteroaryl and heterocycloalkyl is optionally unsubstituted or substituted with a member each independently selected from the group consisting of CH₃ and -OCH₃;

R^{10} and R^{11} are each independently selected from the group consisting of: -H, -F, -C₁₋₆alkyl, -CF₃, and -OH;

R^{12} and R^{13} are each independently selected from the group consisting of -H, -C₁₋₆alkyl, -CO₂-benzyl, -C₁₋₆alkyl(aryl), -C₁₋₆alkyl(heterocycloalkyl), optionally unsubstituted or substituted aryl, -C₃₋₆cycloalkyl, heteroaryl, and heterocycloalkyl;

or R^{12} and R^{13} are taken together with the nitrogen to which they are attached form an optionally substituted heterocycloalkyl; or

(b) R^3 is -H or -CH₃, and

R^4 is H, -Br, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C(O)CH₃, -CH(OH)CF₃, -CH₂OCH₂OCH₃, optionally substituted phenyl, optionally substituted pyridyl, and -(CR¹⁰R¹¹)₁₋₃NR¹²R¹³, R^{10} and R^{11} are each independently H, -CH₃, or -OH, and R^{12} and R^{13} are each independently -H, -C₁₋₆alkyl, -CO₂-benzyl, -CH(CH₃)phenyl, optionally substituted cycloalkyl, and optionally substituted heterocycloalkyl; or

(c) R^3 is selected from -H, -CH(OCH₃)₂, -CH₂O-phenyl, or -(CR¹⁰R¹¹)₁₋₃NR¹²R¹³, where R^{10} and R^{11} are each H, R^{12} is H or -C₁₋₆alkyl, R^{13} is selected from phenyl, benzyl, (3-methyloxetan-3-yl)methyl, (tetrahydrofuran-3-yl)methyl or cyclopropyl(methyl), and

R^4 is selected from the group consisting of H, halo, -CN, -OH, -C₁₋₆alkyl, -C₁₋₆haloalkyl, -C₁₋₆alkenyl, -CH₂O-aryl, -C₁₋₆alkoxy, -C₁₋₆haloalkoxy, -C(O)CH₃, -CH(OH)(CF₃), -(CR¹⁰R¹¹)₀₋₃NR¹²R¹³, aryl, heteroaryl, heterocycloalkyl, wherein each aryl, heteroaryl and heterocycloalkyl is optionally unsubstituted or substituted with a member each independently selected from the group consisting of -CH₃ and -OCH₃, R^{10} and R^{11} are each independently selected from the group consisting of: -H, -F, -C₁₋₆alkyl, -CF₃, and -OH; R^{12} and R^{13} are each independently selected from the group consisting of -H, -C₁₋₆alkyl, -CO₂-benzyl, -C₁₋₆alkyl(aryl), -C₁₋₆alkyl(heterocycloalkyl), optionally unsubstituted or substituted aryl, -C₃₋₆cycloalkyl, heteroaryl, and heterocycloalkyl; or R^{12} and R^{13} are taken together with the nitrogen to which they are attached form an optionally substituted heterocycloalkyl;

and Y is -N-;

or a pharmaceutically acceptable salt thereof; and one or more pharmaceutically acceptable excipients.

2. A pharmaceutical composition as in claim 1, wherein *M* is 1, 2, 3 or 4, and R¹ is each independently -C₁, -F or -C₁₋₆alkoxy.

3. A pharmaceutical composition as in claim 1, wherein:

- a) R³ is H or -CH₃ and R⁴ is -(CR¹⁰R¹¹)₁₋₃NR¹²R¹³; or
- b) R³ is -H, -CH₃, R⁴ is H, -Br, -C₁₋₆alkyl, -C₁₋₆alkenyl, -C(O)CH₃, -CH(OH)CF₃, -CH₂OCH₂OCH₃, optionally substituted phenyl, optionally substituted pyridyl, and -(CR¹⁰R¹¹)₁₋₃NR¹²R¹³, R¹⁰ and R¹¹ are each independently H, -CH₃, or -OH, and R¹² and R¹³ are each independently -H, -C₁₋₆alkyl, -CO₂-benzyl, -CH(CH₃)phenyl, optionally substituted cycloalkyl, and optionally substituted heterocycloalkyl; or
- c) R³ is -H, -CH₃, R⁴ is (CR¹⁰R¹¹)₁₋₃NR¹²R¹³, R¹⁰ and R¹¹ are each independently -H, -F, -CH₃, -CF₃, or -OH, and R¹² and R¹³ are taken together with the nitrogen to which they are attached to form a heterocycloalkyl ring selected from (2R,5R)-2,5-dimethylmorpholine, (2R,6S)-2,6-dimethylmorpholine, (2S,5S)-2,5-dimethylmorpholine, (2S,6R)-2,6-dimethylmorpholine, (3S,SR)-2-methoxyethylpiperazine, 4-((tetrahydrofuran-3-yl)methyl)piperazine, 1,4-oxazepane, 1-methyl-8-oxa-1,2-diazaspiro[4.5]decane, 2,2-dimethylmorpholine, 2,5-dimethylmorpholine, 2-ethylmorpholine, 2-methylmorpholine, 2-oxa-5-azabicyclo[2.2.1]heptane, 3-(dimethylamino)pyrrolidine, 3,3-dimethylmorpholine, 3,5-dimethylpiperazine, 3-hydroxyazetidine, 3-methyl-6-oxopyridazin-1(6H)-yl, 3-methylmorpholine, 4-(2,2,2-trifluoroacetyl)piperazine, 4-(methylsulfonyl)piperazine, 4-(propan-2-yl)piperazine, 4-(tetrahydrofuran-3-carbonyl)piperazine, 4-acetyl-1,4-diazepane, 4-cyclopropylpiperazine, 4-methoxypiperidine, 4-methyl-1,4-diazepane, 4-methyl-piperazine, 8-oxa-3-azabicyclo[3.2.1]octane, isoindoline, morpholine, N,N-dimethylpiperazine-1-sulfonamide, piperazine, piperidine, tetrahydro-1H-oxazolo[3,4-a]pyrazin-3(5H)-one, and thiomorpholine.

4. A pharmaceutical composition as in claim 1, wherein R⁴ is morpholinomethyl, (3-methylmorpholino)methyl, (2,6-dimethylmorpholino)methyl, ((2S,6R)-2,6-dimethylmorpholino)methyl, ((2R,6S)-2,6-dimethylmorpholin-4-yl)methyl, (4-

(methylsulfonyl)piperazin-1-yl)methyl, 1-hydroxy-2-morpholinoethyl or 2-((2S,6R)-2,6-dimethylmorpholino)-1-hydroxyethyl, and R³ is H or -CH₃.

5. A pharmaceutical composition as in claim 1, comprising an effective amount of at least one compound selected from the group consisting of:

9-Bromo-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-Bromo-6-(4-methoxybenzyl)pyrido[2,3-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-(Dimethoxymethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-Bromo-6-(4-methoxybenzyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

9-(3,4-Dimethoxyphenyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(6-methoxypyridin-3-yl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(2-methoxypyridin-3-yl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(3-methoxy-oxypyridazin-1(6H)-yl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(4-Cyclopropylpiperazin-1-yl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((1S,2S)-2-Aminocyclohexyl)amino)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(methyl(1-methylpiperidin-4-yl)amino)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

9-((2-(Dimethylamino)ethyl)(methyl)amino)-6-(4-methoxybenzyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(4-(2-methoxyethyl)piperazin-1-yl)pyrido[3,2-e][1,2,4]triazolo[1,5-

c]pyrimidin-5(6H)-one;

9-(3-(Dimethylamino)pyrrolidin-1-yl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(4-(Dimethylamino)piperidin-1-yl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(methyl(tetrahydro-2H-pyran-4-yl)amino)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((2S,6R)-2,6-Dimethylmorpholino)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((3-(Dimethylamino)propyl)(methyl)amino)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzyl)-9-(4-(methylsulfonyl)piperazin-1-yl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

Benzyl (2-(6-(4-methoxybenzyl)-5-oxo-5,6-dihydropyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-9-yl)ethyl)carbamate;

6-(4-Methoxybenzyl)-8-(morpholinomethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-(piperidin-1-ylmethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzyl)-9-(thiomorpholinomethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chlorobenzyl)-9-(morpholinomethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chlorobenzyl)-9-(piperidin-1-ylmethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chlorobenzyl)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-

e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(2-Aminoethyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(2-((tetrahydro-2H-pyran-4-yl)amino)ethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(2-((1-phenylethyl)amino)ethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-vinylpyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-((methoxymethoxy)methy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(1-Ethoxyviny1)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(Hydroxymethyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(2-Oxa-5-azabicyclo[2.2.1]heptan-5-ylmethyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((Dimethylamino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((2 S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-((4-methylpiperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((3,3 -Dimethylmorpholino)methyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((2,2-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((2-Ethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((2,5 -Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((2,2,6,6-tetrafluoromorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(8-Oxa-3-azabicyclo[3.2.1]octan-3-ylmethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((1-methyl-8-oxa-1,2-diazaspiro[4.5]decan-2-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((2-methylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((3-methylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2 S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((4-methyl-1,4-diazepan-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((1,4-Oxazepan-4-yl)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((4-Acetyl-1,4-diazepan-1-yl)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-((Cyclohexyl(methyl)amino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((4-methoxypiperidin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzy1)-9-((methyl(tetrahydro-2H-pyran-4-yl)amino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(((4-(2-methoxyethyl)piperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

9-((Isopropyl(2-methoxyethylamino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-8-((4-methylpiperazin-1-yl)methyl)pyrido[2,3-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-8-(morpholinomethyl)pyrido[2,3-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-8-(piperidin-1-ylmethyl)pyrido[2,3-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzy1)-8-(thiomorpholinomethyl)pyrido[2,3-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxybenzy)pyrido[2,3-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Metboxybenzy1)-9-(((2-methoxyethyl)(methyl)amino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

7-((6-(4-Methoxybenzy1)-5-oxo-5,6-dihydropyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-9-yl)methyl)tetrahydro-1H-oxazolo[3,4-a]pyrazin-3(5H)-one;

9-(((2S,5S)-2,5-Dimethylmorpholino)methyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,5R)-2,5-Dimethylmorpholino)methyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(piperazin-1-ylmethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

9-(((3S,5R)-3,5-Dimethylpiperazin-1-yl)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((4-((tetrahydrofuran-3-yl)methyl)piperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzyl)-9-((4-(methylsulfonyl)piperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

4-((6-(4-Methoxybenzyl)-5-oxo-5,6-dihydropyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-9-yl)methyl)-N,N-dimethylpiperazine-1-sulfonamide;

6-(4-Methoxybenzyl)-9-((4-(2,2,2-trifluoroacetyl)piperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-9-((4-(tetrahydrofuran-3-carbonyl)piperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzyl)-9-(morpholinomethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-8-((((3-methyloxetan-3-yl)methyl)amino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzyl)-8-((methyl((tetrahydrofuran-3-yl)methyl)amino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-((Cyopropyl(methyl)amino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-8-((4-(methylsulfonyl)piperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-(Benzylamino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(4-Methoxybenzy1)-8-((phenylamino)methy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

8-(Isoindolin-2-ylmethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-Acetyl-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(1-((2S,6R)-2,6-Dimethylmorpholino)ethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(1-Hydroxy-2-morpholinoethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(24(2S,6R)-2,6-Dimethylmorpholino)-1-hydroxyethyl)-6-(4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(1-Fluoro-2-morpholinoethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(2-((2S,6R)-2,6-Dimethylmorpholino)-1-fluoroethyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(2,2,2-trifluoro-1-hydroxyethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(2,2,2-trifluoro-1-morpholinoethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-(trifluoromethoxy)benzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-fluoro-3-methylbenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-fluorobenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(3-fluoro-4-methoxybenzyl)pyrido[3,2-

e] [1,2,4]triazolo[1,5 -c]pyrimidin-5(6H)-one;

9-(((2 S,6R)-2,6-Dimethylmorpholino)methyl)-6-(2-fluoro-4-methoxybenzyl)pyrido [3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3-bromo-4-Fluorobenzy1)-9-(((2 S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

4-((9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-5-oxopyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-6(5H)-yl)methyl)benzonitrile;

6-(4-(tert-Butyl)b enzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e] [1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

3-((9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-5-oxopyri do[3,2-e] [1 ,2,4]triazolo[1 ,5-c]pyrimidin-6(5H)-yl)methyl)benzonitrile;

9-(((2 S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-(methyl sulfonyl)benzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2 S,6R)-2,6-Dimethylmorpholino)methyl)-6-(2-methylbenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5 -c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(3-iodobenzy)pyrido [3,2-e][1,2,4]triazolo[1,5-c]pyrimdin-5(6H)-one;

6-(3 ,5 -Difluorobenzy1)-9-4(2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e] [1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(2-Bromo-4-methoxybenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,6-Difluoro-4-methoxybenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2 S,6R)-2,6-Dimethylmorpholino)methyl)-6-((1-methyl -1 H-indazol-6-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-(1H-Pyrazol-1-yl)benzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-(Difluoromethoxy)-2-fluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3,5-Difluoro-4-methoxybenzy1)-9-0(2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,3-Difluoro-4-methoxybenzy1)-9-4(2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(2-((trifluoromethyl)thio)benzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3-Chloro-4-fluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3,4-Dichlorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2-Chloro-4-methoxybenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2-(Difluoromethoxy)benzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chloro-3-fluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(3-Chloro-5-fluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-(2-oxopyrrolidin-1-yl)benzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-ethoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3,4-Difluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-

e] [1,2,4]triazolo[1,5 -c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-(methylthio)benzyl)pyrido[3,2-e]
[1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2-Chloro-4-(methyl sulfonyl)benzyl)-9-(((2S,6R)-2,6-
dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzyl)-8-(phenoxymethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-
one;

6-(2,3 -Difluoro-4-methoxybenzyl)-9-((4-isopropylpiperazin-1-yl)methyl)pyrido[3,2-e]
[1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,3 -Difluoro-4-methoxybenzyl)-9-(piperidin-1-ylmethyl)pyrido[3,2-e][1,2,4]triazolo[1,5-
c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(2,4,5-trifluorobenzyl)pyrido[3,2-e]
[1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-isopropylbenzyl)pyrido[3,2-e][
1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-(Difluoromethoxy)benzyl)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-
e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-ethoxy-3,5-difluorobenzyl)pyrido[3,2-e]
[1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-ethynylbenzyl)pyrido[3,2-e]
[1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-iodobenzyl)pyrido[3,2-e]
[1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3,4-Dimethoxybenzyl)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-
e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3-Chloro-5-fluoro-4-methoxybenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxy-3-methylbenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(3-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,5-Difluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,4-Difluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(4-(trifluoromethyl)benzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(4-fluoro-3-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(2-fluoro-4-methylbenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2-Chloro-4,5-difluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(3-Chloro-2,4-difluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(3,4,5-trimethoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,4-dichlorobenzy1)-9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,4-Dichloro-5-fluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(2-Chloro-4-fluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chloro-2-fluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(2,3,5,6-tetrafluoro-4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chloro-2,6-difluorobenzy1)-9-(((2S,6R)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(4-fluoro-3,5-dimethylbenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(2,3,4-trifluorobenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(2,3-dichlorobenzy1)-9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,3-Difluoro-4-methylbenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Chloro-3-(trifluoromethoxy)benzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(3,5-Dimethoxybenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3-Chloro-4-ethoxy-5-fluorobenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(4-ethoxy-2,3-difluorobenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2R,6S)-2,6-Dimethylmorpholino)methyl)-6-(3,4,5-trifluorobenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-Benzy1-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(3,4-Dimethylbenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,

6-(2,4-Dimethylbenzy1)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(2,3,5,6-tetrafluoro-4-methylbenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(Benzo[d][1,3]dioxo1-5-ylmethyl)-9-(((2R,6S)-2,6-dimethylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(morpholinomethyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one,

6-(4-Methoxybenzy1)-9-((2-methylmorpholino)methyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

6-(4-Methoxybenzy1)-9-(piperidin-1-ylmethyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

6-(4-Methoxybenzy1)-9-((4-methoxypiperidin-1-yl)methyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

9-((4-Acetyl)piperazin-1-yl)methyl)-6-(4-methoxybenzyl)-[1,2,4]triazolo[1,5-c]pteridin-5(6H)-one;

9-((1,4-Oxazepan-4-yl)methyl)-6-(2,3-difluoro-4-methoxybenzy)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,3-Difluoro-4-methoxybenzy1)-9-((3-methylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

6-(2,3-Difluoro-4-methoxybenzy1)-9-((3-hydroxyazetidin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;

and pharmaceutically acceptable salts thereof; and one or more pharmaceutically acceptable excipients.

6. The pharmaceutical composition of claim 5, wherein the compound is selected from the group consisting of:
- 9-((Dimethylamino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;
- 9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,
- 6-(4-Methoxybenzyl)-9-((4-methylpiperazin-1-yl)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one,
- 9-((2,2-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;
- 6-(4-Methoxybenzyl)-9-((2-methylmorpholino)methyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one;
- and pharmaceutically acceptable salts thereof.
7. The pharmaceutical composition of claim 5, wherein the compound is 9-(((2S,6R)-2,6-Dimethylmorpholino)methyl)-6-(4-methoxybenzyl)pyrido[3,2-e][1,2,4]triazolo[1,5-c]pyrimidin-5(6H)-one or a pharmaceutically acceptable salt thereof.
8. The pharmaceutical composition of any one of Claims 1-7 for use in the treatment of a disease, disorder, or medical condition mediated by PDE1 enzymatic activity.
9. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of a disease or disorder selected from the group comprising neurological disorders, cognitive disorders, cardiovascular disorders, renal disorders, hematological disorders, gastrointestinal and liver disorders, cancer disorders, and neurodegenerative disorders.
10. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of:
- a) a CNS disorder; or
 - b) a CNS disorder, wherein the CNS disorder is selected from one or more of the group comprising dementias and neurodegenerative disorders, cognitive disorders, psychiatric disorders, developmental and genetic conditions, age-associated memory impairments, and learning disabilities; or

- c) a CNS disorder, wherein the CNS disorder is selected from one or more of the group comprising Huntington's disease, Parkinson's disease, Alzheimer's disease, schizophrenia, mild-cognitive impairment, and ADHD; or
 - d) a CNS disorder, wherein the CNS disorder is a cognitive disorder associated with a progressive nervous system disease; or
 - e) a CNS disorder, wherein the CNS disorder is a cognitive disorder associated with a progressive nervous system disease, and wherein the progressive nervous system disease is multiple sclerosis.
11. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of a cognitive impairment, comprising:
- (a) providing cognitive training to an animal in need of treatment of a cognitive impairment under conditions sufficient to produce an improvement in performance by said animal of a cognitive function whose deficit is associated with said cognitive impairment;
 - (b) administering a chemical entity or composition of any of claims 1-7 to said animal in conjunction with said cognitive training;
 - (c) repeating said providing and administering steps one or more times; and
 - (d) reducing the number of training sessions sufficient to produce the improvement in performance, relative to the improvement in performance produced by cognitive training alone.
12. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of:
- a) a vascular disorder; or
 - b) a vascular disorder, wherein the vascular disorder is selected from one or more of the group comprising atherosclerosis, post-angioplasty restenosis, allograft vasculopathy, and pulmonary hypertension; or
 - c) a vascular disorder, wherein the vascular disorder is heart failure or congestive heart failure; or

- d) a vascular disorder, wherein the vascular disorder is caused by myocardial infarction, ischemic heart disease, hypertension, valvular heart disease, or cardiomyopathy.
13. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of:
- a) a renal disorder; or
 - b) a renal disorder, wherein the renal disorder is selected from one or more of the group comprising renal artery stenosis, pyelonephritis, glomerulonephritis, kidney tumors, polycystic kidney disease, injury to the kidney, and damage resulting from radiation of the kidney.
14. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of:
- a) an injury or disease that results in neuronal degeneration; or
 - b) an injury or disease that results in neuronal degeneration, wherein the injury is a primary nervous system injury selected from the group comprising closed head injuries, blunt trauma, penetrating trauma, hemorrhagic stroke, ischemic stroke, glaucoma, cerebral ischemia, and neuronal damage caused by surgical procedures; or
 - c) an injury or disease that results in neuronal degeneration, wherein the injury is a primary nervous system injury selected from the group comprising closed head injuries, blunt trauma, penetrating trauma, hemorrhagic stroke, ischemic stroke, glaucoma, cerebral ischemia, and neuronal damage caused by surgical procedures, and wherein the injury is secondary degeneration resulting from a primary nervous system injury.
15. The pharmaceutical composition of any one of claims 1-7 for use in a method of promoting neurogenesis.
16. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of:
- a) a disorder that includes an aberrant or dysregulated signaling pathway mediated by PDE1; or
 - b) a disorder that includes an aberrant or dysregulated signaling pathway mediated by PDE1, wherein the signaling pathway mediated by PDE1 involves nitric oxide,

natriuretic peptides, dopamine, noradrenalin, neurotensin, cholecystokinin (CCK), vasoactive intestinal peptide, serotonin, glutamate, GABA, acetylcholine, adenosine, cannabinoids, natriuretic peptides, or endorphins; or

c) a disorder that includes an aberrant or dysregulated signaling pathway mediated by PDE1, wherein the disorder is characterized by alterations in dopamine signaling.

17. The pharmaceutical composition of any one of claims 1-7 for use in the treatment of substance or drug abuse, or a fetal alcohol spectrum disorder.

18. The pharmaceutical composition of any one of claims 1-7 for use in a method for modulating PDE1 enzyme activity.