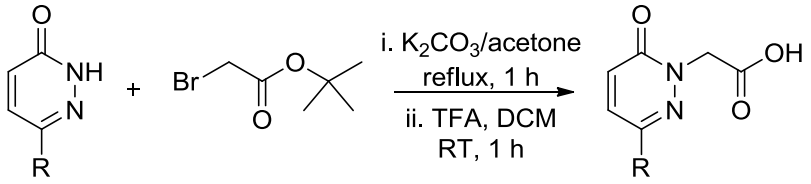
Supplemental Digital Content 1. General Methods for Chemistry

All air or moisture sensitive reactions were performed under positive pressure in nitrogen using oven-dried glassware. We obtained the anhydrous solvents, including dichloromethane, *N*,*N*-dimethylforamide (DMF), acetonitrile, methanol and triethylamine, from Sigma-Aldrich (St. Louis, MO). We employed a Waters semi-preparative high-performance liquid chromotography system for all preparative purification. We used a Phenomenex Luna C18 (5 micron, 30 x 75 mm) column (Phenomenex, Torrence, CA) with flows at 45 milliliters per minute (ml/min). Acetonitrile and water (both with 0.1% trifluoroacetic acid) composed the mobile phase. During purification, we used a gradient from 10% to 50% acetonitrile over 8 min, and fraction collection was delineated using UV detection (220 nm). We performed all analytical analysis on an Agilent LC/MS (Agilent Technologies, Santa Clara, CA). Method 1: We used a 4% to 100% acetonitrile (containing 0.025% trifluoroacetic acid) in water (containing 0.05% trifluoroacetic acid) gradient over seven minutes, with a total of eight minutes run time and a flow rate of 1 ml/min, employing a Phenomenex Luna C18 column (3 micron, 3 x 75 mm) at 50° C. Method 2: We used a gradient of 4% to 100% acetonitrile (containing 0.025% trifluoroacetic acid) in water (containing 0.05% trifluoroacetic acid) over 3 min with a total 4.5-min running time and a flow rate of 1 ml/min over a Phenomenex Gemini Phenyl column (3 micron, 3 x 100 mm) at 50° C. We determined purity with an Agilent Diode Array Detector in both methods 1 and 2. An Agilent 6130 mass spectrometer with electrospray ionization in the positive mode was used to determine mass.[1] We obtained unclear magnetic resonance spectra using Varian 400 MHz spectrometers. All chemical shifts are reported as parts per million in a solvent of undeuterated DMSO-d_6 at 2.49 ppm (with solvent alone serving as the internal standard.) An Agilent 6210 Time-of-Flight LC/MS system determined high-resolution mass spectrometry. We confirmed molecular formulas using electrospray ionization in the positive mode with Agilent Masshunter software (version B.02). Analogs evaluated by biological assays were more than 95% pure, based upon mass and spectra.

General synthesic procedures

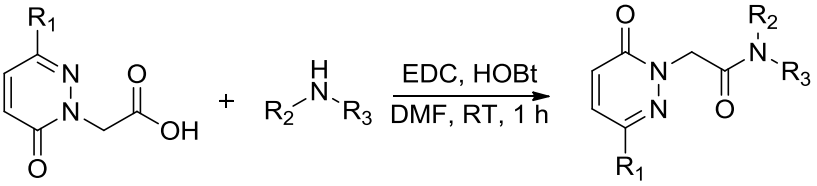
General procedure for alkylation and de-protection of 5-substituted pyridazin-3(2H)-one (Method A):



A mixture of 6-substituted pyridazin-3(2H)-one (1 mmol, 1 eq.), *tert*-butyl 2-bromoacetate (1.3 mmol, 1.3 eq.) and potassium carbonate (1.5 mmol, 1.5 eq.) in acetone (15 mL) was refluxed for 1 h. The reaction mixture was filtered through a pad of celite and washed with ethyl acetate. The filtrate was concentrated and the crude product was purified on a biotage® flash chromatography eluting with 40 % ethyl acetate in hexanes.

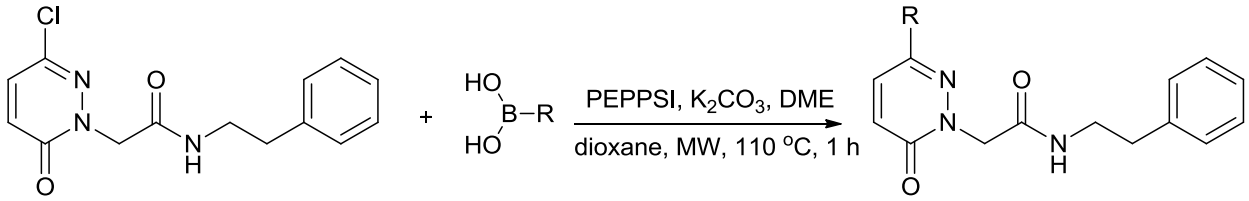
A solution of the t-butyl 2-(6-substituted-6-oxopyridazin-1(3H)-yl)acetate (16 mmol) in dichloromethane (30 mL) was added TFA (20 mL) and the reaction mixture was stirred at room temperature for 1 h. Excess solvent was removed under diminished pressure and the oily product was triturated with water. The white precipitate formed was collected by filtration and dried under vacuum to get the pure product.

General procedure for the amide coupling (Method B):



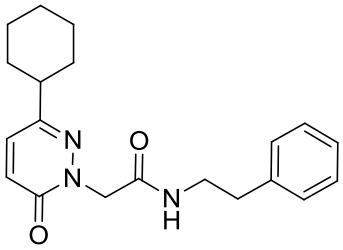
A mixture of 2-(3-oxo-6-substituted-pyridazin-1(3H)-yl)acetic acid (0.41 mmol, 1 eq.), EDC (0.16 g, 0.82 mmol, 2 eq.) and HOBT (0.063 g, 0.41 mmol, 1 eq.) in DMF (2 mL) was stirred at room temperature for 5 min. The amine (0.49 mmol, 1.2 eq.) was then added and stirred at room temperature for 1 h. The reaction mixture was filtered and the filtrate containing the product was purified by reversed phase chromatography or on a biotage® flash chromatography system.

General procedure for the Suzuki coupling (Method C):

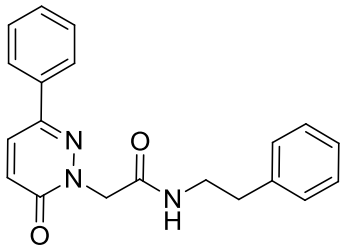


A mixture of 2-(6-chloro-3-oxopyridazin-1(3H)-yl)-*N*-phenethylacetamide (0.1 g, 0.34 mmol, 1 eq.), representative boronic acid (0.41 mmol, 1.2 eq), K_2CO_3 (0.14 g, 1.03 mmol, 3 eq.) and PEPPSI-IPr catalyst (2.4 mg, 3.43 µmol, 1 mol %) in dioxane (2 mL) was degassed with argon for 2-3 min and heated 110 ºC in microwave for 30 min. The solvent was evaporated using a continuous stream of N_2 and the crude product was taken up in DMF. The solution was then stirred with silica bound metal scavenger and filtered through the thiol cartridge to remove any metal impurities. The crude product was purified *via* reversed phase chromatography to give pure compound.

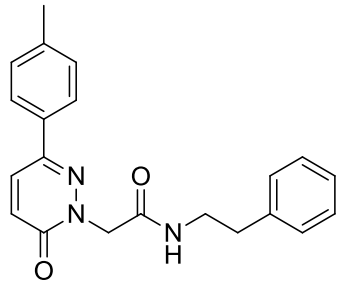
Characterization data for representative compounds



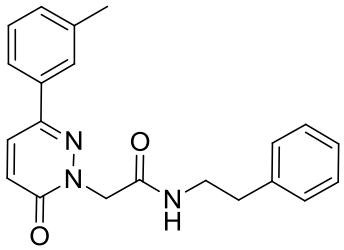
2-(3-Cyclohexyl-6-oxopyridazin-1(6H)-yl)-*N*-phenethylacetamide (3): This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 3) = 2.409 min and t_2 (Method 2) = 3.538 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.13 (td, J = 5.6, 2.6 Hz, 1H), 7.45 (dd, J = 9.6, 2.7 Hz, 1H), 7.33 – 7.16 (m, 5H), 6.90 (dd, J = 9.6, 2.6 Hz, 1H), 4.57 (d, J = 2.5 Hz, 2H), 3.32 – 3.25 (m, 3H), 2.71 (ddd, J = 8.8, 7.0, 2.7 Hz, 2H), 1.86 – 1.62 (m, 5H), 1.44 – 1.12 (m, 5H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{26}N_3O_2$, 340.202; found 340.2027.



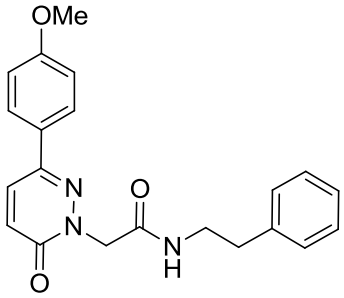
2-(6-Oxo-3-phenylpyridazin-1(6H)-yl)-*N*-phenethylacetamide (4): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.162 min and t_2 (Method 2) = 3.222 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.25 (t, J = 5.7 Hz, 1H), 8.08 (dd, J = 9.8, 0.7 Hz, 1H), 7.91 – 7.85 (m, 2H), 7.54 – 7.44 (m, 3H), 7.33 – 7.17 (m, 5H), 7.08 (dd, J = 9.8, 0.7 Hz, 1H), 4.74 (s, 2H), 3.32 – 3.26 (m, 2H), 2.80 – 2.69 (m, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{20}N_3O_2$, 334.155; found 334.1545.



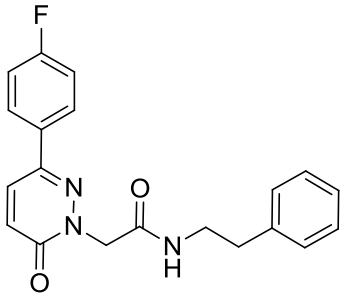
2-(6-Oxo-3-p-tolylpyridazin-1(6H)-yl)-N-phenethylacetamide (5): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 1) = 5.440 min and t_2 (Method 2) = 3.466 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ; 2.36 (s, 3 H), 2.73 (t, *J* = 7.4 Hz, 2 H), 3.27 - 3.35 (m, 2 H), 4.72 (s, 2 H), 7.05 (d, *J* = 9.8 Hz, 1 H), 7.17 - 7.25 (m, 3 H), 7.29 (m, 4 H), 7.77 (d, *J* = 8.2 Hz, 2 H), 8.05 (d, *J* = 9.8 Hz, 1 H) and 8.24 (m, 1 H); ^{13}C NMR (400 MHz, DMSO-d_6) δ; 20.8, 35.0, 54.3, 125.7, 126.1, 128.3, 128.6, 129.5, 129.6, 131.0, 131.5, 139.0, 139.3, 143.5, 158.9, 166.2; HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{21}H_{22}N_3O_3$, 348.1707; found 348.1708.



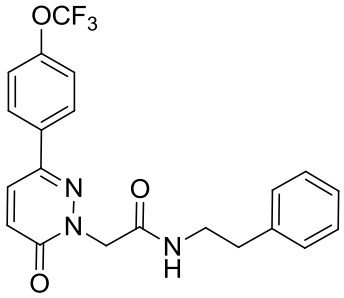
2-(6-Oxo-3-(m-tolyl)pyridazin-1(6H)-yl)-N-phenethylacetamide (6): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.324 min and t_2 (Method 2) = 3.471 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.25 (t, J = 5.6 Hz, 1H), 8.06 (dd, J = 9.8, 0.7 Hz, 1H), 7.73 – 7.62 (m, 2H), 7.38 (t, J = 7.7 Hz, 1H), 7.34 – 7.16 (m, 7H), 7.06 (dd, J = 9.8, 0.7 Hz, 1H), 4.73 (s, 2H), 3.32 – 3.25 (m, 2H), 2.73 (t, J = 7.4 Hz, 2H), 2.38 (s, 3H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{21}H_{22}N_3O_3$, 348.1707; found 348.1709.



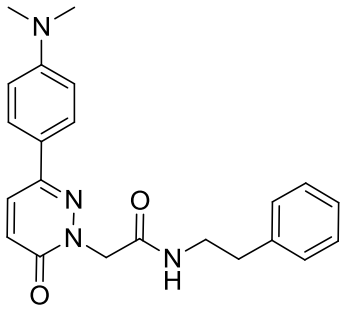
2-(3-(4-Methoxyphenyl)-6-oxopyridazin-1(6H)-yl)-N-phenethylacetamide (8): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.157 min and t_2 (Method 2) = 3.219 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.23 (t, J = 5.6 Hz, 1H), 8.04 (d, J = 9.8 Hz, 1H), 7.85 – 7.78 (m, 2H), 7.34 – 7.17 (m, 5H), 7.10 – 7.01 (m, 3H), 4.71 (s, 2H), 3.81 (s, 3H), 3.31 – 3.27 (m, 2H), 2.73 (dd, J = 8.0, 6.8 Hz, 2H).



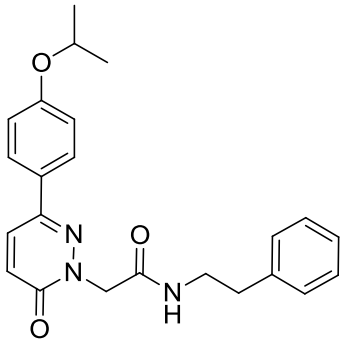
2-(3-(4-Fluorophenyl)-6-oxopyridazin-1(6H)-yl)-N-phenethylacetamide (9): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.200 min and t_2 (Method 2) = 3.404 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.24 (t, J = 5.7 Hz, 1H), 8.07 (d, J = 9.8 Hz, 1H), 7.96 – 7.89 (m, 2H), 7.39 – 7.25 (m, 4H), 7.24 – 7.17 (m, 3H), 7.08 (d, J = 9.7 Hz, 1H), 4.73 (s, 2H), 3.31 – 3.28 (m, 2H), 2.73 (t, J = 7.4 Hz, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{19}FN_3O_2$, 352.1456; found 352.1456.



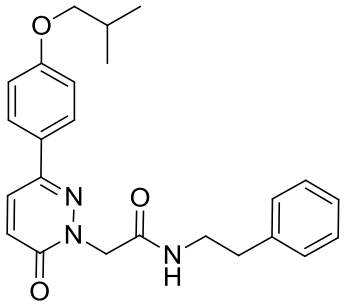
2-(6-Oxo-3-(4-(trifluoromethoxy)phenyl)pyridazin-1(6H)-yl)-N-phenethylacetamide (10): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.527 min and t_2 (Method 2) = 3.514 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.26 (t, J = 5.6 Hz, 1H), 8.10 (d, J = 9.8 Hz, 1H), 8.04 – 7.96 (m, 2H), 7.50 (dp, J = 7.8, 1.0 Hz, 2H), 7.33 – 7.25 (m, 2H), 7.25 – 7.17 (m, 3H), 7.10 (d, J = 9.8 Hz, 1H), 4.74 (s, 2H), 3.32 – 3.28 (m, 2H), 2.73 (t, J = 7.4 Hz, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{21}H_{19}F_3N_3O_3$, 418.1373; found 418.1376.



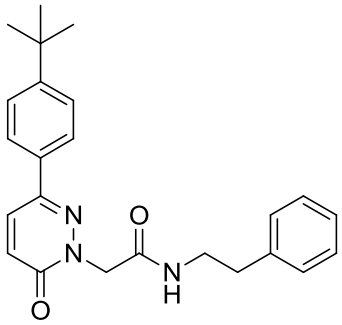
2-(3-(4-(Dimethylamino)phenyl)-6-oxopyridazin-1(6H)-yl)-N-phenethylacetamide (11): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 1.646 min and t_2 (Method 2) = 2.733 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.25 (t, J = 5.6 Hz, 1H), 8.06 (d, J = 9.8 Hz, 1H), 7.36 – 7.25 (m, 3H), 7.25 – 7.13 (m, 5H), 7.05 (d, J = 9.7 Hz, 1H), 6.89 – 6.82 (m, 1H), 4.73 (s, 2H), 3.35 – 3.27 (m, 2H), 2.96 (s, 6H), 2.79 – 2.70 (m, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{22}H_{25}N_4O_2$, 377.1972; found 377.1978.



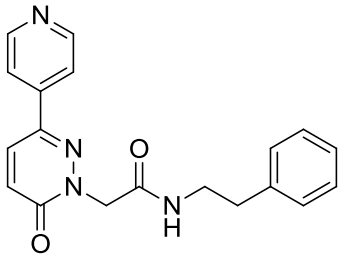
2-(3-(4-Isopropoxyphenyl)-6-oxopyridazin-1(6H)-yl)-*N*-phenethylacetamide (12): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.472 min and t_2 (Method 2) = 3.461 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.23 (t, J = 5.6 Hz, 1H), 8.02 (d, J = 9.8 Hz, 1H), 7.83 – 7.73 (m, 2H), 7.33 – 7.25 (m, 2H), 7.24 – 7.18 (m, 3H), 7.08 – 6.98 (m, 3H), 4.70 (d, J = 1.9 Hz, 2H), 3.41 – 3.38 (m, 1H), 3.32 – 3.27 (m, 2H), 2.73 (dd, J = 7.9, 6.8 Hz, 2H), 1.29 (s, 3H), 1.28 (s, 3H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{23}H_{26}N_3O_3$, 392.1969; found 392.1959.



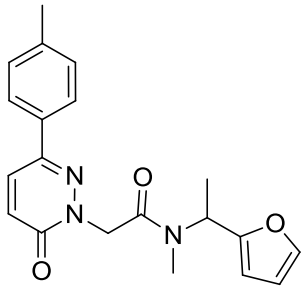
2-(3-(4-isobutoxyphenyl)-6-oxopyridazin-1(6H)-yl)-N-phenethylacetamide (13): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.727 min and t_2 (Method 2) = 3.671 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.23 (t, J = 5.6 Hz, 1H), 8.03 (d, J = 9.8 Hz, 1H), 7.84 – 7.77 (m, 2H), 7.33 – 7.26 (m, 2H), 7.26 – 7.17 (m, 3H), 7.08 – 7.01 (m, 3H), 4.71 (s, 2H), 3.80 (d, J = 6.5 Hz, 2H), 3.31 – 3.26 (m, 2H), 2.73 (dd, J = 8.1, 6.7 Hz, 2H), 2.03 (hept, J = 6.7 Hz, 1H), 1.00 (s, 3H), 0.98 (s, 3H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{24}H_{28}N_3O_3$, 406.2125; found 406.2122.



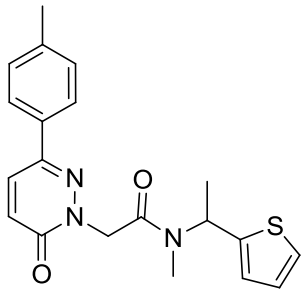
2-(3-(4-(Tert-butyl)phenyl)-6-oxopyridazin-1(6H)-yl)-*N*-phenethylacetamide (14): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 2.736 min and t_2 (Method 2) = 3.743 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.24 (t, J = 5.6 Hz, 1H), 8.04 (d, J = 9.8 Hz, 1H), 7.85 – 7.72 (m, 2H), 7.56 – 7.46 (m, 2H), 7.32 – 7.24 (m, 2H), 7.24 – 7.16 (m, 3H), 7.06 (d, J = 9.7 Hz, 1H), 4.72 (s, 2H), 3.35 – 3.25 (m, 2H), 2.78 – 2.69 (m, 2H), 1.31 (s, 9H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{24}H_{28}N_3O_2$, 390.2176; found 390.2178.



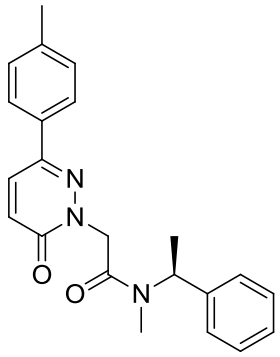
2-(3-(4-(tert-butyl)phenyl)-6-oxopyridazin-1(6H)-yl)-N-phenethylacetamide (15): This compound was prepared using Method A, B and C. LC-MS Retention Time: t_1 (Method 3) = 1.211 min and t_2 (Method 2) = 2.552 min; ^{1}H NMR (400 MHz, DMSO-d_6) δ 8.81 – 8.74 (m, 2H), 8.30 (t, J = 5.5 Hz, 1H), 8.21 (d, J = 9.8 Hz, 1H), 8.05 – 7.96 (m, 2H), 7.34 – 7.25 (m, 2H), 7.25 – 7.14 (m, 4H), 4.79 (s, 2H), 3.31 – 3.28 (m, 2H), 2.73 (t, J = 7.4 Hz, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{19}H_{19}N_4O_2$, 335.1503; found 335.1507.



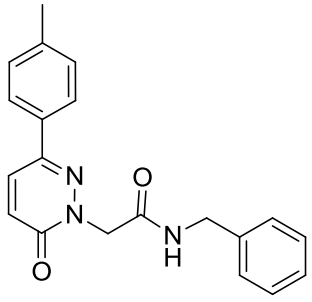
N-(1-(furan-2-yl)ethyl)-N-methyl-2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)acetamide (16): This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.452 min and t_2 (Method 2) = 3.473 min; ^{1}H NMR (400 MHz, $CDCl_3$) δ 1.48 (d, *J* = 6.3 Hz, 2 H), 1.65 (d, *J* = 5.9 Hz, 1 H), 2.39 (s, 3 H), 2.76 (s, 1 H), 2.89 (s, 2 H), 4.65 - 4.82 (m, 1 H), 5.03 (d, *J* = 15.3 Hz, 1 H), 5.23 - 5.41 (m, 1 H), 5.93 (q, *J* = 6.4 Hz, 1 H), 6.24 - 6.40 (m, 2 H), 6.77 (d, *J* = 9.4 Hz, 1 H), 7.23 (d, *J* = 7.0 Hz, 2 H), 7.32 - 7.42 (m, 2 H), 7.54 - 7.61 (m, 1 H), 7.70 (d, *J* = 9.4 Hz, 1 H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{22}N_3O_3$, 352.1656; found 352.1656.



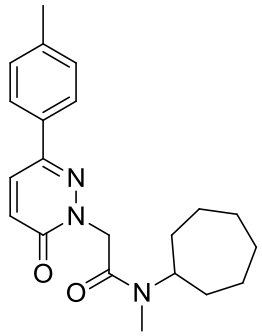
***N*-methyl-2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)-*N*-(1-(thiophen-2-yl)ethyl)acetamide (17):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.757 min and t_2 (Method 2) = 3.471 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.07 (dd, J = 9.8, 0.9 Hz, 1H), 7.82 – 7.74 (m, 2H), 7.35 – 7.27 (m, 3H), 7.14 – 6.97 (m, 3H), 5.94 – 5.84 (m, 1H), 5.29 – 4.98 (m, 2H), 2.84 (s, 3H), 2.36 (s, 3H), 1.51 (d, J = 7.0 Hz, 3H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{22}N_3O_2S$, 368.1427; found 368.1434.



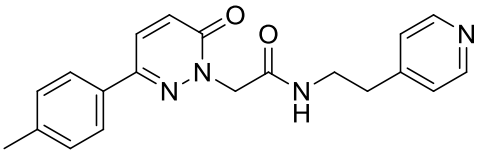
(S)-*N*-methyl-2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)-N-(1-phenylethyl)acetamide (19): This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.843 min and t_2 (Method 2) = 3.503 min; ^{1}H NMR (400 MHz, $CDCl_3$) δ 1.54 (d, *J* = 7.4 Hz, 2 H), 1.72 (d, *J* = 6.7 Hz, 2 H), 2.41 (s, 3 H), 2.76 (s, 3 H), 5.02 - 5.28 (m, 2 H), 6.06 (q, *J*= 6.9 Hz, 1 H), 7.00 - 7.10 (m, 1 H), 7.24 - 7.43 (m, 7 H), 7.65 - 7.74 (m, 3 H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{22}H_{24}N_3O_2$, 362.1863; found 362.1866.



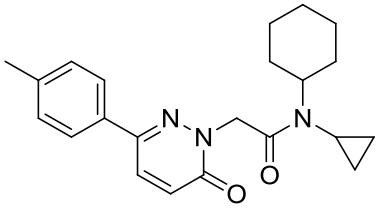
***N*-benzyl-2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)acetamide (21):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 3) = 2.247 min and t_2 (Method 2) = 3.647 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.29 (t, J = 5.6 Hz, 1H), 7.98 (d, J = 2.7 Hz, 1H), 7.87 – 7.78 (m, 1H), 7.48 – 7.40 (m, 2H), 7.34 – 7.15 (m, 6H), 6.46 (dd, J = 9.5, 0.6 Hz, 1H), 4.58 (s, 2H), 3.29 – 3.22 (m, 2H), 2.32 (s, 3H); HRMS (ESI) *m/z* $(M+Na)^+$ calcd. for $C_{20}H_{19}N_3O_2Na$, 356.1369; found 356.137.



***N*-cycloheptyl-N-methyl-2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)acetamide (23):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 6.125 min and t_2 (Method 2) = 3.643 min; ^{1}H NMR (400 MHz, $CDCl_3$) δ 1.32 - 1.84 (m, 12 H), 2.35 (s, 3 H), 2.72 (s, 1 H), 2.92 (s, 2 H), 3.79 – 3.84 (m, 1 H), 4.25 - 4.39 (m, 1 H), 4.94 - 5.08 (m, 2 H), 7.04 (d, *J* = 9.8 Hz, 1 H), 7.30 (d, *J* = 7.8 Hz, 2 H), 7.76 (d, *J* = 7.8 Hz, 2 H), 7.99 - 8.11 (m, 1 H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{21}H_{28}N_3O_2$, 354.2176; found 354.2179.

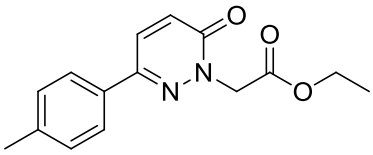


2-(6-Oxo-3-(p-tolyl)pyridazin-1(6H)-yl)-N-(2-(pyridin-4-yl)ethyl)acetamide (25): This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 2.527 min and t_2 (Method 2) = 1.364 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.76 – 8.66 (m, 2H), 8.29 (t, J = 5.7 Hz, 1H), 8.10 – 8.00 (m, 1H), 7.80 – 7.71 (m, 4H), 7.36 – 7.27 (m, 2H), 7.10 – 6.98 (m, 1H), 4.70 (s, 2H), 3.45 (q, J = 6.4 Hz, 2H), 2.97 (t, J = 6.7 Hz, 2H), 2.36 (s, 3H).; HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{21}N_4O_2$, 349.1659; found 349.1667.

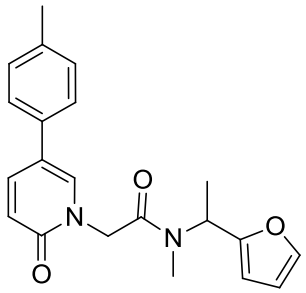


***N*-cyclohexyl-N-cyclopropyl-2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)acetamide (26):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 6.394 min and t_2 (Method 2) = 3.751 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.05 (d, J = 9.8 Hz, 1H), 7.81 – 7.73 (m, 2H), 7.35 – 7.26 (m, 2H), 7.04 (d, J = 9.7 Hz, 1H), 5.12 (s, 2H), 3.85 – 3.65 (m,

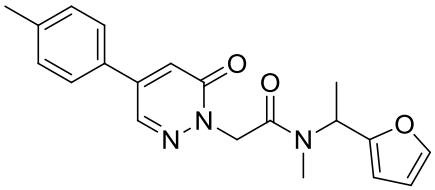
1H), 3.40 – 3.31 (m, 1H), 2.36 (s, 3H), 1.79 – 1.65 (m, 4H), 1.58 - 0.91 (m, 8H).; HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{22}H_{28}N_3O_2$, 366.2176; found 366.2189.



Ethyl 2-(6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)acetate (27): LC-MS Retention Time: t_1 (Method 1) = 5.503 min and t_2 (Method 2) = 3.363 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.30 – 7.91 (m, 1H), 7.78 (dd, J = 8.3, 1.7 Hz, 2H), 7.47 – 7.19 (m, 2H), 7.24 – 6.92 (m, 1H), 4.93 (d, J = 1.6 Hz, 2H), 4.17 (qd, J = 7.2, 1.3 Hz, 2H), 2.36 (s, 3H), 1.32 – 1.12 (m, 3H).

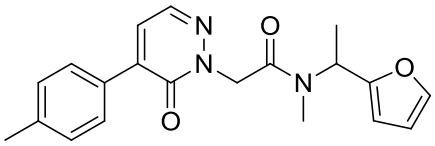


***N*-(1-(furan-2-yl)ethyl)-N-methyl-2-(2-oxo-5-(p-tolyl)pyridin-1(2H)-yl)acetamide (36):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.438 min and t_2 (Method 2) = 3.430 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.10 – 7.70 (m, 3H), 7.55 – 7.35 (m, 2H), 7.24 (d, J = 8.0 Hz, 2H), 6.54 – 6.40 (m, 3H), 5.73 – 5.67 (m, 1H), 4.88 (s, 2H), 2.79 - 2.56 (m, 3H), 2.32 (s, 3H), 1.57 (d, J = 6.8 Hz, 1H), 1.39 (d, J = 7.1 Hz, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{21}H_{23}N_2O_3$, 351.1703; found 351.1709.

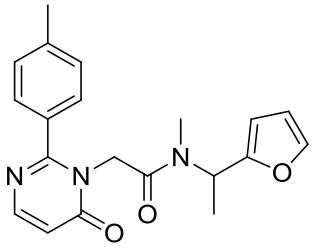


N-(1-(furan-2-yl)ethyl)-N-methyl-2-(6-oxo-4-(p-tolyl)pyridazin-1(6H)-yl)acetamide (37): This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.513 min and t_2 (Method 2) = 3.444 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.42 – 8.33 (m, 1H), 7.82 – 7.60 (m, 3H), 7.44 – 7.31 (m, 2H), 7.21 (d, J = 2.2 Hz, 1H), 6.50 – 6.35 (m, 2H),

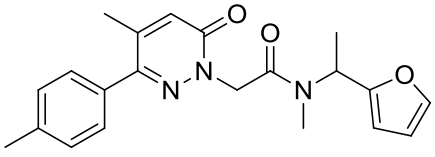
5.70 (q, J = 7.1 Hz, 1H), 5.01 (s, 2H), 2.78 (s, 3H), 2.38 (s, 3H), 1.55 (d, J = 6.8 Hz, 1H), 1.39 (d, J = 7.1 Hz, 2H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{22}N_3O_3$, 352.1656; found 352.1652.



***N*-(1-(furan-2-yl)ethyl)-*N*-methyl-2-(6-oxo-5-(p-tolyl)pyridazin-1(6H)-yl)acetamide (38):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.591 min and t_2 (Method 2) = 3.433 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.09 – 7.90 (m, 1H), 7.83 – 7.56 (m, 4H), 7.27 (dd, J = 8.3, 3.1 Hz, 2H), 6.50 – 6.38 (m, 2H), 5.71 (q, J = 7.1 Hz, 1H), 5.05 (s, 2H), 2.78 - 2.62 (m, 3H), 2.35 (d, J = 2.1 Hz, 3H), 1.55 -1.38 (m, 3H).; HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{22}N_3O_3$, 352.1656; found 352.1654.



***N*-(1-(furan-2-yl)ethyl)-N-methyl-2-(6-oxo-2-(p-tolyl)pyrimidin-1(6H)-yl)acetamide (39):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1 (Method 1) = 5.627 min and t_2 (Method 2) = 3.550 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 8.67 – 8.57 (m, 2H), 8.28 – 8.15 (m, 2H), 7.36 – 7.25 (m, 2H), 6.97 – 6.86 (m, 1H), 6.58 – 6.47 (m, 1H), 6.46 – 6.35 (m, 1H), 5.82 – 5.55 (m, 1H), 5.23 (s, 2H), 2.81 - 2.57 (m, 3H), 2.38 (d, J = 2.8 Hz, 3H), 1.58 -1.37 (m, 3H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{20}H_{22}N_3O_3$, 352.1656; found 352.1672.



***N*-(1-(furan-2-yl)ethyl)-N-methyl-2-(4-methyl-6-oxo-3-(p-tolyl)pyridazin-1(6H)-yl)acetamide (40):** This compound was prepared using Method A and B. LC-MS Retention Time: t_1

(Method 1) = 5.609 min and t_2 (Method 2) = 3.393 min; ^{1}H NMR (400 MHz, DMSO-d6) δ 7.76 – 7.13 (m, 6H), 6.99 – 6.82 (m, 1H), 6.56 – 6.33 (m, 1H), 5.73 – 5.63 (m, 1H), 4.98 (d, J = 1.2 Hz, 2H), 2.75 - 2.56 (m, 3H), 2.36 (d, J = 2.0 Hz, 3H), 2.18 – 2.12 (m, 3H), 1.53-1.36 (m, 3H); HRMS (ESI) *m/z* $(M+H)^+$ calcd. for $C_{21}H_{24}N_3O_3$, 366.1812; found 366.1813.