WHAT IS CLAIMED IS:

1. A method of treating a human subject having acute myeloid leukemia (AML), wherein the method comprises administering to the subject a combination of (i) a pharmaceutical composition comprising 5-azacytidine, (ii) at least one additional therapeutic agent, and (iii) a lysine specific demethylase-1 (LSD-1) inhibitor or a pharmaceutically acceptable salt thereof.

2. The method of claim 1, wherein the subject is not eligible for intensive induction chemotherapy.

3. The method of claim 1, wherein:
   (a) the 5-azacytidine and the at least one additional therapeutic agent are administered concomitantly; or
   (b) the 5-azacytidine and the at least one additional therapeutic agent are administered sequentially wherein the 5-azacytidine is administered first.

4. The method of claim 1, wherein:
   (a) the 5-azacytidine and the at least one additional therapeutic agent are co-formulated as a single unit dosage form; or
   (b) the 5-azacytidine and the at least one additional therapeutic agent are formulated as separate dosage forms.

5. The method of claim 1, wherein:
   (a) the 5-azacytidine and the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, are administered concomitantly; or
   (b) the 5-azacytidine and the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, are administered sequentially.

6. The method of claim 1, wherein:

(a) the 5-azacytidine, the at least one additional therapeutic agent, and the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, are administered concomitantly; or

(b) the 5-azacytidine, the at least one additional therapeutic agent, and the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, are administered sequentially.

7. The method of claim 1, wherein the 5-azacytidine is administered:

(a) subcutaneously or intravenously; and/or

(b) at a dose of about 75 mg/m^2 to about 100 mg/m^2 subcutaneously or intravenously; and/or

(c) at a dose of about 75 mg/m^2 subcutaneously or intravenously; and/or

(d) subcutaneously or intravenously daily for the first seven days of a 28-day cycle.

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8. The method of claim 1, wherein the 5-azacytidine is administered:

(a) at a dose of about 50 mg, about 60 mg, about 70 mg, about 80 mg, about 90 mg, about 100 mg, about 150 mg, about 200 mg, about 250 mg, about 300 mg, about 350 mg, about 400 mg, about 450 mg, about 500 mg, about 550 mg, or 600 mg orally; and/or

(b) at a dose of about 200 mg; and/or

(c) at a dose of about 300 mg; and/or

(d) for the first seven, fourteen, or twenty-one days of a 28 day cycle; and/or

(e) to the human subject one or two times per day; and/or;

(f) in the form of a capsule or a tablet.

9. The method of claim 8, wherein the 5-azacytidine is administered in the form of a non-enteric-coated tablet.

10. The method of claim 1, wherein the 5-azacytidine is administered orally:

(a) at a dose of about 200 mg per day for 14 days in a 28-day cycle;

(b) at a dose of about 300 mg per day for 14 days in a 28-day cycle;

(c) at a dose of about 200 mg per day for 21 days in a 28-day cycle; or

(d) at a dose of about 300 mg per day for 21 days in a 28-day cycle.

11. The method of claim 1, wherein the 5-azacytidine is administered orally:

(a) daily for 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or greater than 14 days, optionally followed by a treatment dosing holiday of 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or greater than 14 days;

(b) daily for 14 or more days, optionally followed by a treatment dosing holiday of 7 or more days;

(c) for 21 or more days, optionally followed by a treatment dosing holiday of 7 or more days;

(d) for 14 days, optionally followed by a treatment dosing holiday of 14 days;

(e) for 21 or more days, followed by a treatment dosing holiday of 7 or more days; or

(f) for 14 days, followed by a treatment dosing holiday of 14 days.

12. The method of claim 1, wherein the 5-azacytidine is administered orally:

(a) at a dose of about 300 mg daily for 14 days, followed by a treatment dosing holiday of 14 days;

(b) at a dose of about 200 mg daily for 14 days, followed by a treatment dosing holiday of 14 days;

(c) at a dose of about 300 mg daily for 21 days, followed by a treatment dosing holiday of 7 days; or

(d) at a dose of about 200 mg daily, followed by a treatment dosing holiday of 7 days;

13. The method of claim 1, wherein the 5-azacytidine is administered orally:

(a) using a treatment cycle comprising administration of 5-azacytidine per day for 7 days in a 28-day cycle;

(b) using a treatment cycle comprising administration of 5-azacytidine per day for 14 days in a 28-day cycle; or

(c) using a treatment cycle comprising administration of 5-azacytidine per day for 21 days in a 28-day cycle.

14. The method of claim 1, wherein the at least one additional therapeutic agent comprises gilteritinib, midostaurin, quizartinib, enasidenib, ivosidenib, and/or venetoclax.

15. The method of claim 14, wherein the at least one additional therapeutic agent is venetoclax.

16. The method of claim 15, wherein the venetoclax is administered:

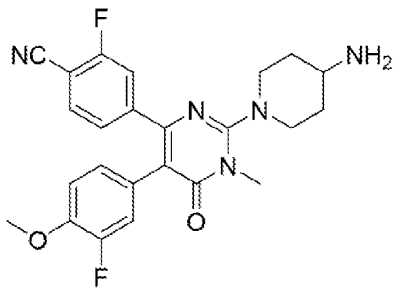
(a) orally; and/or

(b) in a form of a tablet; and/or

(c) daily; and/or

(d) at a dose of about 400 mg.

17. The method of claim 1, wherein the LSD-1 inhibitor is a compound having the structure:



or a pharmaceutically acceptable salt thereof.

18. The method of claim 17, wherein the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, is administered:

(a) orally; and/or

(b) in a form of a tablet or capsule; and/or

(c) once a week; and/or

(d) at a dose of about 20 mg, about 40 mg, or about 60 mg.

19. The method of claim 1, wherein:

(a) the AML is resistant to treatment with the 5-azacytidine alone; and/or

(b) the AML is resistant to treatment with the at least one additional therapeutic agent alone; and/or

(c) the AML is resistant to treatment with the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof alone; and/or

(d) the combination of the 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death as compared to the 5-azacytidine alone; and/or

(e) the combination of the 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death as compared to the 5-azacytidine alone by about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, about 80%, about 85%, about 90%, about 95%, or about 100%; and/or

(f) the combination of the 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death as compared to at least one additional therapeutic agent alone; and/or

(g) the combination of the 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death as compared to the at least one additional therapeutic agent alone by about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, about 80%, about 85%, about 90%, about 95%, or about 100%; and/or

(h) the combination of 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death as compared to the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof; and/or

(i) the combination of 5-azacytidine, the at least one additional therapeutic agent,

LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death as compared to the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof by about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, about 80%, about 85%, about 90%, about 95%, or about 100%; and/or

(j) the combination of 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death compared to the combination of any two of 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof; and/or

(k) the combination of 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death compared to the combination of any two of 5-azacytidine, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof by about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, about 80%, about 85%, about 90%, about 95%, or about 100%; and/or

(l) the 5-azacytidine administered orally and at least one additional therapeutic agent increases AML cell death as compared to 5-azacytidine administered intravenously or subcutaneously and at least one additional therapeutic agent; and/or

(m) the 5-azacytidine administered orally and at least one additional therapeutic agent increases AML cell death as compared to 5-azacytidine administered intravenously or subcutaneously and at least one additional therapeutic agent by about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, about 80%, about 85%, about 90%, about 95%, or about 100%; and/or

(n) the combination of the 5-azacytidine administered orally, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death compared to the combination of the 5-azacytidine

administered intravenously or subcutaneously, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof; and/or

(o) the combination of the 5-azacytidine administered orally, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof, increases AML cell death compared to the combination of the 5-azacytidine administered intravenously or subcutaneously, the at least one additional therapeutic agent, LSD-1 inhibitor, and a pharmaceutically acceptable salt thereof by about 10%, about 15%, about 20%, about 25%, about 30%, about 35%, about 40%, about 45%, about 50%, about 55%, about 60%, about 65%, about 70%, about 75%, about 80%, about 85%, about 90%, about 95%, or about 100%.

20. The method of claim 1, wherein the method comprises:

(a) administering the 5-azacytidine subcutaneously or intravenously to the subject once daily for the first 7 days of a 28 day cycle;

(b) administering the at least one additional therapeutic agent to the subject once daily in a 28 day cycle; and

(c) administering the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, to the subject once a week in a 28 day cycle.

21. The method of claim 1, wherein the method comprises:

(a) administering the 5-azacytidine subcutaneously or intravenously to the subject on days 1, 2, 3, 4, 5, 6, and 7 days of a 28 day cycle;

(b) administering the at least one additional therapeutic agent to the subject on days 1,2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28 of a 28 day cycle; and

(c) administering the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, to the subject on days 1, 8, 15, and 22 of a 28 day cycle.

22. The method of claim 21, furthering comprising:

(a) administering the 5-azacytidine at a dose of about 75 mg/m^2 subcutaneously or intravenously every day for the first seven days of a 28 day cycle; and/or

(b) administering the at least one additional therapeutic agent to the subject at a dose of at least about 100 mg every day of a 28 day cycle; and/or

(c) administering the LSD-1 inhibitor to the subject at a dose of about 20 mg, about 40 mg, or about 60 mg once a week of a 28 day cycle.

23. The method of claim 22, wherein the method comprises concurrently administering the at least one additional therapeutic agent to the subject a dose of about 100 mg on Day 1, a dose of about 200 mg on Day 2, a dose of about 300 mg on Day 3, and a dose of about 400 mg on Days 4-28 of a 28 day cycle.

24. The method of claim 1, wherein the method comprises:

(a) administering the 5-azacytidine at a dose of about 75 mg/m^2 subcutaneously or intravenously every day for the first seven days of a 28 day cycle; and/or

(b) administering the at least one additional therapeutic agent to the subject at a dose of about 400 mg orally every day of a 28 day cycle; and/or

(c) administering the LSD-1 inhibitor to the subject at a dose of about 20 mg, about 40 mg or about 60 mg orally once a week of a 28 day cycle.

25. The method of claim 24, wherein administering the at least one additional therapeutic agent comprises administering venetoclax.

26. The method of claim 1, wherein the method comprises the steps of:

(a) administering the 5-azacytidine orally to the subject once daily for the first 14 days of a 28 day cycle;

(b) administering the at least one additional therapeutic agent to the subject once daily in a 28 day cycle; and

(c) administering the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, to the subject once a week in a 28 day cycle.

27. The method of claim 1, wherein the method comprises the steps of:

(a) administering the 5-azacytidine orally to the subject on days 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14 of a 28 day cycle;

(b) administering the at least one additional therapeutic agent to the subject on days 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, and 28 of a 28 day cycle; and

(c) administering the LSD-1 inhibitor, or a pharmaceutically acceptable salt thereof, to the subject on days 1, 8, 15, and 22 of a 28 day cycle.

28. The method of claim 27, furthering comprising:

(a) administering the 5-azacytidine at a dose of about 300 mg every day for the first fourteen days of a 28 day cycle; and/or

(b) administering the at least one additional therapeutic agent to the subject at a dose of at least about 100 mg every day of a 28 day cycle; and/or

(c) administering the LSD-1 inhibitor to the subject at a dose of about 20 mg, about 40 mg, or about 60 mg once a week of a 28 day cycle.

29. The method of claim 28, wherein the method comprises concurrently administering the at least one additional therapeutic agent to the subject a dose of about 100 mg on Day 1, a dose of about 200 mg on Day 2, a dose of about 300 mg on Day 3, and a dose of about 400 mg on Days 4-28 of a 28 day cycle.

30. The method of claim 1, wherein the method comprises:

(a) administering the 5-azacytidine at a dose of about 300 mg orally every day for the first fourteen days of a 28 day cycle; and/or

(b) administering the at least one additional therapeutic agent to the subject at a dose of about 400 mg orally every day of a 28 day cycle; and/or

(c) administering the LSD-1 inhibitor to the subject at a dose of about 20 mg, about 40 mg or about 60 mg orally once a week of a 28 day cycle.

31. The method of claim 30, wherein administering the at least one additional therapeutic agent comprises administering venetoclax.

32. The method of claim 27, furthering comprising:

(a) administering the 5-azacytidine at a dose of about 200 mg every day for the first fourteen days of a 28 day cycle; and/or

(b) administering the at least one additional therapeutic agent to the subject at a dose of at least about 100 mg every day of a 28 day cycle; and/or

(c) administering the LSD-1 inhibitor to the subject at a dose of about 20 mg, about 40 mg, or about 60 mg once a week of a 28 day cycle.

33. The method of claim 32, wherein the method comprises concurrently administering the at least one additional therapeutic agent to the subject a dose of about 100 mg on Day 1, a dose of about 200 mg on Day 2, a dose of about 300 mg on Day 3, and a dose of about 400 mg on Days 4-28 of a 28 day cycle.

34. The method of claim 1, wherein the method comprises:

(a) administering the 5-azacytidine at a dose of about 200 mg orally every day for the first fourteen days of a 28 day cycle; and/or

(b) administering the at least one additional therapeutic agent to the subject at a dose of about 400 mg orally every day of a 28 day cycle; and/or

(c) administering the LSD-1 inhibitor to the subject at a dose of about 20 mg, about 40 mg or about 60 mg orally once a week of a 28 day cycle.

35. The method of claim 34, wherein administering the at least one additional therapeutic agent comprises administering venetoclax

36. The method of claim 1, wherein the acute myeloid leukemia comprises acute myeloid leukemia with recurrent genetic abnormalities, acute myeloid leukemia with myelodysplasia-related changes, therapy-related myeloid neoplasms, myeloid sarcoma, myeloid

proliferations related to Down syndrome, blastic plasmacytoid dendritic cell neoplasm, and/or acute promyelocytic leukaemia.

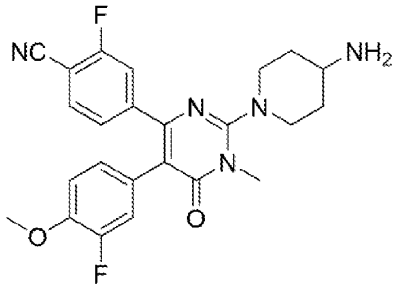
37. A method of treating a human subject having acute myeloid leukemia (AML) who is not eligible for intensive induction chemotherapy, the method comprises administering to the human subject:

(i) in a first continuous 28-day cycle:

(a) the 5-azacytidine subcutaneously or intravenously daily at a dose of about 75 mg/m^2 on Days 1 to 7;

(b) the venetoclax orally at a dose of about 100 mg on Day 1; about 200 mg on Day 2, and about 400 mg daily on Days 3 to 28; and

(c) a pharmaceutical composition comprising the besylate salt of the following compound:



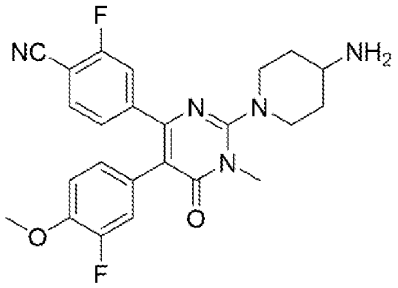
on Days 1, 8, 15, and 22; and

(ii) in subsequent 28 day cycles:

(d) the 5-azacytidine subcutaneously or intravenously daily at a dose of about 75 mg/m^2 on Days 1 to 7 of each subsequent cycle;

(e) the venetoclax orally at a dose of about 400 mg on Days 1 to 28 of each subsequent cycle; and

(f) a pharmaceutical composition comprising the besylate salt of the following compound



on Days 1, 8, 15, and 22 of each subsequent cycle.

38. The method of claim 37, wherein the pharmaceutical composition is administered at:

(a) the dose of about 20 mg in the first continuous 28-day cycle and subsequent 28 day cycles;

(b) the dose of about 40 mg in the first continuous 28-day cycle and subsequent 28 day cycles; or

(c) the dose of about 60 mg in the first continuous 28-day cycle and subsequent 28 day cycles.

39. The method of claim 38, wherein the pharmaceutical composition is administered at the dose of about 20 mg in the first continuous 28-day cycle and subsequent 28 day cycles; and if the dose of 20 mg is tolerated, then a second dose cohort will open where the pharmaceutical composition is administered at the dose of about 40 mg in the first continuous 28-day cycle and subsequent 28 day cycles.

40. The method of claim 39, wherein if the dose of 40 mg is tolerated, then a third dose cohort will open where the pharmaceutical composition is administered at the dose of about 40 mg in the first continuous 28-day cycle and subsequent 28 day cycles.