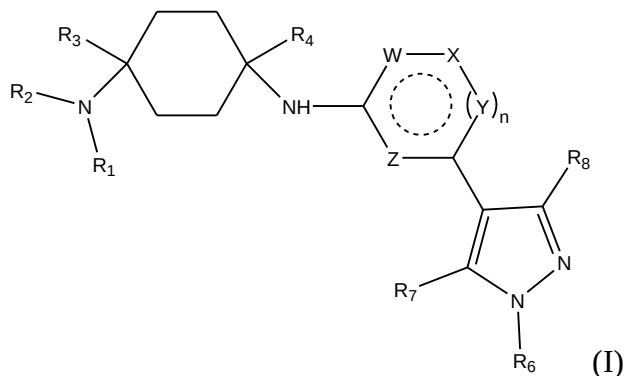


CLAIMS:

1. A compound having Formula (I), or a stereoisomer or salt thereof:



wherein:

R₁ and R₂ are each independently selected from H; and straight or branched C₁–C₈ alkyl, straight or branched C₁–C₅ alkoxy, straight or branched C₁–C₅ acyl, C₅–C₁₅ aryl, and C₃–C₇ heteroaryl, each optionally substituted by at least one of halide, hydroxyl, ester, ether, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, and amide; or

R₁ and R₂ together with the nitrogen atom they are connected to form a 4–7 membered saturated, unsaturated, or aromatic ring that may optionally include at least one of N, O, NH, C=N, C=O, and SO₂, and can optionally be substituted with at least one of straight or branched C₁–C₅ alkyl, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, hydroxyl, halide, and cyano;

R₃ and R₄ are each independently selected from H, and straight or branched C₁–C₈ alkyl optionally substituted by at least one of halide, hydroxyl, alkoxy, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, ester, and amide; or

R₁ or R₂ together with R₃ and the carbon and nitrogen atoms they are each connected to form a 4–7 membered saturated, unsaturated, or aromatic ring that may optionally include at least one of N, NH, O, C=N, C=O, and SO₂, and can optionally be substituted with at least one of straight or branched C₁–C₅ alkyl, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, hydroxyl, carbonyl, and halide;

W, X, Y, and Z are each selected from CH, CR₅, CR_{5c}, NH, N, and S; provided that at least one of W, X, Y and Z is selected from NH, N, and S; and provided that, when W is N and Z is N, then X is CR_{5c};

n is an integer selected from 0 and 1;

R₅ is selected from OH, NH₂, and halide; R_{5c} is selected from OH and NH₂;

R₈ is selected from H and halide; and straight or branched C₁–C₈ alkyl, straight or branched C₂–C₈ alkenyl, and straight or branched C₂–C₈ alkynyl, each optionally substituted by at least one halide;

R₆ is selected from straight or branched C₁–C₈ alkyl, straight or branched C₂–C₈ alkenyl, straight or branched C₂–C₈ alkynyl, C₅–C₁₀ cycloalkyl, and saturated or unsaturated 4–6 membered heterocycle, each optionally substituted by at least one of straight or branched C₁–C₈ alkyl, C₃–C₇ cycloalkyl, 4–6 membered heterocycle, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, halide, hydroxyl, and C₁–C₅ alkyl halide;

R₇ is selected from straight or branched C₁–C₈ alkyl, straight or branched C₂–C₈ alkenyl, and straight or branched C₂–C₈ alkynyl, each independently substituted by at least one of C₃–C₇ cycloalkyl, 4–6 membered heterocycle, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, halide, hydroxyl, and C₁–C₅ alkyl halide.

2. The compound according to claim 1, wherein R₁ and R₂ are each independently selected from H, and straight or branched C₁–C₈ alkyl optionally substituted by at least one of halide, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, hydroxyl, ester, ether, and amide.

3. The compound according to claim 1, wherein R₁ and R₂ are each independently selected from H, and straight or branched C₁–C₅ alkoxy optionally substituted by at least one of halide, hydroxyl, ester, and amide.

4. The compound according to claim 1, wherein R₁ and R₂ are each independently selected from H, and C₁–C₅ acyl optionally substituted by at least one of halide, hydroxyl, ester, ether, and amide.

5. The compound according to claim 1, wherein R₁ and R₂ are each independently selected from H, and C₅–C₁₅ aryl optionally substituted by at least one of halide, hydroxyl, ester, ether, and amide.

6. The compound according to any one of the preceding claims, wherein R₄ is H.

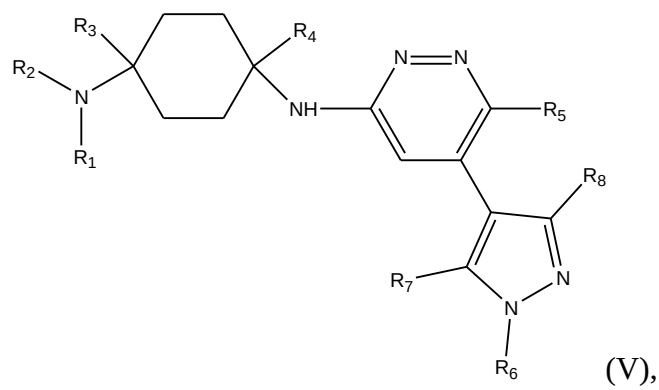
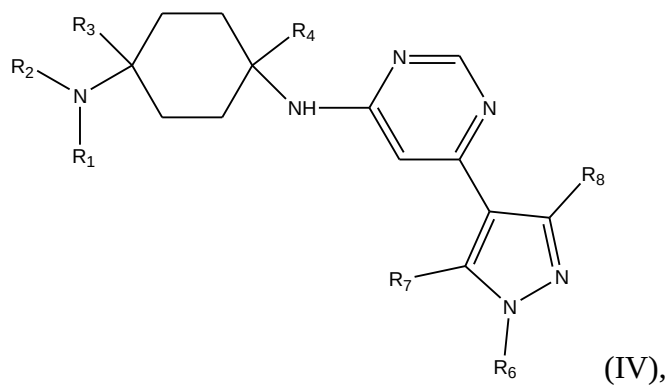
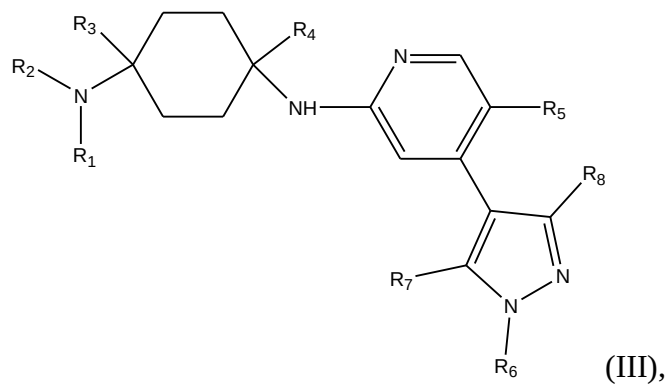
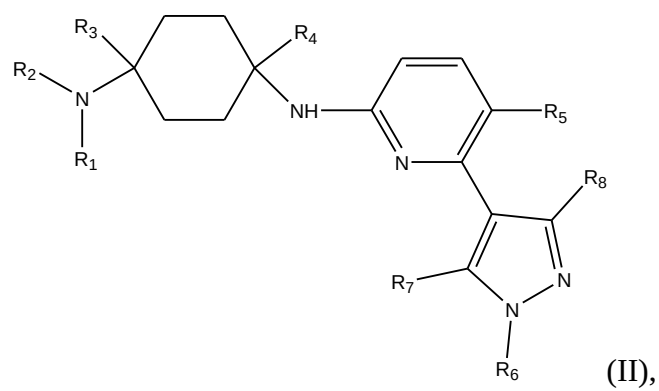
7. The compound according to any one of the preceding claims, wherein R₃ and R₄ are H.

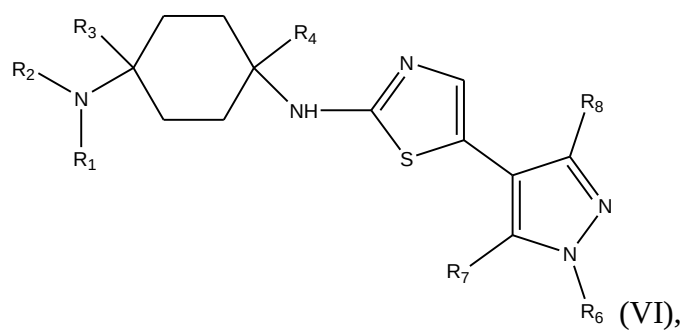
8. The compound according to any one of the preceding claims, wherein R₅ is halide.

9. The compound according to any one of claims 1 to 7, wherein R₅ is NH₂.

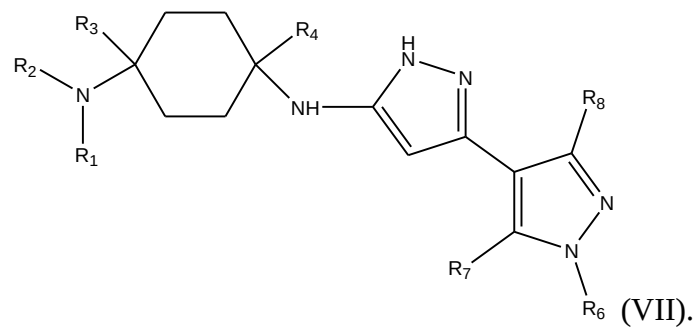
10. The compound according to any one of claims 1 to 7, wherein R₅ is OH.
11. The compound according to any one of the preceding claims, wherein R₈ is selected from H, Cl, and straight or branched C₁–C₄ alkyl.
12. The compound according to any one of the preceding claims, wherein R₈ is H.
13. The compound according to any one of the preceding claims, wherein at least one of R₁ and R₂ is H.
14. The compound according to any one of the preceding claims, wherein R₆ selected from straight or branched C₁–C₈ alkyl, C₅–C₁₀ cycloalkyl, and saturated or unsaturated 4–6 membered heterocycle; and R₇ is selected from straight or branched C₁–C₈ alkyl, substituted by at least one of C₃–C₇ cycloalkyl, 4–6 membered heterocycle, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, halide, hydroxyl, and C₁–C₅ alkyl halide.
15. The compound according to any one of the preceding claims, wherein R₆ is selected from straight or branched C₁–C₈ alkyl, C₅–C₁₀ cycloalkyl, and 4–6 membered saturated heterocycle.
16. The compound according to any one of the preceding claims, wherein R₇ is straight or branched C₁–C₈ alkyl substituted by at least one of C₃–C₇ cycloalkyl and hydroxyl.
17. The compound according to any one of the preceding claims, wherein R₆ is selected from straight or branched C₁–C₈ alkyl, saturated , and unsaturated or aromatic 4 –6 membered heterocycle, each optionally substituted by at least one of straight or branched C₁–C₈ alkyl, C₃–C₇ cycloalkyl, halide, hydroxyl, and CF₃.
18. The compound according to any one of the preceding claims, wherein R₇ is straight or branched C₁–C₈ alkyl substituted by at least one C₃–C₇ cycloalkyl.
19. The compound according to any one of the preceding claims, wherein R₁ and R₂ together with the nitrogen atom they are connected to form a 4–7 membered saturated ring, optionally including at least one of N, O, NH, C=N, C=O, and SO₂, and can optionally be substituted with at least one of straight or branched C₁–C₅ alkyl, hydroxyl, halide, and cyano.
20. The compound according to any one of the preceding claims, wherein R₁ and R₂ together with the nitrogen atom they are connected to form a 4–7 membered saturated ring.

21. The compound according to any one of the preceding claims, wherein R_1 and R_2 together with the nitrogen atom they are connected to form a 4–7 membered saturated ring including at least one of N and O.
22. The compound according to any one of the preceding claims, wherein R_1 and R_2 together with the nitrogen atom they are connected to form a 4–7 membered aromatic ring optionally including at least one of N and O.
23. The compound according to any one of the preceding claims, wherein R_3 and R_4 are H.
24. The compound according to any one of the preceding claims, wherein R_1 or R_2 together with R_3 and the carbon and nitrogen atom they are connected to form a 4–7 membered saturated ring that optionally includes at least one of N, NH, O, C=O, and SO₂, and can optionally be substituted with at least one of straight or branched C₁–C₅ alkyl, hydroxyl, carbonyl, and halide.
25. The compound according to any one of the preceding claims, wherein R_1 or R_2 together with R_3 and the carbon and nitrogen atom they are connected to form a 4–7 membered saturated ring that includes at least one of NH, O, and C=O.
26. The compound according to any one of the preceding claims, wherein n is 1.
27. The compound according to any one of claims 1 to 25, wherein n is 0.
28. The compound according to any one of the preceding claims, wherein one of W, X, Y, and Z is N.
29. The compound according to any one of claims 1 to 27, wherein two of W, X, Y, and Z is N.
30. The compound according to claim 27, wherein two of W, X, Y, and Z are independently selected from NH, N, and S.
31. The compound according to any one of the preceding claims, selected from the following, wherein R_1 – R_8 are as defined herein above:

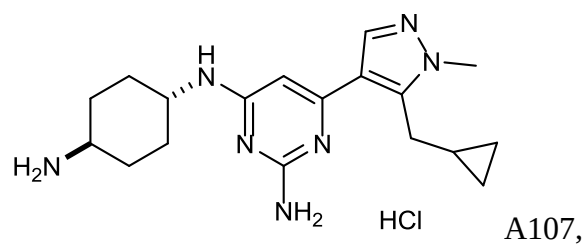
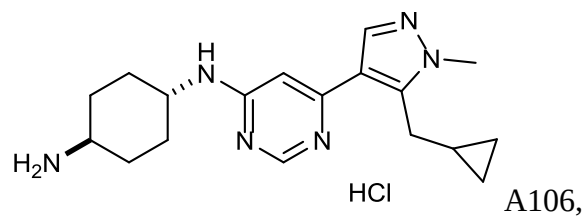
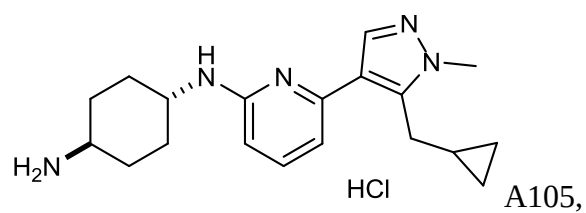
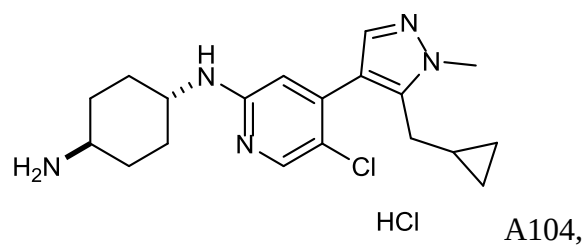


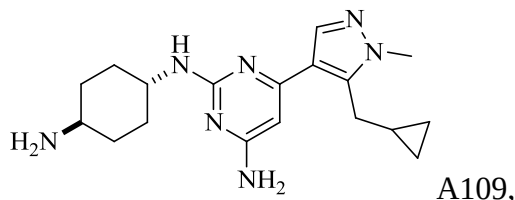
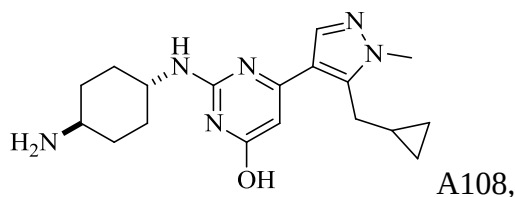


and

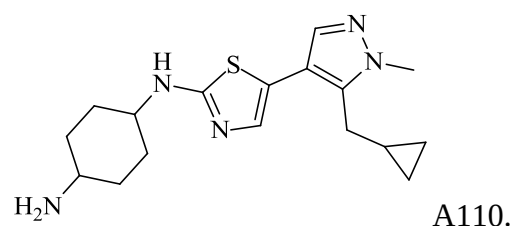


32. The compound according to any one of the preceding claims, selected from the following:





and



33. A pharmaceutical composition comprising at least one compound according to any one of claims 1 to 32.

34. Use of at least one compound according to any one of claims 1 to 32 in the manufacture of a medicament for inhibiting at least one of casein kinase I (CKI) and interleukin-1 receptor-associated kinase 1 (IRAK1) in a subject in need thereof.

35. Use of at least one compound according to any one of claims 1 to 32 in the manufacture of a medicament for inhibiting casein kinase I (CKI) in a subject in need thereof.

36. Use of at least one compound according to any one of claims 1 to 32 in the manufacture of a medicament for inhibiting interleukin-1 receptor-associated kinase 1 (IRAK1) in a subject in need thereof.

37. Use of at least one compound according to any one of claims 1 to 32 in the manufacture of a medicament for treating a condition, symptom, or disease associated with a malignant condition in a subject in need thereof.

38. The use according to claim 37, wherein the malignant condition is cancer.

39. The use according to claim 38, wherein the cancer has WT p53.

40. The use according to claim 39, wherein the WT p53 is a biomarker for the compound efficacy.

41. The use according to claim 38, wherein the cancer is selected from leukemia, multiple myeloma, malignant melanoma, breast cancer, prostate cancer, and colorectal cancer.

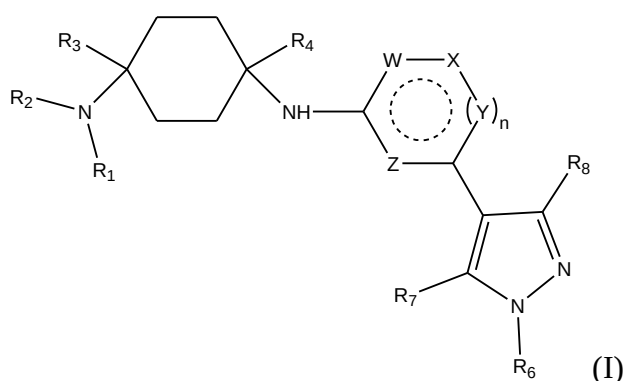
42. The use according to claim 37, wherein the malignant condition is selected from hematological malignancies, multiple myeloma, myelodysplastic syndrome (MDS), acute myeloid leukemia (AML), melanoma, ER-negative breast cancer, diffuse large B cell lymphoma (DLBCL), chronic myelogenous leukemia (CML), chronic lymphocytic leukemia (CLL), and head and neck cancer.

43. The use according to any one of claims 34 to 42, wherein the medicament is further used for inducing a cancer immunotherapy response in the subject.

44. Use of at least one compound according to any one of claims 1 to 32 in the manufacture of a medicament for inducing an immunotherapy response in a subject in need thereof.

45. Use of at least one compound according to any one of claims 1 to 32 in the manufacture of a medicament for treating an inflammatory and immune related disorder in a subject in need thereof.

46. A compound having Formula (I), or a stereoisomer or salt thereof:



wherein:

R₁ and R₂ are each independently selected from H; and straight or branched C₁–C₈ alkyl, straight or branched C₁–C₅ alkoxy, straight or branched C₁–C₅ acyl, C₅–C₁₅ aryl, and C₃–C₇ heteroaryl, each optionally substituted by at least one of halide, hydroxyl, ester, ether, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, and amide; or

R₁ and R₂ together with the nitrogen atom they are connected to form a 4–7 membered saturated, unsaturated, or aromatic ring that may optionally include at least one of N, O, NH, C=N, C=O, and SO₂, and can optionally be substituted with at least one of straight or branched C₁–C₅ alkyl, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, hydroxyl, halide, and cyano;

R₃ and R₄ are each independently selected from H, and straight or branched C₁–C₈ alkyl optionally substituted by at least one of halide, hydroxyl, alkoxy, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, ester, and amide; or

R₁ or R₂ together with R₃ and the carbon and nitrogen atoms they are each connected to form a 4–7 membered saturated, unsaturated, or aromatic ring that may optionally include at least one of N, NH, O, C=N, C=O, and SO₂, and can optionally be substituted with at least one of straight or branched C₁–C₅ alkyl, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, hydroxyl, carbonyl, and halide;

W, X, Y, and Z are each independently selected from CH, CR₅, NH, N, and S; provided that at least one of W, X, Y and Z is selected from NH, N and S; provided that, when W is N and Z is N, then R₈ is other than H;

n is an integer selected from 0 and 1;

R₅ is selected from OH, NH₂, and halide;

R₈ is selected from H and halide; and straight or branched C₁–C₈ alkyl, straight or branched C₂–C₈ alkenyl, and straight or branched C₂–C₈ alkynyl, each optionally substituted by at least one halide;

R₆ is selected from straight or branched C₁–C₈ alkyl, straight or branched C₂–C₈ alkenyl, straight or branched C₂–C₈ alkynyl, C₅–C₁₀ cycloalkyl, and saturated or unsaturated 4–6 membered heterocycle; each optionally substituted by at least one of straight or branched C₁–C₈ alkyl, C₃–C₇ cycloalkyl, 4–6 membered heterocycle, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, halide, hydroxyl, and C₁–C₅ alkyl halide; and

R₇ is selected from straight or branched C₁–C₈ alkyl, straight or branched C₂–C₈ alkenyl, and straight or branched C₂–C₈ alkynyl; each independently substituted by at least one of C₃–C₇ cycloalkyl, 4–6 membered heterocycle, C₅–C₁₅ aryl, C₃–C₇ heteroaryl, halide, hydroxyl, and C₁–C₅ alkyl halide.