X is hydrogen, halogen, optionally substituted alkynyl, optionally substituted carbocyclylalkynyl, optionally substituted aryl, or optionally substituted heteroaryl;

Y is hydrogen, optionally substituted alkyl, or optionally substituted cycloalkyl; and

Z is an optionally substituted group chosen from N-heterocyclyl, -O-heterocyclylalkyl, -N(H)-heterocyclylalkyl, or -N(Me)-heterocyclylalkyl.

[0007] One embodiment provides a pharmaceutical composition comprising a compound of Formula (I), or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient. One embodiment provides a pharmaceutical composition comprising a compound of Formula (Ia), or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient. One embodiment provides a pharmaceutical composition comprising a compound of Formula (Ib), or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.

[0008] One embodiment provides a method of regulating gene transcription in a cell comprising inhibiting lysine-specific demethylase 1 activity by exposing the lysine-specific demethylase 1 enzyme to a compound of Formula (I). One embodiment provides a method of regulating gene transcription in a cell comprising inhibiting lysine-specific demethylase 1 activity by exposing the lysine-specific demethylase 1 enzyme to a compound of Formula (Ia). One embodiment provides a method of regulating gene transcription in a cell comprising inhibiting lysine-specific demethylase 1 activity by exposing the lysine-specific demethylase 1 enzyme to a compound of Formula (Ib).

[0009] One embodiment provides a method of treating cancer in a patient in need thereof, comprising administering to the patient a compound of Formula (I), or a pharmaceutically acceptable salt thereof. One embodiment provides a method of treating cancer in a patient in need thereof, comprising administering to the patient a compound of Formula (Ia), or a pharmaceutically acceptable salt thereof. One embodiment provides a method of treating cancer in a patient in need thereof, comprising administering to the patient a compound of Formula (Ib), or a pharmaceutically acceptable salt thereof.

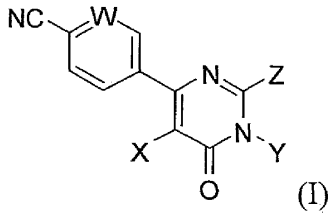
[0009a] In one embodiment, there is use of a compound of Formula (I), wherein Y is H or substituted alkyl; X is H, optionally substituted phenyl, pyridine, pyrimidine, indazole, indole, pyrazole or CN; W is CF or CH; Z is substituted N-attached heterocyclyl or -N(R)-heterocyclyl in the manufacture of a medicament for regulating gene transcription in a cell by inhibiting lysine-specific demethylase 1 activity.

[0009b] In one embodiment, there is use of a compound of Formula (I), or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating acute myeloid leukemia or breast cancer in a patient in need thereof.

CLAIMS

We Claim:

1. A compound having the structure of Formula (I), or a pharmaceutically acceptable salt thereof,



(I)

wherein,

W is N, C-H, or C-F;

X is hydrogen, halogen, -CN, optionally substituted alkyl, optionally substituted alkynyl, optionally substituted carbocyclylalkynyl, optionally substituted aryl, or optionally substituted heteroaryl;

Y is hydrogen, optionally substituted alkyl, optionally substituted cycloalkyl, or optionally substituted cycloalkylalkyl;

Z is an optionally substituted group chosen from alkyl, carbocyclyl, C-attached heterocyclyl, N-attached heterocyclyl, heterocyclylalkyl, heterocyclylalkenyl, -O-heterocyclyl, -N(R)-heterocyclyl, -O-heterocyclylalkyl, -N(R)-heterocyclylalkyl, -N(R)(C_1-C_4alkylene)-NR_2, -O(C_1-C_4alkylene)-NR_2; and

R is hydrogen or C_1-C_4alkyl.

2. The compound of claim 1, or a pharmaceutically acceptable salt thereof, wherein W is C-H.

3. The compound of claim 1, or a pharmaceutically acceptable salt thereof, wherein W is C-F.

4. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt thereof, wherein X is hydrogen.

5. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt thereof, wherein X is halogen.

6. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt thereof, wherein X is optionally substituted alkynyl.

7. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt thereof, wherein X is optionally substituted carbocyclylalkynyl.

8. The compound of any one of claims 1-3, or a pharmaceutically acceptable salt thereof, wherein X is optionally substituted aryl, or optionally substituted heteroaryl.

24. The compound of any one of claims 1-23, or a pharmaceutically acceptable salt thereof, wherein Y is hydrogen.

25. The compound of any one of claims 1-23, or a pharmaceutically acceptable salt thereof, wherein Y is optionally substituted cycloalkyl.

26. The compound of any one of claims 1-23, or a pharmaceutically acceptable salt thereof, wherein Y is optionally substituted alkyl.

27. The compound of claim 26, or a pharmaceutically acceptable salt thereof, wherein the optionally substituted alkyl is an optionally substituted C_1-C_3 alkyl.

28. The compound of claim 26, or a pharmaceutically acceptable salt thereof, wherein the optionally substituted alkyl is an optionally substituted C_1 alkyl.

29. The compound of claim 26, or a pharmaceutically acceptable salt thereof, wherein the optionally substituted alkyl is a methyl group.

30. A pharmaceutical composition comprising a compound of Formula (I), or a pharmaceutically acceptable salt thereof, and a pharmaceutically acceptable excipient.

31. Use of a compound of Formula (I), wherein Y is H or substituted alkyl; X is H, optionally substituted phenyl, pyridine, pyrimidine, indazole, indole, pyrazole or CN; W is CF or CH; Z is substituted N-attached heterocyclyl or -N(R)-heterocyclyl in the manufacture of a medicament for regulating gene transcription in a cell by inhibiting lysine-specific demethylase 1 activity.

32. Use of a compound of Formula (I), or a pharmaceutically acceptable salt thereof, in the manufacture of a medicament for treating acute myeloid leukemia or breast cancer in a patient in need thereof.