WHAT IS CLAIMED IS:

1. A composition comprising:

an activin receptor-like kinase 5 (ALK5) inhibitor;

a MAP/ERK kinase (MEK) inhibitor; and

a Rho kinase (ROCK) inhibitor.

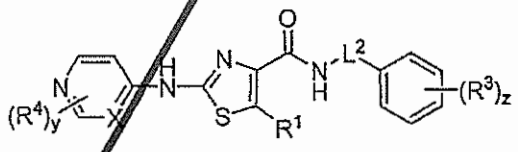
2. The composition of claim 1, further comprising a glycogen synthase kinase 3 (GSK3) inhibitor.

3. The composition of claim 1, further comprising a histone deacetylase (HDAC) inhibitor.

4. The composition of claim 1, wherein the ALK5 inhibitor is A-83-01 or SB431542.

5. The composition of claim 1, wherein the MEK inhibitor is PD0325901.

6. The composition of claim 1, wherein the ROCK inhibitor has the structure:



(II)

wherein,

L^2 is substituted or unsubstituted C_1-C_{10} alkylene;

y is an integer from 0 to 3;

z is an integer from 0 to 5;

X is -N=, -CH= or -CR^5=;

R^1 is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

R^3, R^4 and R^5 are independently -CN, -$S(O)_nR^6$, -NR^7R^8, -$C(O)R^9$, -NR^{10}-$C(O)R^{11}$, -NR^{12}-C(O)-OR^{13}, -$C(O)NR^{14}R^{15}$, -$NR^{16}S(O)_2R^{17}$, -OR^{18}, -$S(O)_2NR^{19}$,

substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl, wherein n is an integer from 0 to 2, wherein if z is greater than 1, two R^3 moieties are optionally joined together to form a substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl; and

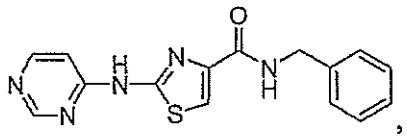
R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18} and R^{19} are independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

or a racemate, diastereomer, tautomer, or a geometric isomer thereof, or a pharmaceutically acceptable salt thereof.

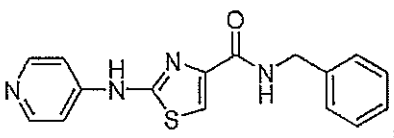
7. The ROCK inhibitor of claim 6, wherein
L2 is methylene;
X is N= or CH=;
R1 is hydrogen; or
y and z are 0.

8. The ROCK inhibitor of claim 6, wherein
L2 is methylene;
X is N= or CH=;
R1 is hydrogen; and
y and z are 0.

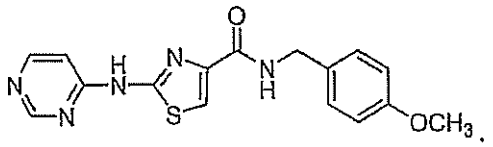
9. The ROCK inhibitor of claim 6, wherein the ROCK inhibitor has the structure:



,



, or



10. The composition of claim 1, comprising one or more mammalian cells.

11. An *in vitro* or *ex vivo* method of inducing non-pluripotent mammalian cells into induced pluripotent stem cells, comprising:

introducing at least one transcription factor selected from the group consisting of: Oct-3/4, Klf4, Sox2, and c-Myc into the non-pluripotent cells; and

contacting the non-pluripotent cells with an ALK5 inhibitor, a MEK inhibitor, and a ROCK inhibitor;

under conditions sufficient to induce pluripotent stem cells.

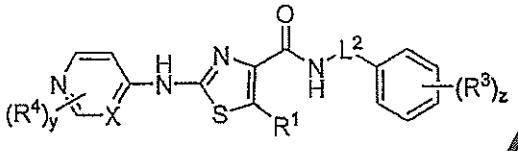
12. The method of claim 11, wherein introducing at least one transcription factor into the non-pluripotent cells comprises introducing a polynucleotide encoding the at least one transcription factor into the non-pluripotent cells.

13. The method of claim 11, wherein introducing at least one transcription factor into the non-pluripotent cells comprises contacting the non-pluripotent cells with a polypeptide comprising the amino acid sequence of the at least one transcription factor polypeptide.

14. The method of claim 11, further comprising contacting the non-pluripotent cells with a GSK3 inhibitor.

15. The method of claim 11, further comprising contacting the non-pluripotent cells with an HDAC inhibitor.

16. The method of claim 11, wherein the ROCK inhibitor has the structure:



(II)

wherein,

L^2 is substituted or unsubstituted C_1-C_{10} alkylene;

y is an integer from 0 to 3;

z is an integer from 0 to 5;

X is -N=, -CH= or -CR^5=;

R^1 is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

R^3, R^4 and R^5 are independently -CN, -$S(O)_nR^6$, -NR^7R^8, -$C(O)R^9$, -NR^{10}-$C(O)R^{11}$, -NR^{12}-C(O)-OR^{13}, -$C(O)NR^{14}R^{15}$, -$NR^{16}S(O)_2R^{17}$, -OR^{18}, -$S(O)_2NR^{19}$, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl, wherein n is an integer from 0 to 2, wherein if z is greater than 1, two R^3 moieties are optionally joined together to form a substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl; and

R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18} and R^{19} are independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

or a racemate, diastereomer, tautomer, or a geometric isomer thereof, or a pharmaceutically acceptable salt thereof.

The claims defining the invention are as follows:

1. A composition comprising:

an activin receptor-like kinase 5 (ALK5) inhibitor;

a MAP/ERK kinase (MEK) inhibitor; and

a Rho kinase (ROCK) inhibitor.

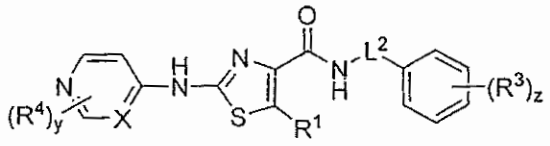
2. The composition of claim 1, further comprising a glycogen synthase kinase 3 (GSK3) inhibitor.

3. The composition of claim 1, further comprising a histone deacetylase (HDAC) inhibitor.

4. The composition of claim 1, wherein the ALK5 inhibitor is A-83-01 or SB431542.

5. The composition of claim 1, wherein the MEK inhibitor is PD0325901.

6. The composition of claim 1, wherein the ROCK inhibitor has the structure:



(II)

wherein,

L^2 is substituted or unsubstituted C_1-C_{10} alkylene;

y is an integer from 0 to 3;

z is an integer from 0 to 5;

X is -N=, -CH= or -CR^5=;

R^1 is hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

R^3, R^4 and R^5 are independently -CN, -$S(O)_nR^6$, -NR^7R^8, -$C(O)R^9$, -NR^{10}-$C(O)R^{11}$, -NR^{12}-C(O)-OR^{13}, -$C(O)NR^{14}R^{15}$, -$NR^{16}S(O)_2R^{17}$, -OR^{18}, -$S(O)_2NR^{19}$, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, substituted or unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl, wherein n is an integer from 0 to 2, wherein if z is greater than 1, two R^3 moieties are optionally joined together to form a substituted or unsubstituted cycloalkyl, substituted or unsubstituted

heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl; and

R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18} and R^{19} are independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

or a racemate, diastereomer, tautomer, or a geometric isomer thereof, or a pharmaceutically acceptable salt thereof.

7. The ROCK inhibitor of claim 6, wherein

L^2 is methylene;

X is N= or CH=;

R^1 is hydrogen; or

y and z are 0.

8. The ROCK inhibitor of claim 6, wherein

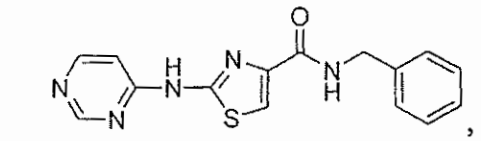
L^2 is methylene;

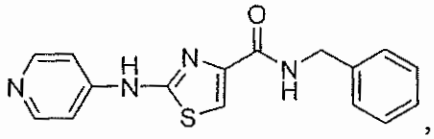
X is N= or CH=;

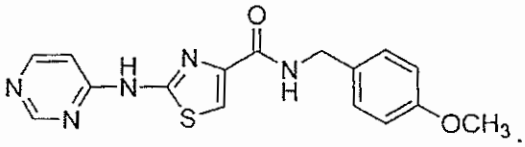
R^1 is hydrogen; and

y and z are 0.

9. The ROCK inhibitor of claim 6, wherein the ROCK inhibitor has the structure:


,


, or


.

10. The composition of claim 1, comprising one or more mammalian cells.

11. A mixture comprising:

one or more mammalian cells;

an ALK5 inhibitor;

a MEK inhibitor; and

a ROCK inhibitor.

12. The mixture of claim 11, wherein the mammalian cells comprise non-pluripotent cells.

13. The mixture of claim 11, further comprising a glycogen synthase kinase 3 (GSK3) inhibitor.

14. The mixture of claim 11, further comprising an histone deacetylase (HDAC) inhibitor.

15. An *in-vitro* method of inducing non-pluripotent mammalian cells into induced pluripotent stem cells, comprising:

introducing at least one transcription factor selected from the group consisting of: Oct-3/4, K1f4, Sox2, and c-Myc into the non-pluripotent cells; and

contacting the non-pluripotent cells with an ALK5 inhibitor, a MEK inhibitor, and a ROCK inhibitor;

under conditions sufficient to induce pluripotent stem cells.

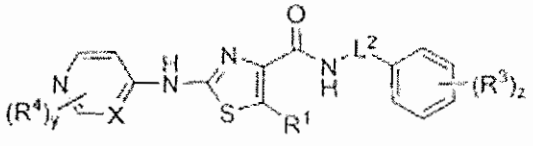
16. The method of claim 15, wherein introducing at least one transcription factor into the non-pluripotent cells comprises introducing a polynucleotide encoding the at least one transcription factor into the non-pluripotent cells.

17. The method of claim 15, wherein introducing at least one transcription factor into the non-pluripotent cells comprises contacting the non-pluripotent cells with a polypeptide comprising the amino acid sequence of the at least one transcription factor polypeptide.

18. The method of claim 15, further comprising contacting the non-pluripotent cells with a GSK3 inhibitor.

19. The method of claim 15, further comprising contacting the non-pluripotent cells with an HDAC inhibitor.

20. The method of claim 15, wherein the ROCK inhibitor has the structure:



(II)

wherein,

L^2 is substituted or unsubstituted C_1-C_{10} alkylene;

y is an integer from 0 to 3;

z is an integer from 0 to 5;

X is -N=, -CH= or -CR^5=;

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R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, R^{18} and R^{19} are independently hydrogen, substituted or unsubstituted alkyl, substituted or unsubstituted heteroalkyl, unsubstituted cycloalkyl, substituted or unsubstituted heterocycloalkyl, substituted or unsubstituted aryl, or substituted or unsubstituted heteroaryl;

or a racemate, diastereomer, tautomer, or a geometric isomer thereof, or a pharmaceutically acceptable salt thereof.