Supplementary Information

Solution Phase Parallel Synthesis of Acyclic Nucleoside Libraries of Purine, Pyrimidine and Triazole Acetamides

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General: The reactions were performed under a dry argon atmosphere and reaction temperatures were measured externally. Anhydrous solvents over molecular sieves were purchased from Fluka and used as such in reactions. The reactions were monitored by thin-layer chromatography (TLC) on pre-coated silica gel ($60F_{254}$) aluminium plates (0.25 mm) from E. Merck and visualized using UV light (254 nm). Pure samples were dried overnight under high vacuum over P_2O_5 at 78 ^oC before analyses. The HR–mass spectral data were obtained on an Agilent LC-MSTOF or Bruker BIOTOF II by electrospray ionization (ESI). ^1H NMR spectra were recorded at 300 MHz on a Nicolet NT-300 NB spectrometer or at 400 MHz on Agilent/Varian MR-400 spectrometer in DMSO-d_6 as solvent. The chemical shifts (δ) are in ppm downfield from standard tetramethylsilane (TMS). HPLCs of final compounds were run on an Agilent 1100 LC equipped with a diode array UV detector and were monitored at multiple wavelengths on Bondclone 10μ C18 column using Solvent A: 0.01M $NH_4H_2PO_4$ (pH 5.1), solvent B: MeOH, 1.0 mL/min; *Condition A*: 20 min linear gradient from 10–90% B; *Condition B*: 15 min linear gradient from 10–90% B; *Condition C*: 12 min linear gradient from 30–90% B; 1.0 mL/min; *Condition D*: 9 min linear gradient from 40–90% B; 1.0 mL/min; *Condition E*: 12 min linear gradient from 40–90% B; 1.0 mL/min; or otherwise stated. Melting points were determined on MPA100 OptiMelt automatic melting point apparatus and are uncorrected.

Synthesis of starting materials: Starting materials 2-(6-(Benzyloxy)-9*H*-purin-9-yl)acetic acid (**3A**),[1] 2-(6-(Benzylamino)-9*H*-purin-9-yl)acetic acid **(3B)**,[2] 2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetic acid (**7**),[3] and 2-(4-(benzyloxycarbonylamino)-2-oxopyrimidin-1(2*H*)-yl)acetic acid (**9**)[4] were synthesized in gram quantities by reported methods. Others are synthesized as below.

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)acetic acid (5). The commercially available starting material 2-amino-6-chloropurine (5.00 g, 0.03 mole) was suspended in dry DMF (50 mL) and

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[1] (a) Winther, L.. Systems and methods for biological and chemical detection, comprising automatic selection of reagent sets. PCT Int. Appl., 2009007787, 15 Jan 2009. (b) Lohse, J.. Monomeric and polymeric linkers useful for conjugating biological molecules and other substances. PCT Int. Appl., 2007015168, 08 Feb 2007.

[2] Zlatkov, A.; Danchev, N.; Nikolova, I.; Peikov, P. Synthesis, kinetic study and brain antihypoxic activity of 6-benzylamino-9-purineacetic acid. *Farmatsiya* (Sofia, Bulgaria), **2006**, *53*, 6-12.

[3] Liu, X.-J.; Chen, R.-Y. Synthesis of novel phosphonotripeptides containing uracil or thymine group. *Phosphorus, Sulfur Silicon Relat. Elem.*, **2001**, *176*, 19-28.

[4] (a) Katritzky, A. R. Narindoshvili, T. Chiral peptide nucleic acid monomers (PNAM) with modified backbones. *Org. Biomol. Chem.*, **2008**, *6*, 3171-3176. (b) Schwergold, C.; Depecker, G.; Di Giorgio, C.; Patino, N.; Jossinet, F.; Ehresmann, B.; Terreux, R.; Cabrol-Bass, D.; Condom, R. Cyclic PNA hexamer-based compound: modelling, synthesis and inhibition of the HIV-1 RNA dimerization process. *Tetrahedron*, **2002**, *58*, 5675-5687.

K_2CO_3 (4.97 g, 0.036 mole) was added. Stirring was continued for 1 h and methyl bromoacetate (3.41 mL, 0.036 mole) was added slowly. The reaction mixture was stirred at room temperature 24h under nitrogen atmosphere. After this time, the reaction mixture was concentrated under vacuum and the crude reaction mass was purified by column chromatography using $CHCl_3$:CH_3OH (95:5) as an eluent yielding **4** (5.71 g, 80%) as white powder [HRMS: *m/z* calc. for $C_8H_8ClN_5O_2$ $(M+H)^+$: 241.0367, found: 241.0361]. The methyl ester **4** (5.70 g, 0.024 mole) was suspended in MeOH (50 mL) and $NaSCH_3$ (2.52 g, 0.036 mole, 1.5 equiv) was added. The reaction mixture was stirred at room temperature for 4 h. The compound **5** (4.80 g, 85%) was precipitated out as white powder which was collected and dried. mp: 270 ^oC. ^1H NMR (400 MHz): δ 7.80 (1H, s), 6.37 (2H, s), 4.43 (2H, s), 2.57 (3H, s). HRMS: *m/z* calc. for $C_8H_9N_5O_2S$ $(M+H)^+$: 240.0550, found: 240.0553. HPLC Purity: 99% (Retention Time = 2.87 min; Condition D).

2-(3-(3,4-Dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetic acid (11). The starting material 1,2,4-triazole-3-carboxylic acid (5.00 g, 0.044 mole) was dissolved in dry DMF (50 mL) under argon atmosphere and 3,4-dimethylaniline (8.00 g, 0.066 mole) was added followed by the addition of HATU (20.15 g, 0.053 mole, 1.2 equiv) and DIPEA (15.34 mL, 0.088 mole). The reaction mixture was stirred at room temperature overnight. Solvent was removed by evaporation, and purification by column chromatography produced the pure compound **10** (9.56 g, 75%) [^1H NMR (400 MHz): δ 10.27 (1H, br s), 8.63 (1H, br s), 7.60 (1H, s), 7.53 (1H, dd, *J* = 2.0, 8.4 Hz), 7.09 (1H, d, *J* = 8.4 Hz), 2.21 (3H, s), 2.19 (3H, s). HRMS: *m/z* calc. for $C_{11}H_{12}N_4O$ $(M+H)^+$: 217.1084, found: 217.1080]. Compound **10** (9.50 g, 0.044 mole) was suspended in dry DMF (50 mL) and K_2CO_3 (7.30 g, 0.053 mole) was added. The stirring was continued for 1 h and methyl bromoacetate (5.00 mL, 0.053 mole) was added slowly. The reaction mixture was stirred at room temperature 24 h under nitrogen atmosphere. After this time, the reaction mixture was concentrated under vacuum and the crude reaction mass was purified by column chromatography using $CHCl_3$:CH_3OH (95:5) as an eluent yielding (8.87 g, 70%) of methyl ester as white powder [HRMS: *m/z* calc. for $C_{14}H_{16}N_4O_3$ $(M+H)^+$: 288.1222, found: 288.1219]. The methyl ester (6.00 g, 0.021 mole) was dissolved in Methanol (25 mL) and 1N NaOH (30 mL) was added. The reaction mixture was stirred at room temperature for 4 h. The reaction mixture was cooled to 0 ^oC and neutralized with 1N HCl. The white precipitate was filtered and washed with water (2x25 mL) followed by diethylether (25 mL) to give **11** (5.14 g, 90%). ^1H NMR (400

MHz): δ 10.16 (1H, s), 8.71 (1H, s), 7.60 (1H, d, J = 2.0 Hz), 7.51 (1H, dd, J = 2.0, 8.0 Hz), 7.09 (1H, d, J = 8.0 Hz), 5.19 (2H, s), 2.21 (3H, s), 2.19 (3H, s). HRMS: *m/z* calc. for $C_{13}H_{14}N_4O_3$ $(M+H)^+$: 275.1139, found: 275.1141).

General Procedure for Amide Coupling (Schemes 1-5): Solution phase parallel synthesis of compound libraries was performed on a MiniBlock® (Toledo Metler) reaction block equipped with 24-reaction glass vessels (10 mL) format. Solvents and reagents were added using automatic liquid dispensation, retraction, and aspiration platform EVO100 (4 syringe system) from Tecan with reagent dispensing from 10 µL to 4 mL per injection under N_2 using the MiniBlock adapter. The reactions were shaken overnight on a MiniBlock compact shaking and washing station under argon atmosphere. The solvents were evaporated on a Genevac EZ2 high performance centrifuge solvent evaporator with adapters for Miniblocks. Purification of final products were performed on an Isco Teledyne Combiflash Rf200 with four channels to carryout sequential purification. Universal RediSep solid sample loading pre-packed cartridges (2.5 g silica) were used to absorb crude product and purified on 12 g silica RediSep Rf Gold Silica (20–40 µm spherical silica) columns using $CHCl_3$–MeOH gradients.

A 1 M stock solution of HATU and 1 M stock solution of amines in dry DMF under argon atmosphere were first prepared using an Evo 100 platform and arranged on the dispensing platform racks. Three (3) mL of stock solution containing 100 mg of starting material was first dispensed in each reaction vessel followed by the appropriate amine (1.5 equiv) as stock solution in respective tubes using automation under argon atmosphere. The reaction block was then shaken for 5 minutes on the shaker. Next, HATU stock solution containing 1.2 equivalents amount followed by DIEA (2.0 equivalents) were added to each reaction vessel. The reaction block was shaken overnight on a shaker at room temperature. The reaction block was then loaded on the evaporation system to remove all the solvent from each reaction vessel. The residues left in the reaction vessels were then dissolved in 2–3 mL of 15% $CHCl_3$-MeOH and TLC of each reaction was performed before purification. Each sample was absorbed on pre-packed sample loading cartridges and dried under vacuum before loading on the automatic chromatography system for purification. Pure samples were dried overnight under high vacuum over P_2O_5 at 78 ^oC.

General procedure for Cytosine library (Scheme-6): After the amide coupling as described above, solvent was removed by centrifugal evaporation. To each well, 20 mg of Pd/C and 2.0 equivalents of ammonium formate were added. The reaction block was sealed and then 5 mL of MeOH was dispensed in each well by using a Tecan dispensing system. The reaction block was shaken overnight. The reaction mixture from each vessel was taken up in syringe and filtered through micron filter disk onto RediSep solid sample loading pre-packed cartridges (2.5 g silica). These cartridges were dried on a vacuum manifold and purified over 12 g silica RediSep Rf Gold Silica (20–40 μm sperical silica) columns using $CHCl_3$–MeOH gradients. Pure samples were dried overnight under vacuum over P_2O_5 at 78 ^oC.

Analytical data of Library.

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(3,4-dimethylphenyl)acetamide (12). Yield 61%, mp: 194 ^oC ^1H NMR (400 MHz): δ 10.33 (1H, s NH), 8.53 (1H, s), 8.38 (1H, s), 7.53–7.35 (6H, m), 7.27 (1H, dd, *J* = 1.8, 2.2 Hz), 7.06 (1H, d, *J* = 8.0 Hz), 5.65 (2H, s), 5.15 (2H, s), 2.17 (3H, s), 2.16 (3H, s,). HRMS: *m/z* calc. for $C_{22}H_{21}N_5O_2$ $(M+H)^+$: 388.1768, found: 388.1768. HPLC Purity: 100% (Retention Time = 9.64 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(3,4,5-trimethoxyphenyl)acetamide (13). Yield 66%, mp: 202 ^oC. ^1H NMR (400 MHz): δ 8.60 (1H, s), 8.42 (1H, br s), 8.05 (1H, s), 7.55–7.30 (5H, m), 6.76 (2H, s), 5.70 (2H, s), 5.00 (2H, s), 3.82 (6H, s), 3.80 (3H, s). HRMS: *m/z* calc. for $C_{23}H_{23}N_5O_5$ $(M+H)^+$: 450.1772, found: 450.1775. HPLC Purity: 100% (Retention Time = 8.54 min, Condition C).

***N*-Benzyl-2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamide (14).** Yield 98%, mp: 173 ^oC. ^1H NMR (400 MHz): δ 8.82 (1H, t, *J* = 5.8 Hz), 8.54 (1H, s), 8.35 (1H, s), 7.53–7.24 (10H, m), 5.64 (2H, s), 5.02 (2H, s), 4.32 (2H, d, *J* = 6.0 Hz). HRMS: *m/z* calc. for $C_{21}H_{19}N_5O_2$ $(M+H)^+$: 374.1612, found: 374.1617. HPLC Purity: 98% (Retention Time = 8.70 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(4-methoxybenzyl)acetamide (15). Yield 54%, mp: 195 ^oC. ^1H NMR (400 MHz): δ 8.74 (1H, t, *J* = 5.8 Hz), 8.54 (1H, s), 8.34 (1H, s), 7.53–7.34 (5H, m), 7.21 (2H, d, *J* = 8.4 Hz), 6.89 (2H, ddd, *J* = 3.5, 5.9, 5.9 Hz), 5.64 (2H, s), 4.99 (2H, s), 4.24 (2H, d, *J* = 5.6 Hz), 3.73 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{21}N_5O_3$ $(M+H)^+$: 404.1717, found: 404.1717. HPLC Purity: 99% (Retention Time = 8.78 min, Condition C).

***N*-(Benzo[*d*][1,3]dioxol-5-ylmethyl)-2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamide (16).** Yield 32%. ^{1}H NMR (400 MHz): δ 8.29 (1H, s), 8.02 (1H, s), 7.55–7.31 (5H, m), 6.73–6.65 (3H, m), 6.45 (1H, s), 5.94 (2H, s), 5.69 (2H, s), 4.89 (2H, s), 4.33 (2H, d, *J* = 5.6 Hz). HRMS: *m/z* calc. for $C_{22}H_{19}N_5O_4$ $(M+H)^+$: 418.1510, found: 418.1514. HPLC Purity: 100% (Retention Time = 8.77 min, Condition C).

Methyl 4-((2-(6-(benzyloxy)-9H-purin-9-yl)acetamido)methyl)benzoate (17). Yield 90%, mp: 213 ^{o}C. ^{1}H NMR (400 MHz): δ 8.91 (1H, t, *J* = 5.8 Hz), 8.56 (1H, s), 8.36 (1H, s), 7.93 (2H, dd, *J* = 2.0, 6.4 Hz), 7.53–7.36 (7H, m), 5.64 (2H, s), 5.05 (2H, s), 4.40 (2H, d, *J* = 6.0 Hz), 3.85 (3H, s). HRMS: *m/z* calc. for $C_{23}H_{21}N_5O_4$ $(M+H)^+$: 432.1666, found: 432.1669. HPLC Purity: 100% (Retention Time = 8.85 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(pyridin-2-ylmethyl)acetamide (18). Yield 19%. ^{1}H NMR (400 MHz): δ 8.93 (1H, t, *J* = 5.8 Hz), 8.55 (1H, s), 8.51 (1H, dd, *J* = 0.8, 5.6 Hz), 8.36 (1H, s), 7.78 (1H, ddd, *J* = 1.8, 7.7, 7.7 Hz), 7.53–7.26 (7H, m), 5.64 (2H, s), 5.07 (2H, s), 4.41 (2H, d, *J* = 5.6 Hz). HRMS: *m/z* calc. for $C_{20}H_{18}N_6O_2$ $(M+H)^+$: 375.1564, found: 375.1563. HPLC Purity: 99% (Retention Time = 8.23 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-((5-methylfuran-2-yl)methyl)acetamide (19). Yield 28%. ^{1}H NMR (400 MHz): δ 8.78 (1H, t, *J* = 5.4 Hz), 8.52 (1H, s), 8.33 (1H, s), 7.53–7.36 (5H, m), 6.15 (1H, d, *J* = 3.2 Hz), 6.00 (1H, dd, *J* = 1.2, 3.2 Hz), 5.64 (2H, s), 4.98 (2H, s), 4.24 (2H, d, *J* = 5.2 Hz), 2.23 (3H, s). HRMS: *m/z* calc. for $C_{20}H_{19}N_5O_3$ $(M+H)^+$: 378.1561, found: 378.1567. HPLC Purity: 100% (Retention Time = 8.64 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-((tetrahydrofuran-2-yl)methyl)acetamide (20). Yield 39%. ^{1}H NMR (400 MHz): δ 8.51 (1H, s), 8.44 (1H, t, *J* = 5.6 Hz), 8.31 (1H, s), 7.53–7.34 (5H, m), 5.64 (2H, s), 4.96 (2H, s), 3.86–3.60 (3H, m), 3.27–3.10 (2H, m), 1.89–1.76 (3H, m), 1.53–1.47 (1H, m). HRMS: *m/z* calc. for $C_{19}H_{21}N_5O_3$ $(M+H)^+$: 368.1717, found: 368.1720. HPLC Purity: 90% (Retention Time = 7.80 min, Condition C).

***N*-((1*H*-Indol-5-yl)methyl)-2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamide (21).** Yield 54%, mp: 219 ^{o}C ^{1}H NMR (400 MHz): δ 11.03 (1H, s NH), 8.76 (1H, t, *J* = 5.8 Hz), 8.54 (1H, s), 8.35 (1H, s), 7.53–7.32 (8H, m), 7.01 (1H, dd, *J* = 1.6, 8.0 Hz), 6.39 (1H, t, *J* = 2.2 Hz), 5.64 (2H, s), 5.00

(2H, s), 4.36 (2H, d, *J* = 5.6 Hz). HRMS: *m/z* calc. for $C_{23}H_{20}N_6O_2$ $(M+H)^+$: 413.1721, found: 413.1718. HPLC Purity: 98% (Retention Time = 8.45 min, Condition C).

***N*-((1*H*-benzo[*d*]imidazol-2-yl)methyl)-2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamide (22).** Yield 40%. ^{1}H NMR (400 MHz): 12.27 (1H, s, NH), 9.05 (1H, t, *J* = 5.6 Hz), 8.53 (1H, s), 8.36 (1H, s), 7.55–7.34 (7H, m), 7.16 (2H, d, *J* = 4.8 Hz), 5.64 (2H, s), 5.07 (2H, s), 4.55 (2H, d, *J* = 6.0 Hz). HRMS: *m/z* calc. for $C_{22}H_{19}N_7O_2$ $(M+H)^+$: 414.1673, found: 414.1675. HPLC Purity: 98% (Retention Time = 8.31 min, Condition C).

(*R*)-2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(1-(naphthalen-1-yl)ethyl)acetamide (23). Yield 44%, mp: 188 ^{o}C ^{1}H NMR (400 MHz): δ 8.29 (1H, s), 7.99 (1H, s), 7.84–7.31 (12H, m), 6.69 (1H, br s), 5.85 (2H, t, *J* = 7.2 Hz), 5.66 (2H, s), 4.86 (1H, d, *J* = 15.2 Hz), 4.81 (1H, d, *J* = 15.2 Hz), 1.66 (2H, d, *J* = 6.8 Hz). HRMS: *m/z* calc. for $C_{26}H_{23}N_5O_2$ $(M+H)^+$: 438.1925, found: 438.1930. HPLC Purity: 100% (Retention Time = 9.76 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(2-morpholinoethyl)acetamide (24). Yield 28%. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.32 (1H, s), 8.27 (1H, br), 7.53–7.34 (5H, m), 5.64 (2H, s), 4.95 (2H, s), 3.56 (4H, br s), 3.28 (2H, br s), 2.36 (4H, br s). HRMS: *m/z* calc. for $C_{20}H_{24}N_6O_3$ $(M+H)^+$: 397.1983, found: 397.1985. HPLC Purity: 100% (Retention Time = 8.61 min, Condition C).

***N*-(2-(1*H*-Indol-3-yl)ethyl)-2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamide (25).** Yield 84%, mp: 221 ^{o}C. ^{1}H NMR (400 MHz): δ 10.82 (1H, s), 8.53 (1H, s), 8.44 (1H, t, *J* = 5.4 Hz), 8.31 (1H, s), 7.53–7.33 (7H, m), 7.17 (1H, d, *J* = 2.0 Hz), 7.08–6.95 (2H, m), 5.64 (2H, s), 4.94 (2H, s), 3.40–3.35 (2H, m), 2.85 (2H, t, *J* = 7.5 Hz). HRMS: *m/z* calc. for $C_{24}H_{22}N_6O_2$ $(M+H)^+$: 427.1877, found: 427.1881. HPLC Purity: 100% (Retention Time = 8.95 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(2-phenylpropyl)acetamide (26). Yield 19%. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.35 (1H, t, *J* = 5.6 Hz), 8.28 (1H, s), 7.53–7.20 (10H, m), 5.64 (2H, s), 4.91 (2H, s), 3.24 (2H, t, *J* = 6.4 Hz), 2.88 (1H, dd, *J* = 7.2, 14.4 Hz), 1.99 (3H, d, *J* = 7.2 Hz). HRMS: *m/z* calc. for $C_{23}H_{23}N_5O_2$ $(M+H)^+$: 402.1925, found: 402.1930. HPLC Purity: 100% (Retention Time = 9.439 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(3-phenylpropyl)acetamide (27). Yield 41%. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.36 (1H, t, *J* = 5.4 Hz), 8.32 (1H, s), 7.52–7.15 (10H, m), 5.64 (2H,

s), 4.95 (2H, s), 3.10 (2H, dd, *J* = 6.8, 12.4 Hz), 2.59 (2H, t, *J* = 7.8 Hz), 1.76–1.68 (2H, m). HRMS: *m/z* calc. for $C_{23}H_{23}N_5O_2$ $(M+H)^+$: 402.1925, found: 402.1928. HPLC Purity: 99% (Retention Time = 9.46 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(3-methoxypropyl)acetamide (28). White solid, yield 20%. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.32 (1H, s), 8.30 (1H, t, *J* = 5.8 Hz), 7.52–7.34 (5H, m), 5.64 (2H, s), 4.93 (2H, s), 3.39–3.34 (2H, m), 3.21 (3H, s), 3.13 (2H, dd, *J* = 6.8, 12.8 Hz), 1.68–1.61 (2H, m). HRMS: *m/z* calc. for $C_{18}H_{21}N_5O_3$ $(M+H)^+$: 356.1717, found: 356.1719. HPLC Purity: 100% (Retention Time = 8.00 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(3-(2-oxopyrrolidin-1-yl)propyl)acetamide (29). Yield 62%, mp: 147 ^{o}C. ^{1}H NMR: δ 8.52 (1H, s), 8.32 (1H, s), 8.31 (1H, t, *J* = 5.6 Hz), 7.53–7.34 (5H, m), 5.64 (2H, s), 4.93 (2H, s), 3.35–3.28 (2H, m), 3.18 (2H, t, *J* = 7.0 Hz), 3.06 (2H, dd, *J* = 6.8, 13.2 Hz), 2.20 (2H, t, *J* = 8.0 Hz), 1.94–1.86 (2H, m), 1.64–1.57 (2H, m). HRMS: *m/z* calc. for $C_{21}H_{24}N_6O_3$ $(M+H)^+$: 409.1983, found: 409.1986. HPLC Purity: 100% (Retention Time = 8.03 min, Condition C).

***N*-(3-(1*H*-imidazol-1-yl)propyl)-2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamide (30).** Yield 53%, mp: 132 ^{o}C. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.40 (1H, t, *J* = 5.6 Hz), 8.33 (1H, s), 8.16 (2H, br s), 7.52–7.34 (5H, m), 7.20 (1H, br s), 5.64 (2H, s), 4.95 (2H, s), 4.07 (2H, t, *J* = 6.8 Hz), 3.07 (2H, dd, *J* = 6.6, 12.6 Hz), 1.90 (2H, dd, *J* = 6.8, 13.6 Hz). HRMS: *m/z* calc. for $C_{20}H_{21}N_7O_2$ $(M+H)^+$: 392.1830, found: 392.1827. HPLC Purity: 100% (Retention Time = 8.66 min, Condition C).

(*S*)-Methyl 2-(2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamido)-4-methylpentanoate (31). Yield 40%. ^{1}H NMR (400 MHz): δ 8.81 (1H, d, *J* = 7.6 Hz), 8.52 (1H, s), 8.32 (1H, s), 7.53–7.36 (5H, m), 5.64 (2H, s), 5.02 (2H, s), 4.34–4.28 (1H, m), 3.62 (3H, s), 1.66–1.52 (3H, m), 0.91 (3H, d, *J* = 6.4 Hz), 0.85 (3H, d, *J* = 6.4 Hz). HRMS: *m/z* calc. for $C_{21}H_{25}N_5O_4$ $(M+H)^+$: 412.1979, found: 412.1978. HPLC Purity: 100% (Retention Time = 8.78 min, Condition C).

(*S*)-Dimethyl 2-(2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamido)succinate (32). Yield 28%. ^{1}H NMR (400 MHz): δ 8.93 (1H, d, *J* = 8.0 Hz), 8.52 (1H, s), 8.32 (1H, s), 7.53–7.34 (5H, m), 5.64 (2H, s), 5.04 (1H, d, *J* = 16.8 Hz), 4.99 (1H, d, *J* = 17.2 Hz), 4.68 (1H, dd, *J* = 6.4, 14.0 Hz), 3.64

(3H, s), 3.62 (3H, s), 2.80 (2H, t, *J* = 6.8 Hz). HRMS: *m/z* calc. for $C_{20}H_{21}N_5O_6$ $(M+H)^+$: 428.1565, found: 428.1565. HPLC Purity: 100% (Retention Time = 7.61 min, Condition C).

(*S*)-Diethyl 2-(2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamido)pentanedioate (33). Yield 29%. ^{1}H NMR (400 MHz): δ 8.82 (1H, d, *J* = 8.0 Hz), 8.51 (1H, s), 8.32 (1H, s), 7.53–7.34 (5H, m), 5.64 (2H, s), 5.02 (2H, s), 4.30 (1H, ddd, *J* = 5.4, 8.2, 8.2 Hz), 4.20–4.01 (4H, m), 2.41 (2H, t, *J* = 7.6 Hz), 2.07–1.81 (2H, m), 1.17 (6H, t, *J* = 7.2 Hz). HRMS: *m/z* calc. for $C_{23}H_{27}N_5O_6$ $(M+H)^+$: 470.2034, found: 470.2035. HPLC Purity: 100% (Retention Time = 8.53 min, Condition C).

(*S*)-Methyl 2-(2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamido)-4-(methylthio)butanoate (34). Yield 53%, mp: 152 ^{o}C. ^{1}H NMR (400 MHz): δ 8.85 (1H, d, *J* = 7.6 Hz), 8.52 (1H, s), 8.32 (1H, s), 7.53–7.34 (5H, m), 5.64 (2H, s), 5.03 (2H, s), 4.43 (1H, ddd, *J* = 4.6, 8.3, 8.3 Hz), 3.64 (3H, s), 2.55–2.47 (2H, m), 2.04 (3H, s), 1.99–1.89 (2H, m). HRMS: *m/z* calc. for $C_{20}H_{23}N_5O_4S$ $(M+H)^+$: 430.1544, found: 430.1541. HPLC Purity: 90% (Retention Time = 8.26 min, Condition C).

(*S*)-Methyl 2-(2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamido)-3-(4-hydroxyphenyl)propanoate (35). Yield 72%, mp: 140 ^{o}C. ^{1}H NMR (400 MHz): δ 9.24 (1H, s OH), 8.85 (1H, d, *J* = 7.6 Hz), 8.52 (1H, s), 8.26 (1H, s), 7.52–7.34 (5H, m), 7.00 (2H, d, *J* = 8.4 Hz), 6.67 (2H, d, *J* = 8.4 Hz), 5.64 (2H, s), 5.01 (1H, d, *J* = 16.8 Hz), 4.95 (1H, d, *J* = 16.8 Hz), 4.44–4.39 (1H, m), 3.59 (3H, s), 2.91 (1H, dd, *J* = 6.0, 13.6 Hz), 2.83 (1H, dd, *J* = 8.4, 13.6 Hz). HRMS: *m/z* calc. for $C_{24}H_{23}N_5O_5$ $(M+H)^+$: 462.1772, found: 462.1768. HPLC Purity: 100% (Retention Time = 7.88 min, Condition C).

(*R*)-Methyl 2-(2-(6-(benzyloxy)-9*H*-purin-9-yl)acetamido)-3-phenylpropanoate (36). Yield 40%. ^{1}H NMR (400 MHz): δ 8.91 (1H, d, *J* = 7.6 Hz), 8.52 (1H, s), 8.25 (1H, s), 7.52–7.21 (10H, m), 5.64 (2H, s), 5.00 (1H, d, *J* = 17.2 Hz), 4.95 (1H, d, *J* = 16.8 Hz), 4.50 (1H, ddd, *J* = 5.8, 8.1, 8.1 Hz), 3.60 (3H, s), 3.05 (1H, dd, *J* = 6.0, 13.6 Hz), 2.94 (1H, dd, *J* = 8.8, 14.0 Hz). HRMS: *m/z* calc. for $C_{24}H_{23}N_5O_4$ $(M+H)^+$: 446.1823, found: 446.1819. HPLC Purity: 100% (Retention Time = 8.84 min, Condition C).

(*S*)-2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(1-hydroxy-3-(1*H*-indol-2-yl)propan-2-yl)acetamide (37). Yield 69%, mp: 225 ^{o}C ^{1}H NMR (400 MHz): δ 10.79 (1H, s NH), 8.31 (1H, d, *J* = 8.0 Hz), 8.26 (1H, s), 7.59–7.31 (8H, m), 7.14 (1H, d, *J* = 2.0 Hz), 7.05 (1H, t, *J* = 7.0 Hz), 6.95 (1H, t, *J*

= 7.4 Hz), 5.64 (2H, s), 4.97 (1H, d, *J* = 16.4 Hz), 4.92 (1H, d, *J* = 16.8 Hz), 4.78 (1H, t, *J* = 5.4 Hz, OH), 3.97 (1H, d, *J* = 7.6 Hz), 3.40 (2H, dd, *J* = 6.2, 7.0 Hz), 2.93 (1H, dd, *J* = 7.0, 14.6 Hz), 2.79 (1H, dd, *J* = 6.8, 14.4 Hz). HRMS: *m/z* calc. for $C_{25}H_{24}N_6O_3$ $(M+H)^+$: 456.1983, found: 457.1979. HPLC Purity: 99% (Retention Time = 8.58 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-1-(4-(pyridin-2-yl)piperazin-1-yl)ethanone (38). Yield 70%, mp: 215 °C. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.28 (1H, s), 8.15 (1H, dd, *J* = 2.0, 4.8 Hz), 7.58 (1H, ddd, *J* = 3.0, 7.8, 7.8 Hz), 7.53–7.34 (5H, m), 6.89 (1H, d, *J* = 8.8 Hz), 6.69 (1H, dd, *J* = 5.0, 7.0 Hz), 5.64 (2H, s), 5.34 (2H, s), 3.69 (4H, dd, *J* = 5.8, 20.6 Hz), 3.55 (4H, dd, *J* = 5.8, 14.2 Hz). HRMS: *m/z* calc. for $C_{23}H_{23}N_7O_2$ $(M+H)^+$: 430.1986, found: 430.1994. HPLC Purity: 100% (Retention Time = 8.85 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-1-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)ethanone (39). Yield 52%. ^{1}H NMR (400 MHz): δ 8.51 (1H, s), 8.26 (1H, s), 7.53–7.34 (5H, m), 6.82 (2H, s), 5.64 (2H, s), 5.25 (2H, s), 3.52 (2H, t, *J* = 4.6 Hz), 3.45 (2H, s), 3.38 (2H, t, *J* = 2.0 Hz), 2.47 (2H, t, *J* = 4.2 Hz), 2.35 (2H, t, *J* = 4.9 Hz), 2.32 (6H, s), 2.20 (3H, s). HRMS: *m/z* calc. for $C_{28}H_{32}N_6O_2$ $(M+H)^+$: 485.2660, found: 485.2663. HPLC Purity: 99% (Retention Time = 10.72 min, Condition C).

2-(6-(Benzyloxy)-9*H*-purin-9-yl)-*N*-(3,4-dimethoxybenzyl)-*N*-methylacetamide (40). Yield 91%, mp: 126 °C. ^{1}H NMR (400 MHz): δ 8.52 (1H, s), 8.31 (1H, s), 7.53–7.34 (5H, m), 7.02–6.77 (3H, m), 5.64 (2H, s), 5.35 (2H, s), 4.44 (2H, s), 3.83 (3H, s), 3.74 (3H, s), 3.05 (3H, s). HRMS: *m/z* calc. for $C_{24}H_{25}N_5O_4$ $(M+H)^+$: 448.1979, found: 448.1986. HPLC Purity: 99% (Retention Time = 9.32 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(3,4-dimethylphenyl)acetamide (41). Yield 92%, mp: 231 °C. ^{1}H NMR (400 MHz): δ 10.29 (1H, s, NH), 8.32 (1H, br s, NH), 8.17 (1H, s), 8.14 (1H, s), 7.36–7.19 (7H, m), 7.06 (1H, d, *J* = 8.0 Hz), 5.05 (2H, s), 4.72 (2H, br s), 2.17 (3H, s), 2.16 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{22}N_6O$ $(M+H)^+$: 387.1928, found: 387.1934. HPLC Purity: 100% (Retention Time = 9.76 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(3,4,5-trimethoxyphenyl)acetamide (42). Yield 50%. ^{1}H NMR (400 MHz): δ 10.42 (1H, s, NH), 8.34 (1H, br s, NH), 8.17 (1H, s), 8.15 (1H, s), 7.36–7.19 (5H, m), 6.95 (2H, s), 5.05 (2H, s), 4.72 (2H, br s), 3.72 (6H, s), 2.16 (3H, s). HRMS: *m/z*

calc. for $C_{23}H_{24}N_6O_4$ $(M+H)^+$: 449.1932, found: 449.1932. HPLC Purity: 100% (Retention Time = 8.92 min, Condition C).

***N*-Benzyl-2-(6-(benzylamino)-9*H*-purin-9-yl)acetamide (43).** Yield 61%, mp: 209 °C ^{1}H NMR (400 MHz): δ 8.78 (1H, t, *J* = 6.0 Hz), 8.30 (1H, br s, NH), 8.19 (1H, s), 8.11 (1H, s), 7.35–7.18 (10H, m), 4.92 (2H, s), 4.71 (2H, br s), 4.31 (2H, *J* = 6.0 Hz). HRMS: *m/z* calc. for $C_{21}H_{20}N_6O$ $(M+H)^+$: 373.1771, found: 373.1772. HPLC Purity: 100% (Retention Time = 8.70 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(4-methoxybenzyl)acetamide (44). Yield 82%, mp: 213 °C. ^{1}H NMR (400 MHz): δ 8.71 (1H, t, *J* = 5.8 Hz), 8.30 (1H, br s, NH), 8.18 (1H, s), 8.10 (1H, s), 7.35–7.18 (7H, m), 6.89 (2H, ddd, *J* = 3.4, 5.8, 5.8 Hz), 4.89 (2H, s), 4.71 (2H, br s), 4.23 (2H, d, *J* = 6.0 Hz), 3.73 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{22}N_6O_2$ $(M+H)^+$: 403.1877, found: 403.1879. HPLC Purity: 91% (Retention Time = 8.98 min, Condition C).

***N*-(Benzo[*d*][1,3]dioxol-5-ylmethyl)-2-(6-(benzylamino)-9*H*-purin-9-yl)acetamide (45). Y**ield 42%. ^{1}H NMR (400 MHz): δ 8.72 (1H, t, *J* = 5.8 Hz), 8.30 (1H, br s, NH), 8.20 (1H, s), 8.11 (1H, s), 7.35–7.18 (5H, m), 6.86 (1H, s), 6.85 (1H, d, *J* = 8.0 Hz), 6.84 (1H, s), 6.76 (1H, dd, *J* = 1.6, 8.0 Hz), 5.98 (2H, s), 4.90 (2H, s), 4.71 (2H, br s), 4.21 (2H, d, *J* = 5.6 Hz). HRMS: *m/z* calc. for $C_{22}H_{20}N_6O_3$ $(M+H)^+$: 417.1670, found: 417.1666. HPLC Purity: 100% (Retention Time = 8.96 min, Condition C).

Methyl 4-((2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)methyl)benzoate (46) Yield 53%, mp: 226 °C. ^{1}H NMR (400 MHz): δ 8.89 (1H, t, *J* = 5.8 Hz, NH), 8.34 (1H, br s, NH), 8.20 (1H, s), 8.12 (1H, s), 7.92 (1H, d, *J* = 8.4 Hz), 7.43 (1H, d, *J* = 8.1 Hz), 7.35–7.26 (3H, m), 7.22–7.17 (2H, m), 4.94 (2H, s), 4.70 (2H, br s), 4.39 (2H, d, *J* = 6 Hz), 3.84 (3H, s), 2.55–2.38 (2H, m), 2.03 (3H, s), 2.01–1.88 (2H, m). HRMS: *m/z* calc. for $C_{23}H_{22}N_6O_3$ $(M+H)^+$: 431.1826, found: 431.1816. HPLC Purity: 99% (Retention Time = 9.05 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-1-(4-(pyridin-2-yl)piperazin-1-yl)ethanone (47). Yield 82%, mp: 225 °C. ^{1}H NMR (400 MHz): δ 8.33 (1H, br s, NH), 8.16–8.13 (2H, m), 8.05 (1H, s), 7.57 (1H, ddd, *J* = 2.0, 7.8, 7.8 Hz), 7.36–7.18 (5H, m), 6.89 (1H, d, *J* = 8.7 Hz), 6.68 (1H, dd, *J* = 5.2, 9.0 Hz), 5.22 (2H, s), 4.70 (2H, br s), 3.70–3.50 (8H, m). HRMS: *m/z* calc. for $C_{23}H_{24}N_8O$

$(M+H)^+$: 429.2146, found: 429.2135. HPLC Purity: 98% (Retention Time = 8.91 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-((5-methylfuran-2-yl)methyl)acetamide (48). Yield 58%, mp: 208 ^oC. ^1H NMR (400 MHz): δ 8.73 (1H, t, *J* = 5.4 Hz), 8.29 (1H, br s, NH), 8.16 (1H, s), 8.09 (1H, s), 7.35–7.18 (5H, m), 6.14 (1H, d, *J* = 3.2 Hz), 5.99 (1H, d, *J* = 2.0 Hz),4.87 (2H, s), 4.71 (2H, br s),4.23 (2H, d, *J* = 5.6 Hz), 2.23 (3H, s). HRMS: *m/z* calc. for $C_{20}H_{20}N_6O_2$ $(M+H)^+$: 377.1721, found: 377.1732. HPLC Purity: 100% (Retention Time = 8.81 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-((tetrahydrofuran-2-yl)methyl)acetamide (49). Yield 35%. ^1H NMR (400 MHz): δ 8.40 (1H, t, *J* = 5.4 Hz), 8.30 (1H, br s, NH), 8.16 (1H, s), 8.08 (1H, s), 7.35–7.17 (5H, m), 4.86 (2H, s), 4.72 (2H, br s), 3.87–3.54 (3H, m), 3.26–3.10 (2H, m), 1.86–1.46 (4H, m). HRMS: *m/z* calc. for $C_{19}H_{22}N_6O_2$ $(M+H)^+$: 367.1877, found: 367.1873. HPLC Purity: 100% (Retention Time = 8.05 min, Condition C).

***N*-((1*H*-Indol-5-yl)methyl)-2-(6-(benzylamino)-9*H*-purin-9-yl)acetamide (50).** Yield 83%, mp: 257 ^oC. ^1H NMR (400 MHz): δ 11.02 (1H, s, NH), 8.72 (1H, t, *J* = 5.8 Hz), 8.30 (1H, br s, NH), 8.19 (1H, s), 8.11 (1H, s), 7.45 (1H, s), 7.35–7.18 (7H, m), 7.01 (1H, dd, *J* = 1.6, 8.0 Hz), 6.38 (1H, t, *J* = 2.0 Hz), 4.90 (2H, s), 4.72 (2H, br s), 4.36 (2H, d, *J* = 5.6 Hz). HRMS: *m/z* calc. for $C_{23}H_{21}N_7O$ $(M+H)^+$: 412.1880, found: 412.1880. HPLC Purity: 100% (Retention Time = 8.64 min, Condition C).

***N*-((1*H*-benzo[*d*]imidazol-2-yl)methyl)-2-(6-(benzylamino)-9*H*-purin-9-yl)acetamide (51).** Yield 23%. ^1H NMR (400 MHz): δ 9.22 (1H, t, *J* = 5.4 Hz), 8.40 (1H, br s, NH), 8.20 (1H, s), 8.16 (1H, s), 7.72 (2H, dd, *J* = 3.2, 6.0 Hz), 7.44 (2H, dd, *J* = 3.0, 5.8 Hz), 7.35–7.19 (5H, m), 5.03 (2H, s), 4.90 (2H, s), 4.74 (2H, d, *J* = 5.2 Hz), 4.72 (2H, br s). HRMS: *m/z* calc. for $C_{22}H_{20}N_8O$ $(M+H)^+$: 413.1833, found: 413.1840. HPLC Purity: 96% (Retention Time = 8.56 min, Condition C).

(*R*)-2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(1-(naphthalen-1-yl)ethyl)acetamide (52). Yield 43%. ^1H NMR (400 MHz): δ 9.00 (1H, d, *J* = 7.8 Hz), 8.29 (1H, br s, NH), 8.17 (1H, s), 8.09–7.92 (3H, m), 8.07 (1H, s), 7.84 (1H, d, *J* = 7.8 Hz), 7.62–7.17 (9H, m), 5.74–5.64 (1H, m), 4.91

(2H, s), 4.70 (2H, br s), 1.53 (2H, d, *J* = 6.9 Hz). HRMS: *m/z* calc. for $C_{26}H_{24}N_6O$ $(M+H)^+$: 437.2084, found: 437.2087. HPLC Purity: 100% (Retention Time = 9.42 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(2-morpholinoethyl)acetamide (53). Yield 30%. ^{1}H NMR (400 MHz): δ 8.29 (1H, br s, NH), 8.19 (1H, t, *J* = 5.4 Hz), 8.16 (1H, s), 8.09 (1H, s), 7.35–7.18 (5H, m), 4.84 (2H, s), 4.71 (2H, br s), 3.55 (4H, t, *J* = 4.6 Hz), 3.21 (2H, dd, *J* = 6.4, 12.4 Hz), 2.37–2.33 (6H, m). HRMS: *m/z* calc. for $C_{20}H_{25}N_7O_2$ $(M+H)^+$: 396.2143, found: 396.2135. HPLC Purity: 100% (Retention Time = 8.09 min, Condition C).

***N*-(2-(1*H*-indol-2-yl)ethyl)-2-(6-(benzylamino)-9*H*-purin-9-yl)acetamide (54).** Yield 62%, mp: 212 ^{o}C. ^{1}H NMR (400 MHz): δ 8.41 (1H, t, *J* = 5.4 Hz), 8.30 (1H, br s, NH), 8.18 (1H, s), 8.08 (1H, s), 7.52 (1H, d, *J* = 8.0 Hz), 7.35–7.17 (8H, m), 7.06 (1H, t, *J* = 7.4 Hz), 6.97 (1H, t, *J* = 7.4 Hz), 4.82 (2H, s), 4.72 (2H, br s), 3.37 (2H, dd, *J* = 6.8, 12.8 Hz), 2.84 (2H, t, *J* = 7.6 Hz). HRMS: *m/z* calc. for $C_{24}H_{23}N_7O$ $(M+H)^+$: 426.2037, found: 426.2035. HPLC Purity: 100% (Retention Time = 9.15 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(2-phenylpropyl)acetamide (55). Yield 50%, mp: 197 ^{o}C. ^{1}H NMR (400 MHz): δ 8.32 (1H, t, *J* = 5.2 Hz), 8.30 (1H, br s, NH), 8.16 (1H, s), 8.05 (1H, s), 7.35–7.17 (10H, m), 4.81 (2H, s), 4.70 (2H, br s), 3.23 (2H, t, *J* = 6.6 Hz), 2.21–2.84 (1H, m), 1.19 (2H, d, *J* = 6.9 Hz). HRMS: *m/z* calc. for $C_{23}H_{24}N_6O$ $(M+H)^+$: 401.2084, found: 401.2086. HPLC Purity: 93% (Retention Time = 9.71 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(3-phenylpropyl)acetamide (56). Yield 58%, mp: 178 ^{o}C. ^{1}H NMR (400 MHz): δ 8.32 (1H, t, *J* = 5.4 Hz), 8.30 (1H, br, NH), 8.16 (1H, s), 8.09 (1H, s), 7.35–7.15 (10H, m), 4.84 (2H, s), 4.71 (2H, br s), 3.10 (2H, dd, *J* = 6.8, 12.4 Hz), 2.59 (2H, t, *J* = 7.6 Hz), 1.76–1.68 (2H, m). HRMS: *m/z* calc. for $C_{23}H_{24}N_6O$ $(M+H)^+$: 401.2084, found: 401.2093. HPLC Purity: 100% (Retention Time = 9.70 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(3-methoxypropyl)acetamide (57). Yield 59%, mp: 189 ^{o}C. ^{1}H NMR (400 MHz): δ 8.30 (1H, br s, NH), 8.25 (1H, t, *J* = 5.4 Hz), 8.17 (1H, s), 8.08 (1H, s), 7.35–7.18 (5H, m), 4.82 (2H, s), 4.71 (2H, br), 3.38–3.34 (2H, m), 3.20 (3H, s), 3.12 (2H, dd, *J* = 6.6, 12.6 Hz), 1.68–1.61 (2H, m). HRMS: *m/z* calc. for $C_{18}H_{22}N_6O_2$ $(M+H)^+$: 355.1877, found: 355.1881. HPLC Purity: 100% (Retention Time = 8.07 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(3-(2-oxopyrrolidin-1-yl)propyl)acetamide (58). Yield 28%. ^{1}H NMR (400 MHz): δ 8.28 (1H, t, *J* = 5.5 Hz), 8.30 (1H, br s, NH), 8.16 (1H, s), 8.09 (1H, s), 7.35–7.17 (5H, m), 4.82 (2H, s), 4.70 (2H, br s), 3.30 (2H, t, *J* = 6.6 Hz), 3.18 (2H, t, *J* = 6.8 Hz), 3.05 (2H, dd, *J* = 7.2, 17.6 Hz), 2.20 (2H, t, *J* = 8.2 Hz), 1.90 (2H, t, *J* = 7.5 Hz), 1.60 (2H, t, *J* = 7.2 Hz). HRMS: *m/z* calc. for $C_{21}H_{25}N_7O_2$ $(M+H)^+$: 408.2143, found: 408.2139. HPLC Purity: 100% (Retention Time = 8.14 min, Condition C).

(*S*)-Methyl 2-(2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)-4-methylpentanoate (59). Yield 46%. ^{1}H NMR (400 MHz): δ 8.79 (1H, d, *J* = 7.8 Hz, NH), 8.35 (1H, br s, NH), 8.16 (1H, s), 8.08 (1H, s), 7.34–7.28 (3H, m), 7.26–7.17 (2H, m), 4.91 (2H, s), 4.71 (2H, br s), 4.29 (1H, m), 3.62 (3H, s), 1.69–1.48 (3H, m), 0.90 (3H, d, *J* = 6.3 Hz), 0.84 (3H, d, *J* = 6.3 Hz). HRMS: *m/z* calc. for $C_{21}H_{26}N_6O_3$ $(M+H)^+$: 411.2139, found: 411.2130. HPLC Purity: 95% (Retention Time = 9.37 min, Condition C).

(*S*)-Dimethyl 2-(2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)succinate (60) Yield 43%, mp: 168 ^{o}C. ^{1}H NMR (400 MHz): δ 8.90 (1H, d, *J* = 7.8 Hz, NH), 8.33 (1H, br s, NH), 8.16 (1H, s), 8.08 (1H, s), 7.35–7.26 (3H, m), 7.25–7.19 (2H, m), 4.90 (2H, d, *J* = 1.8 Hz), 4.73–4.63 (3H, m), 3.63 (3H, s), 3.62 (3H, s), 2.81–2.78 (2H, m). HRMS: *m/z* calc. for $C_{20}H_{22}N_6O_5$ $(M+H)^+$: 427.1724, found: 427.1716. HPLC Purity: 97% (Retention Time = 8.06 min, Condition C).

(*S*)-Diethyl 2-(2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)pentanedioate (61) Yield 48%, mp: 124 ^{o}C. ^{1}H NMR (400 MHz): δ 8.79 (1H, d, *J* = 7.5 Hz, NH), 8.32 (1H, br s, NH), 8.16 (1H, s), 8.08 (1H, s), 7.34–7.28 (3H, m), 7.26–7.20 (2H, m), 4.91 (2H, s), 4.68 (2H, m), 4.29 (1H, m), 4.11–4.01 (4H, m), 2.41 (2H, t, *J* = 7.5 Hz), 2.24–1.97 (1H, m), 1.91–1.18 (1H, m), 1.16 (6H, t, *J* = 7.1 Hz). HRMS: *m/z* calc. for $C_{24}H_{24}N_6O_4$ $(M+H)^+$: 469.2194, found: 469.2185. HPLC Purity: 91% (Retention Time = 9.06 min, Condition C).

(*S*)-Methyl 2-(2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)-4-(methylthio)butanoate (62) Yield 44%, mp: 166 ^{o}C. ^{1}H NMR (400 MHz): δ 8.82 (1H, d, *J* = 7.8 Hz, NH), 8.33 (1H, br s, NH), 8.16 (1H, s), 8.09 (1H, s), 7.34–7.26 (3H, m), 7.22–7.17 (2H, m), 4.92 (2H, s), 4.70 (2H, br s), 4.46–4.38 (1H, m), 3.64 (3H, s), 2.55–2.38 (2H, m), 2.03 (3H, s), 2.01–1.88 (2H, m). HRMS: *m/z* calc. for $C_{20}H_{24}N_6O_3S$ $(M+H)^+$: 429.1703, found: 429.1698. HPLC Purity: 99% (Retention Time = 7.71 min, Condition C).

(*S*)-Methyl 2-(2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)-3-(4-hydroxyphenyl) propanoate (63) Yield 80%, mp: 231 ^{o}C. ^{1}H NMR (400 MHz): δ 9.26 (1H, s, OH), 8.83 (1H, d, *J* = 7.5 Hz, NH), 8.34 (1H, br s, NH), 8.17 (1H, s), 8.03 (1H, s), 7.34–7.26 (3H, m), 7.22–7.17 (2H, m), 7.00 (2H, d, *J* = 8.7 Hz), 6.67 (2H, d, *J* = 8.7 Hz), 4.88 (2H, m), 4.71 (1H, m), 4.43–4.36 (1H, m), 3.58 (3H, s), 2.94–2.78 (2H, m), 0.90 (3H, d, *J* = 6.3 Hz), 0.84 (3H, d, *J* = 6.3 Hz). HRMS: *m/z* calc. for $C_{24}H_{24}N_6O_4$ $(M+H)^+$: 461.1932, found: 461.1930. HPLC Purity: 100% (Retention Time = 8.42 min, Condition C).

(*R*)-Methyl 2-(2-(6-(benzylamino)-9*H*-purin-9-yl)acetamido)-3-phenylpropanoate (64) Yield 61%, mp: 150 ^{o}C. ^{1}H NMR (400 MHz): δ 8.88 (1H, d, *J* = 7.5 Hz, NH), 8.35 (1H, br s, NH), 8.17 (1H, s), 8.01 (1H, s), 7.34–7.19 (10H, m), 4.88 (2H, m), 4.69 (1H, m), 4.52–4.45 (1H, m), 3.59 (3H, s), 3.07–2.90 (2H, m). HRMS: *m/z* calc. for $C_{24}H_{24}N_6O_3$ $(M+H)^+$: 445.1983, found: 445.1978. HPLC Purity: 94% (Retention Time = 9.40 min, Condition C).

(*S*)-2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(1-hydroxy-3-(1*H*-indol-3-yl)propan-2-yl)acetamide (65). Yield 79%, mp; 214 ^{o}C. ^{1}H NMR (400 MHz): δ 10.79 (1H, s, NH), 8.30 (1H, br s, NH), 8.27 (1H, d, *J* = 8.0 Hz), 8.19 (1H, s), 8.02 (1H, s), 7.59 (1H, d, *J* = 7.6 Hz), 7.35–7.15 (7H, m), 7.05 (1H, t, *J* = 7.0 Hz), 6.96 (1H, t, *J* = 7.4 Hz), 4.87 (1H, d, *J* = 16.8 Hz), 4.81 (1H, d, *J* = 16.8 Hz), 4.77 (1H, t, *J* = 5.8 Hz OH), 4.72 (2H, br s), 3.96 (1H, dd, *J* = 5.6, 13.2 Hz), 3.40–3.34 (2H, m), 2.92 (1H, dd, *J* = 6.6, 14.6 Hz), 2.79 (1H, dd, *J* = 6.6, 14.6 Hz). HRMS: *m/z* calc. for $C_{25}H_{25}N_7O_2$ $(M+H)^+$: 456.2143, found: 456.2144. HPLC Purity: 94% (Retention Time = 8.75 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-1-(4-(pyridin-2-yl)piperazin-1-yl)ethanone (66). Yield 82%, mp: 225 ^{o}C. ^{1}H NMR (400 MHz): δ 8.33 (1H, br s, NH), 8.16–8.13 (2H, m), 8.05 (1H, s), 7.57 (1H, ddd, *J* = 2.0, 7.8, 7.8 Hz), 7.36–7.18 (5H, m), 6.89 (1H, d, *J* = 8.7 Hz), 6.68 (1H, dd, *J* = 5.2, 9.0 Hz), 5.22 (2H, s), 4.70 (2H, br s), 3.70–3.50 (8H, m). HRMS: *m/z* calc. for $C_{23}H_{24}N_8O$ $(M+H)^+$: 429.2146, found: 429.2135. HPLC Purity: 98% (Retention Time = 8.91 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-1-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)ethanone (67). Yield 57%, mp: 186 ^{o}C. ^{1}H NMR (400 MHz): δ 8.31 (1H, br s, NH), 8.16 (1H, s), 8.03 (1H, s), 7.35–7.17 (5H, m), 6.82 (2H, s), 5.14 (2H, s), 4.70 (2H, br s), 3.45–3.37 (6H, m), 2.51–2.49

(4H, m), 2.31 (6H, s), 2.20 (3H, s). HRMS: *m/z* calc. for $C_{28}H_{33}N_7O$ $(M+H)^+$: 484.2819, found: 484.2807. HPLC Purity: 97% (Retention Time = 11.14 min, Condition C).

2-(6-(Benzylamino)-9*H*-purin-9-yl)-*N*-(3,4-dimethoxybenzyl)-*N*-methylacetamide (68). Yield 81%, mp: 163 ^oC. ^1H NMR (400 MHz): δ 8.31 (1H, br s, NH), 8.16 (1H, s), 8.07 (1H, s), 7.36–7.26 (3H, m), 7.22–7.18 (2H, m), 7.01–6.82 (2H, m), 6.78 (1H, dd, *J* = 1.4, 10.8 Hz), 5.22 (2H, m), 4.70 (2H, br s), 4.54 (2H, m), 3.73 (3H, s), 3.72 (3H, s), 3.04 (3H, s). HRMS: *m/z* calc. for $C_{24}H_{26}N_6O_3$ $(M+H)^+$: 447.2139, found: 447.2135. HPLC Purity: 96% (Retention Time = 8.94 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-1-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)-ethanone (69). Yield 41%, mp: 224 ^oC. ^1H NMR (400 MHz): δ 7.80 (1H, s), 6.82 (2H, s), 6.45 (2H, s), 4.99 (2H, s), 3.47 (2H, br s), 3.44 (2H, s), 3.87 (2H, br s), 2.58 (3H, s), 2.44 (2H, t, *J* = 4.5 Hz), 2.35 (2H, t, *J* = 4.8 Hz), 2.31 (6H, s), 2.20 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{29}N_7OS$ $[M+H]^+$: 440.2227, found: 440.2220. HPLC Purity: 99% (Retention Time = 9.87 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(3,4,5-trimethoxyphenyl)acetamide (70). Yield 55%, mp: 250 ^oC. ^1H NMR(400 MHz): δ 10.35 (1H, s, CONH), 7.91 (1H, s), 6.94 (2H, s), 6.47 (2H, s), 4.92 (2H, s), 3.72 (6H, s), 3.61 (3H, s), 2.59 (3H, s). HRMS: *m/z* calc. for $C_{17}H_{20}N_6O_4S$ $(M+H)^+$: 405.1340, found: 405.1340. HPLC Purity: 98% (Retention Time = 7.12 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-benzylacetamide (71). Yield 16%. ^1H NMR (400 MHz): δ 8.68 (1H, t, *J* = 5.8 Hz, CONH), 7.89 (1H, s), 7.36–7.23 (5H, m), 6.47 (2H, s), 4.78 (2H, s), 4.30 (2H, d, *J* = 6.0 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{15}H_{16}N_6OS$ $(M+H)^+$: 329.1179, found: 329.1179. HPLC Purity: 97% (Retention Time = 6.37 min; Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(4-methoxybenzyl)acetamide (72). Yield 15%. ^1H NMR (400 MHz): δ 8.61 (1H, t, *J* = 5.6 Hz, CONH), 7.86 (1H, s), 7.21 (2H, d, *J* = 8.8 Hz), 6.90 (2H, d, *J* = 8.8 Hz), 6.47 (2H, s), 4.76 (2H, s), 4.23 (2H, d, *J* = 6.0 Hz), 3.74 (3H, s), 2.59 (3H, s). HRMS: *m/z* calc. for $C_{16}H_{18}N_6O_2S$ $(M+H)^+$: 359.1285, found: 359.1279. HPLC Purity: 96% (Retention Time = 8.79 min, Condition A).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(benzo[*d*][1,3]dioxol-5-ylmethyl)acetamide (73). Yield 55%, mp: 261 °C. ^{1}H NMR (400 MHz): δ 8.62 (1H, t, *J* = 5.6 Hz, CONH), 7.88 (1H, s), 6.86 (1H, d, *J* = 8.0 Hz), 6.84 (1H, d, *J* = 1.6 Hz), 6.75 (1H, dd, *J* = 1.6, 8.0 Hz), 6.45 (2H, s), 5.99 (2H, s), 4.75 (2H, s), 4.20 (2H, d, *J* = 6.0 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{16}H_{16}N_6O_3S$ $(M+H)^+$: 373.1077, found: 373.1072. HPLC Purity: 97% (Retention Time = 6.55 min, Condition A).

Methyl 4-((2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)methyl)benzoate (74). Yield 61%, mp: 229 °C. ^{1}H NMR (400 MHz): δ 8.75 (1H, t, *J* = 5.8 Hz), 7.93 (2H, d, *J* = 8.8 Hz), 7.89 (1H, s), 7.42 (2H, d, *J* = 8.0 Hz), 6.49 (2H, s), 4.80 (2H, s), 4.38 (2H, d, *J* = 6.0 Hz), 3.85 (3H, s), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{17}H_{18}N_6O_3S$ $(M+H)^+$: 387.1234, found: 387.1234. HPLC Purity: 97% (Retention Time = 7.32 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-((5-methylfuran-2-yl)methyl)acetamide (75). Yield 10%. ^{1}H NMR (400 MHz): δ 8.65 (1H, t, *J* = 5.4 Hz, CONH), 7.86 (1H, s), 6.46 (2H, s), 6.14 (1H, d, *J* = 3.2 Hz), 5.99 (1H, d, *J* = 2.8 Hz), 4.74 (2H, s), 4.22 (2H, d, *J* = 5.6 Hz), 2.57 (3H, s), 2.34 (3H, s). HRMS: *m/z* calc. for $C_{14}H_{16}N_6O_2S$ $(M+H)^+$: 333.1128, found: 333.1127. HPLC Purity: 99% (Retention Time = 6.00 min; Condition D).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-((tetrahydrofuran-2-yl)methyl)acetamide (76). Yield 15%. ^{1}H NMR (400 MHz): δ 8.30 (1H, t, *J* = 5.4 Hz, CONH), 7.85 (1H, s), 6.45 (2H, s), 4.72 (2H, s), 3.87–3.59 (3H, m), 3.22–3.07 (2H, m), 2.57 (3H, s), 1.92–1.44 (4H, m). HRMS: *m/z* calc. for $C_{13}H_{18}N_6O_2S$ $(M+H)^+$: 323.1285, found: 323.1284. HPLC Purity: 99% (Retention Time = 5.86 min, Condition A).

***N*-((1*H*-Indol-5-yl)methyl)-2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamide (77).** Yield 37%, mp: 184 °C. ^{1}H NMR (400 MHz): δ 11.03 (1H, s NH), 8.62 (1H, t, *J* = 5.8 Hz, CONH), 7.88 (1H, s), 7.44 (1H, s), 7.35–7.31 (2H, m), 7.01 (1H, dd, *J* = 1.6, 8.4 Hz), 6.46 (2H, s), 6.39 (1H, s), 4.76 (2H, s), 4.35 (2H, d, *J* = 5.6 Hz), 2.57 (3H, s). HRMS: *m/z* calc. for $C_{17}H_{17}N_7OS$ $(M+H)^+$: 368.1288, found: 368.1286. HPLC Purity: 94% (Retention Time = 6.82 min, Condition C).

(*R*)-2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(1-(naphthalen-1-yl)ethyl)acetamide (78). Yield 12%. ^{1}H NMR (400 MHz): δ 8.90 (1H, d, *J* = 7.6 Hz, CONH), 8.10 (1H, d, *J* = 8.0 Hz),

7.94 (1H, d, *J* = 8.4 Hz), 7.84 (1H, s), 7.84 (1H, d, *J* = 8.0 Hz), 7.61–7.51 (6H, m), 6.42 (2H, s), 5.71 (1H, t, *J* = 7.2 Hz), 4.80 (1H, d, *J* = 17.2 Hz), 4.76 (2H, d, *J* = 16.8 Hz), 2.57 (3H, s). HRMS: *m/z* calc. for $C_{20}H_{20}N_6OS$ $(M+H)^+$: 393.1492, found: 393.1487. HPLC Purity: 99% (Retention Time = 8.65 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(2,2-diphenylethyl)acetamide (79). Yield 15%. ^{1}H NMR (400 MHz): δ 8.28 (1H, t, *J* = 5.6 Hz), 7.76 (1H, s), 7.32–7.17 (10H, m), 6.43 (2H, s), 4.61 (2H, s), 4.17 (1H, t, *J* = 7.8 Hz), 3.74 (2H, dd, *J* = 5.6, 7.6 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{22}N_6OS$ $(M+H)^+$: 419.1649, found: 419.1645. HPLC Purity: 99% (Retention Time = 8.89 min, Condition C).

***N*-(2-(3*H*-Indol-3-yl)ethyl)-2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamide (80).** Yield 29%, mp: 183 ^{o}C. ^{1}H NMR (400 MHz): δ 10.82 (1H, s NH), 8.31 (1H, t, *J* = 5.6 Hz, CONH), 7.85 (1H, s), 7.52 (1H, d, *J* = 8.0 Hz), 7.34 (1H, d, *J* = 8.0 Hz), 7.17 (1H, d, *J* = 2.0 Hz), 7.06 (1H, t, *J* = 7.5 Hz), 6.98 (1H, t, *J* = 7.2 Hz), 6.46 (2H, s), 4.70 (2H, s), 3.31 (2H, s), 2.84 (2H, t, *J* = 7.4 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{18}H_{19}N_7OS$ $(M+H)^+$: 382.1431, found: 382.1437. HPLC Purity: 99% (Retention Time = 6.90 min; Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(2-(5-nitropyridin-2-ylamino)ethyl)acetamide (81). Yield 56%, mp: 261 ^{o}C. ^{1}H NMR (400 MHz): δ 8.91 (1H, d, *J* = 2.4 Hz), 8.34 (1H, t, *J* = 5.6 Hz), 8.13 (2H, br s), 7.85 (1H, s), 6.56 (1H, d, *J* = 9.6 Hz), 6.45 (2H, s), 4.69 (2H, s), 3.46 (4H, br s), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{15}H_{17}N_9O_3S$ $(M+H)^+$: 404.1248, found: 404.1248. HPLC Purity: 90% (Retention Time = 8.22 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(3-(2-oxopyrrolidin-1-yl)propyl)acetamide (82). Yield 20%. ^{1}H NMR (400 MHz): δ 8.18 (1H, t, *J* = 5.6 Hz, CONH), 7.86 (1H, s), 6.45 (2H, s), 4.69 (2H, s), 3.32 (2H, s), 3.18 (2H, t, *J* = 7.2 Hz), 3.05 (2H, d, *J* = 6.0 Hz), 2.58 (3H, s), 2.20 (2H, t, *J* = 8.0 Hz), 1.90 (2H, t, *J* = 7.6 Hz), 1.60 (2H, t, *J* = 7.0 Hz). HRMS: *m/z* calc. for $C_{15}H_{21}N_7O_2S$ $(M+H)^+$: 364.1550, found: 364.1548. HPLC Purity: 99% (Retention Time = 5.89 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(3-phenylpropyl)acetamide (83). Yield 21%. ^{1}H NMR (400 MHz): δ 8.22 (1H, t, *J* = 5.4 Hz, CONH), 7.85 (1H, s), 7.33–7.23 (5H, m), 6.44 (2H, s), 4.70 (2H, s), 3.11 (2H, ddd, *J* = 6.5, 13.5, 13.5 Hz), 2.67-2.56 (2H, m), 2.58 (3H, s),

1.75–1.68 (2H, m). HRMS: *m/z* calc. for $C_{17}H_{20}N_6OS$ $(M+H)^+$: 357.1492, found: 357.1493. HPLC Purity: 91% (Retention Time = 9.60 min, Condition A).

(*S*)-2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(1-hydroxy-3-(1*H*-indol-3-yl)propan-2-yl)acetamide (84). Yield 22%. ^{1}H NMR (400 MHz): δ 10.79 (1H, s NH), 8.18 (1H, d, *J* = 8.0 Hz, CONH), 7.79 (1H, s), 7.59 (1H, d, *J* = 8.0 Hz), 7.33 (1H, d, *J* = 8.0 Hz), 7.13 (1H, d, *J* = 2.0 Hz), 7.05 (1H, t, *J* = 7.5 Hz), 6.96 (1H, t, *J* = 7.5 Hz), 6.44 (2H, s), 4.77–4.65 (3H, m), 3.96 (1H, dd, *J* = 5.8, 12.6 Hz), 3.43–3.37 (2H, m), 2.90 (1H, dd, *J* = 6.8, 14.4 Hz), 2.79 (1H, dd, *J* = 6.8, 14.4 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{19}H_{21}N_7O_2S$ $(M+H)^+$: 412.1550, found: 412.1547. HPLC Purity: 99% (Retention Time = 8.74 min, Condition A).

(*S*)-Methyl 2-(2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)-4-methylpentanoate (85). Yield 29%, mp: 184 ^{o}C. ^{1}H NMR (400 MHz): δ 8.69 (1H, d, *J* = 7.6 Hz), 7.85 (1H, s), 6.44 (2H, s), 4.77 (2H, s), 4.30 (1H, dd, *J* = 8.2, 14.2 Hz), 3.63 (3H, s), 2.58 (3H, s), 1.67–1.48 (3H, m), 0.91 (3H, d, *J* = 6.4 Hz), 0.85 (3H, d, *J* = 6.8 Hz). HRMS: *m/z* calc. for $C_{15}H_{22}N_6O_3S$ $(M+H)^+$: 367.1547, found: 367.1548. HPLC Purity: 97% (Retention Time = 7.56 min, Condition C).

(*S*)-Methyl 2-(2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)-3-(4-hydroxyphenyl) propanoate (86). Yield 36%, mp: 239 ^{o}C. ^{1}H NMR (400 MHz): δ 9.26 (1H, s), 8.73 (1H, d, *J* = 7.6 Hz), 7.79 (1H, s), 7.00 (2H, d, *J* = 8.4 Hz), 6.68 (2H, d, *J* = 8.4 Hz), 6.44 (2H, s), 4.77 (1H, d, *J* = 17.2 Hz), 4.70 (1H, d, *J* = 17.2 Hz), 4.40 (1H, dd, *J* = 7.6, 14.0 Hz), 3.58 (3H, s), 2.90 (1H, dd, *J* = 6.2, 13.8 Hz), 2.82 (1H, dd, *J* = 8.4, 14.0 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{18}H_{20}N_6O_4S$ $(M+H)^+$: 417.1340, found: 417.1341. HPLC Purity: 97% (Retention Time = 6.60 min, Condition C).

(*R*)-Methyl 2-(2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)-3-phenylpropanoate (87). Yield 30%, mp: 159 ^{o}C. ^{1}H NMR (400 MHz): δ 8.78 (1H, d, *J* = 7.6 Hz), 7.78 (1H, s), 7.32 – 7.20 (5H, m), 6.44 (2H, s), 4.76 (1H, d, *J* = 17.2 Hz), 4.70 (1H, d, *J* = 17.2 Hz), 4.49 (1H, dd, *J* = 8.0, 14.0 Hz), 3.59 (3H, s), 3.03 (1H, dd, *J* = 5.8, 13.8 Hz), 2.94 (1H, dd, *J* = 8.8, 13.6 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{18}H_{20}N_6O_3S$ $(M+H)^+$: 401.1390, found: 401.1389. HPLC Purity: 95% (Retention Time = 7.71 min, Condition C).

(*S*)-Diethyl 2-(2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)pentanedioate (88). Yield 45%, mp: 117 °C. ^{1}H NMR (400 MHz): δ 8.71 (1H, d, *J* = 7.6 Hz), 7.85 (1H, s), 6.44 (2H, s), 4.78 (2H, s), 4.32–4.02 (5H, m), 2.58 (3H, s), 2.40 (2H, t, *J* = 7.6 Hz), 2.00 (1H, ddd, *J* = 7.7, 13.6, 13.6 Hz), 1.85 (1H, ddd, *J* = 7.7, 14.8, 14.8 Hz), 1.17 (3H, t, *J* = 7.0 Hz). HRMS: *m/z* calc. for $C_{17}H_{24}N_6O_5S$ $(M+H)^+$: 425.1601, found: 425.1601. HPLC Purity: 98% (Retention Time = 7.30 min, Condition C).

(*S*)-Dimethyl 2-(2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)succinate (89). Yield 55%, mp: 177 °C. ^{1}H NMR (400 MHz): δ 8.81 (1H, d, *J* = 7.6 Hz), 7.84 (1H, s), 6.47 (2H, s), 4.79 (1H, d, *J* = 17.2 Hz), 4.74 (1H, *J* = 17.2 Hz), 4.68 (1H, ddd, *J* = 7.0, 13.5, 13.5 Hz), 3.64 (3H, s), 3.62 (3H, s), 2.80 (2H, t, *J* = 6.5 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{14}H_{18}N_6O_5S$ $(M+H)^+$: 383.1132, found: 383.1132. HPLC Purity: 98% (Retention Time = 5.78 min, Condition C).

(*S*)-Methyl 2-(2-(2-amino-6-(methylthio)-9*H*-purin-9-yl)acetamido)-4-(methylthio) butanoate (90). Yield 54%, mp: 188 °C. ^{1}H NMR (400 MHz): δ 8.73 (1H, d, *J* = 7.6 Hz), 7.86 (1H, s), 6.45 (2H, s), 4.78 (2H, s), 4.42 (1H, ddd, *J* = 5.0, 8.3, 8.3 Hz), 3.64 (3H, s), 2.58 (3H, s), 2.56–2.47 (2H, m), 2.04 (3H, s), 2.04–1.87 (2H, m). HRMS: *m/z* calc. for $C_{14}H_{20}N_6O_3S_2$ $(M+H)^+$: 385.1111, found: 385.1110. HPLC Purity: 98% (Retention Time = 6.68 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-*N*-(3,4-dimethoxybenzyl)-*N*-methylacetamide (91). White solid, yield 12%. ^{1}H NMR (400 MHz): 7.86 (1H, d, *J* = 12.0 Hz), 7.03–6.77 (3H, m), 6.44 (2H, s), 5.05 (2H, s), 4.43 (2H, s), 3.80 (3H, s), 3.77 (3H, s), 3.01 (3H, s), 2.59 (3H, s). HRMS: *m/z* calc. for $C_{18}H_{22}N_6O_3S$ $(M+H)^+$: 403.1547, found: 403.1546. HPLC Purity: 99% (Retention Time = 6.81 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-1-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)-ethanone (92). Yield 41%, mp: 224 °C. ^{1}H NMR (400 MHz): δ 7.80 (1H, s), 6.82 (2H, s), 6.45 (2H, s), 4.99 (2H, s), 3.47 (2H, br s), 3.44 (2H, s), 3.87 (2H, br s), 2.58 (3H, s), 2.44 (2H, t, *J* = 4.5 Hz), 2.35 (2H, t, *J* = 4.8 Hz), 2.31 (6H, s), 2.20 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{29}N_7OS$ $[M+H]^+$: 440.2227, found: 440.2220. HPLC Purity: 99% (Retention Time = 9.87 min, Condition C).

2-(2-Amino-6-(methylthio)-9*H*-purin-9-yl)-1-(4-(pyridin-2-yl)piperazin-1-yl)ethanone (93). Yield 20%. ^{1}H NMR (400 MHz): δ 8.14 (1H, d, *J* = 4.8 Hz), 7.82 (1H, s), 7.57 (1H, ddd, *J* = 1.8, 7.8, 7.8 Hz), 6.88 (1H, d, *J* = 8.8 Hz), 6.68 (1H, dd, *J* = 4.8, 6.8 Hz), 6.46 (2H, s), 5.07 (2H, s), 3.65 (4H, d, *J* = 9.2 Hz), 3.54 (4H, d, *J* = 8.4 Hz), 2.58 (3H, s). HRMS: *m/z* calc. for $C_{17}H_{20}N_8OS$ $(M+H)^+$: 385.1554, found: 385.1549. HPLC Purity: 98% (Retention Time = 7.05 min, Condition C).

***N*-Benzyl-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (94).** Yield 80%, mp: >270 ^{o}C. ^{1}H NMR: δ 11.26 (1H, s, NH), 8.63 (1H, t, *J* = 6.0 Hz, CONH), 7.47 (1H, d, *J* = 1.2 Hz), 7.35–7.21 (1H, m), 4.33 (2H, s), 4.30 (2H, d, *J* = 5.7 Hz), 1.75 (3H, s, CH_3). FABMS *m/z*: 274 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 11.43 min, Condition A).

Methyl 4-((2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamido)methyl) benzoate (95). Yield 90%, mp: 267 ^{o}C. ^{1}H NMR: δ 11.27 (1H, s, NH), 8.72 (1H, t, *J* = 4.5 Hz, CONH), 7.91 (2H, dd, *J* = 1.3, 5.0 Hz), 7.47 (1H, d, *J* = 0.9 Hz), 7.41 (2H, d, *J* = 6.3 Hz), 4.37 (2H, s), 4.36 (2H, s), 3.85 (3H, s, OCH_3), 1.76 (3H, s, CH_3). HRMS: *m/z* calc. for $C_{16}H_{17}N_3O_5$ $(M+H)^+$: 332.12410, found: 332.12427. HPLC Purity: 98% (Retention Time = 12.97 min, Condition A).

***N*-(Benzo[*d*][1,3]dioxol-5-ylmethyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (96).** Yield 75%, mp: >270 ^{o}C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.58 (1H, t, *J* = 5.5 Hz, CONH), 7.46 (1H, d, *J* = 1.2Hz), 6.86–6.71 (3H, m), 5.98 (2H, s), 4.31 (2H, s), 4.20 (2H, d, *J* = 6.0 Hz), 1.73 (3H, s, CH_3). FABMS *m/z*: 318 $(M+H)^+$. HPLC Purity: 97% (Retention Time = 11.89 min, Condition A).

***N*-(4-Methoxybenzyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (97).** Yield 88%, mp: >270 ^{o}C. ^{1}H NMR: δ 11.28 (1H, s, NH), 8.57 (1H, t, *J* = 6.0 Hz, CONH), 7.46 (1H, d, *J* = 1.2 Hz), 7.19–6.85 (4H, m), 4.31 (2H, s), 4.22 (2H, d, *J* = 5.7 Hz), 3.73 (3H, s), 1.75 (3H, s, CH_3). FABMS *m/z*: 304 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 12.11 min, Condition A).

***N*-(4-(Dimethylamino)benzyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (98).** Yield 62%, mp: 199 ^{o}C. ^{1}H NMR: δ 11.25 (1H, s, NH), 8.47 (1H, t, *J* = 4.3 Hz, CONH), 7.44 (1H, d, *J* = 0.6 Hz), 7.08 (2H, d, *J* = 6.6 Hz), 6.68 (2H, dd, *J* = 1.8, 6.9 Hz),

4.29 (2H, s), 4.16 (2H, d, *J* = 4.2 Hz), 3.31 (6H, s, 2xCH_3), 1.75 (3H, s, CH_3). FABMS *m/z*: 317 $(M+H)^+$. HPLC Purity: 95% (Retention Time = 13.22 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-((tetrahydrofuran-2-yl)methyl) acetamide (99). Yield 52%, mp: 222 °C. ^{1}H NMR: δ 11.22 (1H, s, NH), 8.21 (1H, t, *J* = 4.2 Hz), 7.42 (1H, d, *J* = 0.6 Hz), 4.28 (2H, s), 3.82 (1H, t, *J* = 4.3 Hz), 3.76 (1H, dd, *J* = 5.2, 10.4 Hz), 3.61 (1H, dd, *J* = 5.2, 11.0 Hz), 3.19–3.10 (2H, m), 1.88–1.77 (3H, m), 1.76 (3H, s, C*H*$_3$), 1.53–1.47 (1H, m). HRMS: *m/z* calc. for $C_{12}H_{17}N_3O_4$ $(M+H)^+$: 268.12918, found: 268.12948. HPLC Purity: 98% (Retention Time = 7.92 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(pyridin-2-ylmethyl)acetamide (100). Yield 20%, mp: 201 °C. ^{1}H NMR: δ 11.28 (1H, s, NH), 8.76 (1H, t, *J* = 5.4 Hz CONH), 8.50 (1H, m), 7.76 (1H, ddd, *J* = 1.8, 7.5, 7.8 Hz), 7.48 (1H, d, *J* = 1.2 Hz), 7.27 (2H, m), 4.40 (2H, s), 4.38 (2H, s), 1.75 (3H, s, C*H*$_3$). FABMS *m/z*: 275 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 8.67 min, Condition A).

***N*-((3a,7a-dihydro-1*H*-benzo[*d*]imidazol-2-yl)methyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (101).** Yield 41%, mp: 229 °C. ^{1}H NMR: δ 11.31 (1H, s, NH), 8.98 (1H, t, *J* = 5.0 Hz, CONH), 7.65–7.60 (1H, m), 7.47 (1H, d, *J* = 1.2 Hz), 4.62 (2H, d, *J* = 5.4 Hz), 4.42 (2H, s), 1.75 (3H, s, CH_3). FABMS *m/z*: 275 $(M+H)^+$. HPLC Purity: 96% (Retention Time = 11.14 min, Condition A).

***N*-((1-Ethylpyrrolidin-2-yl)methyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (102).** Yield 88%, mp: 194 °C. ^{1}H NMR: δ 11.07 (1H, s, NH), 7.99 (1H, d, *J* = 4.0 Hz, CONH), 7.42 (1H, s), 4.27 (2H, s), 3.27–2.72 (4H, m), 2.44–2.05 (3H, m), 1.78–1.42 (3H, m), 1.01 (3H, t, *J* = 5.4 Hz). FABMS *m/z*: 295 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 6.82 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(2-phenylpropyl)acetamide (103). Yield 63%, mp: 195 °C. ^{1}H NMR: δ 11.22 (1H, s, NH), 8.15 (1H, t, *J* = 4.3 Hz, CONH), 7.38–7.18 (5H, m), 4.26 (1H, d, *J* = 12.3 Hz), 4.22 (1H, d, *J* = 12.3 Hz), 3.21 (2H, t, *J* = 5.0 Hz), 1.75 (3H, s, CH_3), 1.18 (3H, d, *J* = 5.1 Hz). FABMS *m/z*: 302 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 14.47 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(2-morpholinoethyl)acetamide (104). Yield 58%, mp: 198 ^{o}C. ^{1}H NMR: δ 11.32 (1H, s, NH), 8.35–8.30 (1H, m, CONH); 7.43 (1H, s), 4.30 (2H, s, CH_2CO), 3.35–3.30 (4H, m, morpholino), 1.76 (3H, s, CH_3). FABMS *m/z*: 297.1$(M+H)^+$. HPLC Purity: 99% (Retention Time = 6.82 min; Condition A).

***N*-(2-(1*H*-indol-3-yl)ethyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (105)**. Yield 79%. ^{1}H NMR: δ 11.27 (1H, s, NH), 10.82 (1H, s, NH), 8.34–8.26 (1H, m, CONH); 7.53 (1H, d, *J* = 7.5 Hz), 7.41 (1H, d, *J* = 1.2 Hz), 7.33 (1H, d, *J* = 8.1 Hz), 7.16 (1H, d, *J* = 2.1 Hz), 7.00–6.95 (2H, m), 4.27 (2H, s), 3.37–3.30 (2H, m), 2.82 (2H, t, *J* = 7.5 Hz), 1.75 (3H, s, CH_3). FABMS *m/z*: 327 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 13.47 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(2-(5-nitropyridin-2-ylamino)ethyl)acetamide (106). Yield 75%, mp: 215 ^{o}C. ^{1}H NMR: δ 11.26 (1H, s, NH), 8.92 (1H, d, *J* = 2.1 Hz), 8.27 (1H, t, *J* = 4.0 Hz, CONH), 8.12 (2H, br s), 7.39 (1H, d, *J* = 0.9 Hz), 6.56 (1H, d, *J* = 7.2 Hz), 4.26 (2H, s), 3.46–3.25 (4H, m), 1.75 (3H, s, CH_3). FABMS *m/z*: 349 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 11.43 min, Condition A).

***N*-(2-(5-methoxy-1*H*-indol-3-yl)ethyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (107).** Yield 68%, mp: 212 ^{o}C. ^{1}H NMR: δ 11.25 (1H, s, NH), 10.66 (1H, s), 8.25 (1H, t, *J* = 5.8 Hz, CONH), 7.40 (1H, d, *J* = 1.2 Hz), 7.22 (1H, d, *J* = 9 Hz), 7.12 (1H, d, *J* = 2.4 Hz), 7.00 (1H, d, *J* = 2.4 Hz), 6.71 (2H, dd, *J* = 2.2, 8.9 Hz), 4.27 (2H, s), 3.76 (3H, s), 3.37–3.31 (2H, m), 2.90 (2H, t, *J* = 7.1 Hz), 1.75 (3H, s, CH_3). FABMS *m/z*: 357 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 13.29 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(2-(pyridin-2-yl)ethyl)acetamide (108). Yield 95%, mp: 221 ^{o}C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.50 (1H, d, *J* = 3.6 Hz), 8.21 (1H, t, *J* = 4.2 Hz, CONH), 7.70 (1H, ddd, *J* = 1.5, 6.0, 12.0 Hz), 7.40 (2H, d, *J* = 0.9 Hz), 4.24 (2H, s), 3.51–3.40 (2H, m), 2.87 (2H, t, *J* = 5.5 Hz), 1.75 (3H, s, CH_3). FABMS *m/z*: 288 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 9.80 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(3-phenylpropyl)acetamide (109). Yield 74%, mp: 242 ^{o}C. ^{1}H NMR: δ 11.23 (1H, s, NH), 8.14 (1H, t, *J* = 4.0 Hz, CONH), 7.42 (1H, d, *J* = 0.9 Hz), 7.30–7.15 (5H, m), 4.26 (2H, s), 3.08 (2H, dd, *J* = 5.0, 9.5 Hz), 2.58 (2H, t, *J*

= 5.8 Hz), 1.75 (3H, s, CH_3), 1.70 (2H, dd, *J* = 5.5, 11.3 Hz). FABMS *m/z*: 302 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 14.80 min, Condition A).

***N*-(3-(1*H*-imidazol-1-yl)propyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (110).** Yield 16%. ^{1}H NMR: δ 11.27 (1H, s, NH), 8.24 (1H, s), 8.20 (1H, t, *J* = 4.2 Hz, CONH), 7.43–7.42 (2H, m), 7.25 (1H, t, *J* = 0.9 Hz), 4.26 (2H, s), 4.06 (2H, t, *J* = 5.1 Hz), 3.05 (2H, dd, *J* = 4.8, 9.3 Hz), 1.90 (2H, s), 1.76 (3H, s, CH_3). FABMS *m/z*: 292 $(M+H)^+$. HPLC Purity: 92% (Retention Time = 6.29 min, Condition A).

***N*-(3-(Dipropylamino)propyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (111).** Yield 94%, mp: 202 ^{o}C. ^{1}H NMR: δ 11.27 (1H, s, NH), 8.26 (1H, t, *J* = 4.0 Hz, CONH), 7.42 (1H, d, *J* = 0.9 Hz), 4.27 (2H, s), 3.18–3.02 (10H, m), 1.75 (3H, s, CH_3), 1.61–1.96 (10H, m), 0.92 (6H, t, *J* = 5.5 Hz). FABMS *m/z*: 353 $(M+H)^+$. HPLC Purity: 98% (Retention Time = 11.43 min, Condition A).

2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(3-(2-oxopyrrolidin-1-yl)propyl)acetamide (112). Yield 97%, mp: 227 ^{o}C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.10 (1H, t, *J* = 4.2 Hz CONH), 7.42 (1H, d, *J* = 0.9 Hz), 4.25 (2H, s), 3.31 (2H, t, *J* = 5.5 Hz), 3.17 (2H, t, *J* = 5.1 Hz), 3.04 (2H, dd, *J* = 5.1, 9.9 Hz), 2.20 (2H, d, *J* = 6.0), 1.94–1.89 (2H, m), 1.75 (3H, s, CH_3), 1.59 (2H, t, *J* = 5.2 Hz). FABMS *m/z*: 309 $(M+H)^+$. HPLC Purity: 98% (Retention Time = 8.28 min, Condition A).

***N*-(2,2-Diphenylethyl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (113).** Yield 72%, mp: 223 ^{o}C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.21 (1H, t, *J* = 5.7 Hz, CONH), 7.38–7.16 (10H, m), 4.18 (2H, s), 4.17 (1H, s), 3.71 (2H, dd, *J* = 5.7, 7.8 Hz), 1.73 (3H, s, CH_3). FABMS *m/z*: 364 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 17.45 min, Condition A).

(*R*)-2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(1-(naphthalen-1-yl)ethyl)-acetamide (114). Yield 64%, mp: 250 ^{o}C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.77 (1H, d, *J* = 7.5 Hz, CONH), 8.10–7.47 (1H, m), 7.41 (1H, d, *J* = 1.0 Hz), 5.75–5.65 (1H, m), 4.34 (2H, d, *J* = 2.1 Hz), 1.73 (3H, s, CH_3), 1.50 (3H, d, *J* = 7.0 Hz). FABMS *m/z*: 338 $(M+H)^+$. HPLC Purity: 98% (Retention Time = 8.25 min, Condition A).

(*R*)-2-(5-Methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)-*N*-(1-phenylpropyl)acetamide (115). Yield 66%, mp: 189 ^{o}C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.54 (1H, d, *J* = 8.1 Hz, CONH),

7.42 (1H, d, *J* = 1.2Hz), 7.40–7.22 (6H, m), 4.33 (1H, d, *J* = 12.6 Hz), 4.27 (1H, d, *J* = 12.6 Hz), 1.73 (3H, s, CH_3), 1.66 (2H, t, *J* = 7.0 Hz), 0.81 (3H, t, *J* = 7.2 Hz). FABMS *m/z*: 302 $(M+H)^+$. HPLC Purity: 98% (Retention Time = 14.53 min, Condition A).

***N*-(1-Methoxy-3-phenylpropan-2-yl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (116).** Yield 39%, mp: 209 °C. ^{1}H NMR: δ 11.23 (1H, s, NH), 8.18 (1H, d, *J* = 6.3 Hz, CONH), 7.31 (1H, d, *J* = 0.9 Hz), 7.30–7.18 (5H, m), 4.27 (1H, d, *J* = 12.3 Hz), 4.20 (1H, d, *J* = 12.3 Hz), 4.01 (1H, d, *J* = 4.5 Hz), 3.26 (3H, s), 2.79 (1H, dd, *J* = 4.5, 10.2 Hz), 2.68 (1H, dd, *J* = 5.7, 10.2 Hz), 1.74 (3H, s, CH_3). HRMS: *m/z* calc. for $C_{17}H_{21}N_3O_4$ $(M+H)^+$: 332.16048, found: 332.16073. HPLC Purity: 98% (Retention Time = 14.42 min, Condition A).

(*S*)-*N*-(1-Hydroxy-3-(1*H*-indol-3-yl)propan-2-yl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (117). Yield 41%, mp: 236 °C. ^{1}H NMR: δ 11.26 (1H, s, NH), 10.8 (1H, s, NH), 8.08 (1H, d, *J* = 7.8 Hz, CONH), 7.61(1H, d, *J* = 7.8 Hz), 7.34 (1H, s), 7.31 (1H, s), 7.12 (1H, d, *J* = 2.1 Hz), 7.08–6.94 (2H, m), 4.74 (1H, t, *J* = 5.4 Hz, OH), 4.32 (1H, d, *J* = 16.2 Hz), 4.24 (1H, d, *J* = 16.2 Hz), 3.98–3.91 (1H, m), 3.41–3.33 (1H, m), 2.90 (1H, dd, *J* = 6.9, 14.1 Hz), 2.76 (1H, dd, *J* = 6.4, 14.3 Hz), 1.74 (3H, s, CH_3). FABMS *m/z*: 357 $(M+H)^+$. HPLC Purity: 98% (Retention Time = 12.47 min, Condition A).

(*S*)-Methyl 2-(2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamido)-4-(methylthio)butanoate (118). Yield 28%, mp: 182 °C. ^{1}H NMR: δ 11.28 (1H, s, NH), 8.63 (1H, d, *J* = 7.8 Hz, CONH), 7.43 (1H, d, *J* = 1.2 Hz), 4.46–4.38 (1H, m), 4.34 (2H, s), 3.64 (3H, s), 2.55–2.43 (2H, m), 2.04 (3H, s), 2.02–1.85 (2H, m), 1.75 (3H, d, *J* = 0.9 Hz CH_3). FABMS *m/z*: 330 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 10.92 min, Condition A).

Methyl 3-(4-hydroxyphenyl)-2-(2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamido)propanoate (119). Yield 41%, mp: 209 °C. ^{1}H NMR: δ 11.26 (1H, s, NH), 9.25 (1H, s, OH), 8.63 (1H, d, *J* = 7.5 Hz, CONH), 7.33 (1H, s), 7.0 (2H, d, *J* = 8.4 Hz), 6.66 (2H, d, *J* = 8.4 Hz), 4.42–4.24 (3H, m), 3.58 (3H, s, OCH_3), 2.92–2.73 (2H, m), 1.74 (3H, s, CH_3). FABMS *m/z*: 362 $(M+H)^+$. HPLC Purity: 98% (Retention Time = 11.50 min, Condition A).

(*R*)-Methyl 2-(2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamido)-3-phenylpropanoate (120). Yield 70%, mp: 180 °C. ^{1}H NMR: δ 11.24 (1H, s, NH), 8.68 (1H, d, *J* = 5.7 Hz, CONH), 7.32–7.20 (6H, m), 4.50–4.45 (1H, m), 4.33 (1H, d, *J* = 12.6 Hz), 4.27 (1H, d, *J* =

12.6 Hz), 3.60 (3H, s), 3.02 (1H, dd, *J* = 4.6, 10.4 Hz), 2.92 (1H, dd, *J* = 6.3, 10.2 Hz), 1.73 (3H, s, CH_3). FABMS *m/z*: 346 $(M+H)^+$. HPLC Purity: 94% (Retention Time = 13.99 min, Condition A).

***N*-((2*R*)-1-Hydroxy-3-methylhexan-2-yl)-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (121).** Yield 13%. ^{1}H NMR: δ 11.22 (1H, s, NH), 7.84 (1H, d, *J* = 6.6 Hz, CONH), 7.41 (1H, d, *J* = 0.9 Hz), 4.52 (1H, t, *J* = 4.0 Hz, OH), 4.32 (1H, d, *J* = 12.3 Hz), 4.26 (1H, d, *J* = 12.3 Hz), 3.63–3.57 (1H, m), 3.40 (2H, t, *J* = 4.0 Hz), 1.75 (3H, s, CH_3), 1.58–1.40 (2H, m), 1.08–1.01 (1H, m), 0.84–0.81 (6H, m, 2xCH_3). FABMS *m/z*: 284 $(M+H)^+$. HPLC Purity: 96% (Retention Time = 10.47 min, Condition A).

(*S*)-Dimethyl 2-(2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamido)succinate (122). Yield 80%, mp: 177 °C. ^{1}H NMR: δ 11.25 (1H, s, NH), 8.71 (1H, d, *J* = 6.3 Hz, CON*H*), 7.41 (1H, d, *J* = 0.9 Hz), 4.66 (1H, dd, *J* = 5.0, 10.7 Hz), 4.35 (1H, d, *J* = 12.6 Hz), 4.30 (1H, d, *J* = 12.6 Hz), 3.64 (3H, s), 3.62 (3H, s), 2.81 (1H, dd, *J* = 4.5, 12.6 Hz), 2.73 (1H, dd, *J* = 5.1, 12.3 Hz), 1.75 (3H, s, C*H*$_3$). FABMS *m/z*: 328 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 8.52 min, Condition A).

(*S*)-Diethyl 2-(2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamido)pentanedioate (123). Yield 40%, mp: 125 °C. ^{1}H NMR: δ 11.25 (1H, s, NH), 8.58 (1H, d, *J* = 5.7 Hz, CONH), 7.42 (1H, d, *J* = 0.9 Hz), 4.34 (2H, s), 4.32–4.26 (1H, m), 4.12–4.03 (4H, m), 2.37 (2H, t, *J* = 5.7 Hz), 2.0 (2H, dd, *J* = 4.4, 10.4 Hz), 1.75 (3H, s, CH_3), 1.20 (6H, t, *J* = 2.7 Hz). FABMS *m/z*: 370 $(M+H)^+$. HPLC Purity: 97% (Retention Time = 13.15 min, Condition A).

***N*-(3-Methoxybenzyl)-*N*-methyl-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (124).** Yield 51%, mp: 174 °C. ^{1}H NMR: δ 11.27 (1H, s, NH), 7.42 (1H, dd, *J* = 0.9, 4.2 Hz), 7.33–7.23 (1H, m), 6.89–6.78 (3H, m), 4.63–4.50 (4H, m), 3.76 (3H, d, *J* = 9.3 Hz), 2.95 (3H, s), 1.77 (3H, s, CH_3). FABMS *m/z*: 318 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 13.67 min, Condition A).

***N*-(3,4-Dimethoxybenzyl)-*N*-methyl-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (125).** Yield 42%, mp: 192 °C. ^{1}H NMR: δ 11.28 (1H, s, NH), 7.42 (1H, dd, *J* = 1.2, 5.7 Hz), 6.97–6.74 (3H, m), 4.63 (2H, d, *J* = 12.9 Hz), 4.47 (2H, d, *J* = 19.7 Hz), 3.74 (6H, s,

2xOCH_3), 2.92 (3H, s), 1.76 (3H, s, CH_3). FABMS *m/z*: 348 $(M+H)^+$. HPLC Purity: 97% (Retention Time = 12.70 min, Condition A).

***N*-(Furan-2-ylmethyl)-*N*-methyl-2-(5-methyl-2,4-dioxo-3,4-dihydropyrimidin-1(2*H*)-yl)acetamide (126).** Yield 72%, mp: 233 °C. ^{1}H NMR: δ 7.67–7.60 (1H, m), 7.39 (1H, dd, *J* = 1.2, 6.3 Hz), 6.47–6.32 (2H, m), 4.70–4.50 (4H, m), 2.98 (3H, s, NCH_3), 1.76 (3H, s, CH_3). FABMS *m/z*: 278 $(M+H)^+$. HPLC Purity: 99% (Retention Time = 10.68 min, Condition A).

5-Methyl-1-(2-oxo-2-(4-(pyridin-2-yl)piperazin-1-yl)ethyl)pyrimidine-2,4(1*H*,3*H*)-dione (127). Yield 70%, mp: 245 °C. ^{1}H NMR: δ 11.27 (1H, s, NH), 8.13 (1H, dd, *J* = 1.0, 3.8 Hz), 7.56 (1H, ddd, *J* = 1.2, 5.0, 5.8 Hz), 7.38 (1H, d, *J* = 0.9 Hz), 6.87 (1H, d, *J* = 6.3 Hz), 6.68 (1H, dd, *J* = 3.8, 5.3 Hz), 4.63 (2H, s), 3.59–3.50 (8H, m), 1.76 (3H, s, CH_3). HRMS: *m/z* calc. for $C_{16}H_{19}N_5O_3$ $(M+H)^+$: 330.15607, found: 330.15611. HPLC Purity: 99% (Retention Time = 12.22 min, Condition A).

1-(2-(4-Mesitylpiperazin-1-yl)-2-oxoethyl)-5-methylpyrimidine-2,4(1*H*,3*H*)-dione (128). Yield 23%, mp: 124 °C. ^{1}H NMR: δ 11.24 (1H, s, NH), 7.36 (1H, d, *J* = 0.9 Hz), 6.81 (2H, s), 4.55 (2H, s), 3.43 (2H, s), 3.39–3.32 (4H, m), 2.40 (2H, t, *J* = 3.5 Hz), 2.34 (2H, t, *J* = 3.5 Hz), 2.30 (6H, s), 2.20 (3H, s), 1.75 (3H, d, *J* = 0.9 Hz CH_3). HRMS: *m/z* calc. for $C_{21}H_{28}N_4O_3$ $(M+H)^+$: 385.22342, found: 385.22381. HPLC Purity: 98% (Retention Time = 20.42 min, Condition A).

Benzyl 1-(2-((5-methylfuran-2-yl)methylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (129). Yield 49%, mp: 200 °C. ^{1}H NMR: δ 10.74 (1H, s, NH), 8.61 (1H, t, *J* = 5.3 Hz CON*H*), 7.98 (2H, d, *J* = 7.6 Hz), 7.43–7.33 (5H, m), 7.00 (1H, d, *J* = 6.8 Hz), 6.13 (1H, d, *J* = 2.8 Hz), 5.99 (1H, dd, *J* = 0.8, 2.8 Hz), 5.19 (2H, s), 4.47 (2H, s), 4.22 (1H, d, *J* = 5.6 Hz), 2.23 (3H, s, CH_3). HRMS: *m/z* calc. for $C_{20}H_{20}N_4O_5$ $(M+H)^+$: 397.15065, found: 397.15094. HPLC Purity: 96% (Retention Time = 18.09 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(pyridin-2-ylmethylamino)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (130). Yield 91%, mp: 222 °C. ^{1}H NMR: δ 10.71 (1H, s, NH), 8.80 (1H, t, *J* = 5.8 Hz, CONH), 8.49 (1H, d, *J* = 9.2 Hz), 8.02 (1H, d, *J* = 7.2 Hz), 7.76 (1H, ddd, *J* = 1.8, 7.0, 7.8 Hz), 7.43–7.25 (8H, m), 7.00 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.55 (2H, s), 4.40 (2H, d, *J* = 5.6

Hz). HRMS: *m/z* calc. for $C_{20}H_{19}N_5O_5$ $(M+H)^+$: 394.1509, found: 394.1510. HPLC Purity: 97% (Retention Time = 21.50 min, Condition A).

Benzyl 1-(2-(benzo[*d*][1,3]dioxol-5-ylmethylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (131). Yield 91%, mp: 248 ^oC. ^1H NMR: δ 10.75 (1H, s, NH), 8.63 (1H, t, *J* = 5.8 Hz, CONH), 8.00 (1H, d, *J* = 7.5 Hz), 7.41–7.32 (5H, m), 7.00 (1H, d, *J* = 7.2 Hz), 6.86 (1H, s), 6.83 (1H, s), 6.74 (1H, d, *J* = 9.3 Hz), 5.98 (2H, s), 5.19 (2H, s), 4.48 (2H, s), 4.21 (2H, d, *J* = 6.0 Hz). HRMS: *m/z* calc. for $C_{22}H_{20}N_4O_6$ $(M+H)^+$: 437.1456, found: 437.1453. HPLC Purity: 92% (Retention Time = 14.85 min, Condition A).

Benzyl 1-(2-(4-methoxybenzylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-yl-carbamate (132). Yield 71%, mp: 231 ^oC. ^1H NMR: δ 10.75 (1H, s, NH), 8.62 (1H, t, *J* = 5.5 Hz, CONH), 8.0 (1H, d, *J* = 6.9 Hz), 7.43–7.34 (5H, m), 7.20 (2H, d, *J* = 8.4 Hz), 6.88 (2H, d, *J* = 9.0 Hz), 5.19 (2H, s), 4.48 (2H, s), 4.23 (2H, d, *J* = 5.7 Hz), 3.72 (2H, s). HRMS: *m/z* calc. for $C_{22}H_{22}N_4O_5$ $(M+H)^+$: 423.1663, found: 423.1658. HPLC Purity: 94 % (Retention Time = 3.01 min; Condition B).

Benzyl 1-(2-(3-methoxypropylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-yl carbamate (133). Yield 95%, mp: 197 ^oC. ^1H NMR: δ 10.72 (1H, s, NH), 8.17 (1H, t, *J* = 5.5 Hz, CONH), 7.97 (1H, d, *J* = 7.5 Hz), 7.41–7.34 (5H, m), 7.00 (1H, d, *J* = 6.6 Hz), 5.19 (2H, s), 4.41 (2H, s), 3.31–3.06 (4H, m), 3.22 (3H, s), 1.63 (2H, m, *J* = 5.7 Hz). HRMS: *m/z* calc. for $C_{18}H_{22}N_4O_5$ $(M+H)^+$: 375.1663, found: 375.1663. HPLC Purity: 96% (Retention Time = 13.30 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-((tetrahydrofuran-2-yl)methylamino)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (134). Yield 70%, mp: 211 ^oC. ^1H NMR: δ 10.74 (1H, s, NH), 8.28 (1H, t, *J* = 5.8 Hz, CONH), 7.97 (1H, d, *J* = 7.5 Hz), 7.41–7.34 (5H, m), 6.99 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.45 (2H, s), 3.84–3.60 (3H, m), 3.22–3.11 (2H, m), 1.90–1.47 (4H, m). HRMS: *m/z* calc. for $C_{19}H_{22}N_4O_5$ $(M+H)^+$: 387.1763, found: 387.1661. HPLC Purity: 91% (Retention Time = 5.87 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(piperidin-2-ylmethylamino)ethyl)-1,2-dihydropyrimidin-4-yl-carbamate (135). Yield 28%, mp: 197 ^oC. ^1H NMR: δ 10.83 (1H, s, NH), 8.46 (1H, t, *J* = 6.0 Hz, CONH), 7.97 (1H, d, *J* = 7.5 Hz), 7.41–7.34 (5H, m), 7.04 (1H, d, *J* = 7.5 Hz), 5.19 (2H, s),

4.47 (2H, s), 3.31–2.84 (5H, m), 1.85–1.23 (6H, m). HRMS: *m/z* calc. for $C_{20}H_{25}N_5O_4$ $(M+H)^+$: 400.1979, found: 400.1981. HPLC Purity: 97% (Retention Time = 14.03 min; Condition B).

Benzyl 1-(2-((1*H*-benzo[*d*]imidazol-2-yl)methylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-yl carbamate (136). Yield 59%, mp: 218 ^oC. ^1H NMR: δ 10.82 (1H, s, NH), 9.17 (1H, t, *J* = 5.5 Hz, CONH), 8.02 (1H, d, *J* = 7.5 Hz), 7.74 (2H, dd, *J* = 3.3, 8.4 Hz), 7.47 (2H, dd, *J* = 3.0, 8.0 Hz), 7.44–7.32 (5H, m), 7.00 (1H, d, *J* = 6.6 Hz), 5.19 (2H, s), 4.74 (2H, d, *J* = 5.4 Hz), 4.61 (2H, s). HRMS: *m/z* calc. for $C_{22}H_{20}N_6O_4$ $(M+H)^+$: 433.1618, found: 433.1616. HPLC Purity: 95% (Retention Time = 15.01 min, Condition A).

(*R*)-Benzyl 1-(2-(1-(naphthalen-1-yl)ethylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (137). Yield 47%, mp: 159 ^oC. ^1H NMR: δ 10.72 (1H, s, NH), 8.85 (1H, d, *J* = 7.8 Hz, CONH), 8.10 (1H, d, *J* = 7.5 Hz), 8.0 (2H, t, *J* = 7.0 Hz), 7.83 (1H, d, *J* =7.8 Hz), 7.59–7.47 (9H, m), 6.97 (1H, d, *J* = 6.9 Hz), 5.70 (1H, d, *J* = 5.7 Hz), 5.18 (2H, s), 4.52 (2H, d, *J* = 4.2 Hz), 1.51 (3H, d, *J* = 6.6 Hz). HRMS: *m/z* calc. for $C_{26}H_{24}N_4O_4$ $(M+H)^+$: 457.1870, found: 457.1865. HPLC Purity: 98% (Retention Time = 16.89 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(2-phenylpropylamino)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (138). Yield 57%, mp: 194 ^oC. ^1H NMR: δ 10.70 (1H, s, NH), 8.24 (1H, t, *J* = 5.7 Hz, CONH), 7.94 (1H, d, *J* = 7.2 Hz), 7.41–7.18 (10H, m), 6.99 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.41 (2H, s), 3.22 (2H, t, *J* = 6.4 Hz), 2.87 (1H, dd, *J* = 6.9, 18.8 Hz), 1.19 (3H, d, *J* = 6.9 Hz). HRMS: *m/z* calc. for $C_{23}H_{24}N_4O_4$ $(M+H)^+$: 421.1870, found: 421.1872. HPLC Purity: 95% (Retention Time = 16.16 min, Condition A).

Benzyl 1-(2-(2-(1*H*-indol-3-yl)ethylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (139). Yield 75%, mp: 196 ^oC. ^1H NMR: δ 10.81 (1H, s, NH), 10.31 (1H, s, NH), 8.31 (1H, t, *J* = 5.6 Hz, CONH), 7.97 (1H, d, *J* = 9.2 Hz), 7.53 (1H, d, *J* = 8.0 Hz), 7.43–7.32 (7H, m), 7.17 (1H, d, *J* = 2.0 Hz), 7.08–6.96 (3H, m), 5.19 (2H, s), 4.44 (2H, s), 3.32 (2H, s), 2.83 (2H, t, *J* = 7.4 Hz). HRMS: *m/z* calc. for $C_{24}H_{23}N_5O_4$ $(M+H)^+$: 446.1823, found: 446.1825. HPLC Purity: 97% (Retention Time = 15.12 min; Condition B).

Benzyl 1-(2-(2-morpholinoethylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (140). Yield 68%, mp: 156 ^oC. ^1H NMR: δ 10.75 (1H, s, NH), 8.12 (1H, t, *J* = 5.6 Hz, CONH), 7.96 (2H, d, *J* = 7.2 Hz), 7.43–7.33 (5H, m), 6.99 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s),

4.43 (2H, s), 3.56 (4H, t, *J* = 4.6 Hz), 3.30–3.20 (2H, m), 2.40–2.33 (6H, m). HRMS: *m/z* calc. for $C_{20}H_{25}N_5O_5$ $(M+H)^+$: 416.1928, found: 416.1930. HPLC Purity: 94% (Retention Time = 19.91 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(2-(pyridin-2-yl)ethylamino)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (141). Yield 66%, mp: 199 ^oC. ^1H NMR: δ 10.77 (1H, s, NH), 8.49 (1H, d, *J* = 4.0 Hz), 8.29 (1H, t, *J* = 5.1 Hz, CONH), 7.97 (1H, d, *J* = 7.2 Hz), 7.70 (1H, ddd, *J* = 1.8, 7.6, 7.7 Hz), 7.43–7.20 (7H, m), 7.00 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.42 (2H, s), 3.42 (2H, t, *J* = 6.5 Hz), 2.88 (2H, t, *J* = 7.3 Hz). HRMS: *m/z* calc. for $C_{21}H_{25}N_5O_4$ $(M+H)^+$: 408.1666, found: 408.1667. HPLC Purity: 95% (Retention Time = 14.05 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(3-phenylpropylamino)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (142). Yield 83%, mp: 215 ^oC. ^1H NMR: δ 10.73 (1H, s, NH), 8.21 (1H, t, *J* = 5.4 Hz, CONH), 7.97 (1H, d, *J* = 7.2 Hz), 7.43–7.15 (10H, m), 7.0 (2H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.43 (2H, s), 3.09 (2H, dd, *J* = 6.8, 12.4 Hz), 2.59 (2H, t, *J* = 7.6 Hz), 1.71 (2H, m). HRMS: *m/z* calc. for $C_{23}H_{24}N_4O_4$ $(M+H)^+$: 421.1870, found: 421.1869. HPLC Purity: 95% (Retention Time = 3.07 min; Condition B).

Benzyl 1-(2-(3-(1*H*-imidazol-1-yl)propylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (143). Yield 34%, mp: 126 ^oC. ^1H NMR: δ 10.77 (1H, s, NH), 8.26 (1H, t, *J* = 5.7 Hz, CONH), 7.99 (2H, d, *J* = 7.2 Hz), 7.41–7.30 (6H, m), 7.11–7.00 (2H, m), 5.19 (2H, s), 4.43 (2H, s), 4.02 (2H, t, *J* = 6.7 Hz), 3.04 (2H, d, *J* = 5.7 Hz), 1.87 (2H, t, *J* = 6.7 Hz). HRMS: *m/z* calc. for $C_{20}H_{22}N_6O_4$ $(M+H)^+$: 411.1775, found: 411.1772. HPLC Purity: 94% (Retention Time = 13.09 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(3-(2-oxopyrrolidin-1-yl)propylamino)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (144). Yield 76%, mp: 174 ^oC. ^1H NMR: δ 10.76 (1H, s, NH), 8.18 (1H, t, *J* = 5.7 Hz, CONH), 7.43–7.34 (5H, m), 7.00 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.42 (2H, s), 3.31–3.02 (6H, m), 2.20 (2H, t, *J* = 7.9 Hz), 1.95–1.85 (2H, m), 1.64–1.54 (2H, m). HRMS: *m/z* calc. for $C_{21}H_{25}N_5O_5$ $(M+H)^+$: 428.1929, found: 428.1925. HPLC Purity: 95% (Retention Time = 13.32 min, Condition A).

(*S*)-methyl 2-(2-(4-(benzyloxycarbonylamino)-2-oxopyrimidin-1(2H)-yl)acetamido)-3-phenylpropanoate (145). Yield 63%, mp: 109 ^oC. ^1H NMR: δ 10.73 (1H, s, NH), 8.76 (1H, d, *J*

= 7.6 Hz CONH), 7.90 (1H, d, *J* = 7.2 Hz), 7.42–7.21 (10H, m), 6.97 (2H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.54–4.43 (2H, m), 3.58 (3H, s), 3.01 (1H, dd, *J* = 6.4, 14.0 Hz), 2.97 (1H, dd, *J* = 8.4, 13.7 Hz). HRMS: *m/z* calc. for $C_{24}H_{24}N_4O_6$ $(M+H)^+$: 465.1769, found: 465.1774. HPLC Purity: 99% (Retention Time = 15.61 min, Condition A).

(*S*)-methyl 2-(2-(4-(benzyloxycarbonylamino)-2-oxopyrimidin-1(2*H*)-yl)acetamido)-3-(4-hydroxyphenyl)propanoate (146). Yield 40%, mp: 176 °C. ^{1}H NMR: δ 10.75 (1H, s, NH), 9.25 (1H, s, OH), 8.71 (1H, d, *J* = 7.5 Hz CONH), 7.91 (1H, d, *J* = 7.2 Hz), 7.43–7.33 (5H, m), 7.01–6.97 (3H, m), 6.66 (2H, d, *J* = 8.4 Hz), 5.18 (2H, s), 4.49 (2H, d, *J* = 5.7 Hz), 4.39 (1H, dd, *J* = 6.9, 14.4 Hz), 3.57 (3H, s), 2.91–2.77 (2H, m). HRMS: *m/z* calc. for $C_{24}H_{24}N_4O_7$ $(M+H)^+$: 481.1718, found: 481.1723. HPLC Purity: 99% (Retention Time = 14.24 min, Condition A).

(*S*)-methyl 2-(2-(4-(benzyloxycarbonylamino)-2-oxopyrimidin-1(2H)-yl)acetamido)-4-(methylthio)butanoate (147). Yield 61%, mp: 175 °C. ^{1}H NMR: δ 10.72 (1H, s, NH), 8.68 (1H, d, *J* = 7.6 Hz, CONH), 7.97 (1H, d, *J* = 7.2 Hz), 7.43–7.34 (5H, m), 7.00 (1H, d, *J* = 7.2 Hz), 5.19 (2H, s), 4.55 (2H, s), 4.51 (2H, d, *J* = 3.6 Hz), 4.47–4.41 (1H, m), 3.64 (3H, s), 2.51 (2H, s), 2.04 (3H, s), 2.01–1.83 (2H, m). HRMS: *m/z* calc. for $C_{20}H_{24}N_4O_6S$ $(M+H)^+$: 449.1489, found: 449.1492. HPLC Purity: 99% (Condition B).

Benzyl 1-(2-((3,4-dimethoxybenzyl)(methyl)amino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (148). Yield 50%, mp: 108 °C. ^{1}H NMR: δ 10.77 (1H, s, NH), 7.99 (1H, t, *J* = 4.3 Hz), 7.43–7.34 (5H, m), 7.03–6.78 (4H, m), 5.20 (2H, s), 4.82 (2H, s), 4.45 (2H, s), 3.73(6H, s), 2.96 (3H, s). HRMS: *m/z* calc. for $C_{24}H_{26}N_4O_6$ $(M+H)^+$: 467.1925, found: 467.1924. HPLC Purity: 97% (Retention Time = 14.79 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(4-(pyridin-2-yl)piperazin-1-yl)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (149). Yield 64%, mp: 219 °C. ^{1}H NMR: δ 10.77 (1H, s, NH), 8.13 (1H, d, *J* = 5.1 Hz), 7.94 (1H, d, *J* = 7.2 Hz), 7.59–7.34 (6H, m), 7.02 (1H, d, *J* = 7.2 Hz), 6.87 (1H, d, *J* = 8.1 Hz), 6.68 (1H, dd, *J* = 4.9, 9.4 Hz), 5.19 (2H, s), 4.80 (2H, s), 3.61–3.49 (8H, m). HRMS: *m/z* calc. for $C_{23}H_{24}N_6O_4$ $(M+H)^+$: 449.1932, found: 449.1927. HPLC Purity: 98% (Retention Time = 14.56 min, Condition A).

Benzyl 2-oxo-1-(2-oxo-2-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)ethyl)-1,2-dihydropyrimidin-4-ylcarbamate (150). Yield 55%, mp: 207 °C. ^{1}H NMR: δ 10.76 (1H, s,

NH), 7.92 (1H, d, *J* = 7.2 Hz), 7.43–7.34 (5H, m), 7.00 (1H, d, *J* = 7.2 Hz), 6.81 (1H, s), 5.19 (2H, s), 4.72 (2H, s), 3.43 (2H, s), 3.41-3.25 (4H, m), 2.41–2.33 (4H, m), 2.30 (6H, s), 2.20 (3H, s). HRMS: *m/z* calc. for $C_{28}H_{33}N_5O_4$ $(M+H)^+$: 504.2605, found: 504.2602. HPLC Purity: 97% (Retention Time = 18.23 min, Condition A).

Benzyl 1-(2-((1*H*-indol-5-yl)methylamino)-2-oxoethyl)-2-oxo-1,2-dihydropyrimidin-4-ylcarbamate (151). Yield 62%, mp: 215 ^oC. ^1H NMR (300 MHz): δ 11.03 (1H, s), 10.76 (1H, s), 8.62 (1H, t, *J* = 5.4 Hz, CONH), 8.01 (1H, d, *J* = 7.2 Hz), 7.44–7.31 (8H, m), 7.02 (1H, s), 7.0 (1H, s), 6.37 (1H, s), 5.19 (2H, s), 4.50 (2H, s), 4.35 (2H, d, *J* = 5.7 Hz). HRMS: *m/z* calc. for $C_{23}H_{21}N_5O_4$ $(M+H)^+$: 432.1666, found: 432.1663. HPLC Purity: 97% (Retention Time = 6.00 min; Condition D).

***N*-(3,4-dimethylphenyl)-1-(2-(3,4-dimethylphenylamino)-2-oxoethyl)-1*H*-1,2,4-triazole-3-carboxamide (152).** Yield 81%, mp: 238 ^oC. ^1H NMR (400 MHz): δ 10.31 (1H, s, NH), 10.16 (1H, s, NH), 8.73 (1H, s), 7.60 (1H, d, *J* = 2.0 Hz), 7.51 (1H, dd, *J* = 2.0, 8.0 Hz), 7.36 (1H, d, *J* = 1.6 Hz), 7.30 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 5.22 (2H, s), 2.21 (3H, s), 2.19 (3H, s), 2.18 (3H, s), 2.17 (3H, s). HRMS: *m/z* calc. for $C_{21}H_{23}N_5O_2$ $(M+H)^+$: 378.1924, found: 378.1927. HPLC Purity: 100% (Retention Time = 9.41 min, Condition E).

***N*-(3,4-Dimethylphenyl)-1-(2-oxo-2-(3,4,5-trimethoxyphenylamino)ethyl)-1*H*-1,2,4-triazole-3-carboxamide (153).** Yield 89%, mp: 235 ^oC. ^1H NMR (400 MHz): δ 10.44 (1H, s, NH), 10.16 (1H, s, NH), 8.74 (1H, s), 7.60 (1H, d, *J* = 1.8 Hz), 7.47 (1H, dd, *J* = 1.8, 8.0 Hz), 7.09 (1H, d, *J* = 8.0 Hz), 6.96 (2H, s), 5.23 (2H, s), 3.74 (6H, s), 3.62 (3H, s), 2.11 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{25}N_5O_5$ $(M+H)^+$: 440.1928, found: 440.1933. HPLC Purity: 100% (Retention Time = 8.30 min, Condition E).

1-(2-(Benzylamino)-2-oxoethyl)-*N*-(3,4-dimethylphenyl)-1*H*-1,2,4-triazole-3-carboxamide (154). Yield 47%. ^1H NMR (400 MHz): δ 10.16 (1H, s, NH), 8.82 (1H, t, *J* = 5.6 Hz, NH), 8.70 (1H, s), 7.59 (1H, s), 7.51 (1H, dd, *J* = 2.0, 8.0 Hz), 7.36–7.25 (5H, m), 7.08 (1H, d, *J* = 8.0 Hz), 5.09 (2H, s), 4.34 (2H, d, *J* = 6.0 Hz), 2.21 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{20}H_{21}N_5O_2$ $(M+H)^+$: 364.1768, found: 364.1774. HPLC Purity: 98% (Retention Time = 8.48 min, Condition E).

1-(2-(Benzo[*d*][1,3]dioxol-5-ylmethylamino)-2-oxoethyl)-*N*-(3,4-dimethylphenyl)-1*H*-1,2,4-triazole-3-carboxamide (155). Yield 51%, mp: 217 ^{o}C. ^{1}H NMR (400 MHz): δ 10.14 (1H, s, NH), 8.75 (1H, t, *J* = 5.8 Hz, NH), 8.69 (1H, s), 7.59 (1H, s), 7.51 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 6.87 (1H, d, *J* = 8.0 Hz), 6.86 (1H, s), 6.77 (1H, m), 5.99 (2H, s), 5.07 (2H, s), 4.23 (2H, d, *J* = 5.6 Hz), 2.21 (3H, s), 2.19 (3H, s). HRMS: *m/z* calc. for $C_{21}H_{21}N_5O_4$ $(M+H)^+$: 408.1666, found: 408.1673. HPLC Purity: 100% (Retention Time = 8.40 min, Condition E).

Methyl 4-((2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido)methyl) benzoate (156). Yield 75%, mp: 225 ^{o}C. ^{1}H NMR (400 MHz): δ 10.15 (1H, s, NH), 8.91 (1H, t, *J* = 5.8 Hz, NH), 8.71 (1H, s), 9.94 (2H, d, *J* = 8.4 Hz), 7.60 (1H, d, *J* = 1.8 Hz), 7.51 (1H, dd, *J* = 1.8, 8.4 Hz), 7.44 (2H, d, *J* = 8.4 Hz), 7.09 (1H, d, *J* = 8.4 Hz), 5.12 (2H, m), 4.42 (2H, d, *J* = 6.0 Hz), 3.85 (3H, s), 2.21 (3H, s), 2.19 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{23}N_5O_4$ $(M+H)^+$: 422.1823, found: 422.1824. HPLC Purity: 100% (Retention Time = 8.48 min, Condition E).

***N*-(3,4-Dimethylphenyl)-1-(2-((5-methylfuran-2-yl)methylamino)-2-oxoethyl)-1*H*-1,2,4-triazole-3-carboxamide (157).** Yield 28%. ^{1}H NMR (400 MHz): δ 10.14 (1H, s, NH), 8.78 (1H, t, *J* = 5.4 Hz, NH), 8.68 (1H, s), 7.59 (1H, s), 7.50 (1H, dd, *J* = 2.0, 8.4 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 6.16 (1H, d, *J* = 3.2 Hz), 6.00 (1H, d, *J* = 2.0 Hz), 5.12 (2H, s), 4.26 (2H, d, *J* = 5.2 Hz), 2.24 (3H, s), 2.20 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{19}H_{21}N_5O_3$ $(M+H)^+$: 368.1717, found: 368.1724. HPLC Purity: 100% (Retention Time = 9.37 min, Condition C).

1-(2-((1*H*-indol-5-yl)methylamino)-2-oxoethyl)-*N*-(3,4-dimethylphenyl)-1*H*-1,2,4-triazole-3-carboxamide (158). Yield 71%, mp: 246 ^{o}C. ^{1}H NMR (400 MHz): δ 11.04 (1H, s, NH), 10.14 (1H, s, NH), 8.75 (1H, t, *J* = 5.6 Hz, NH), 8.70 (1H, s), 7.59 (1H, s), 7.51 (1H, dd, *J* = 2.0, 8.4 Hz), 7.46 (1H, s), 7.35 (1H, d, *J* = 8.0 Hz), 7.32 (1H, t, *J* = 2.4 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 7.03 (1H, dd, *J* = 1.2, 8.4 Hz), 6.39 (1H, d, *J* = 2.0 Hz), 5.07 (2H, s), 4.38 (2H, d, *J* = 5.6 Hz), 2.21 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{22}N_6O_2$ $(M+H)^+$: 403.1877, found: 403.1885. HPLC Purity: 100% (Retention Time = 8.05 min, Condition E).

1-(2-((1*H*-benzo[*d*]imidazol-2-yl)methylamino)-2-oxoethyl)-*N*-(3,4-dimethylphenyl)-1*H*-1,2,4-triazole-3-carboxamide (159). Yield 15%. ^{1}H NMR (400 MHz): δ 12.28 (1H, s, NH), 10.12 (1H, s, NH), 9.01 (1H, t, *J* = 5.6 Hz, NH), 8.68 (1H, s), 7.56–7.52 (2H, m), 7.48–7.42 (1H, m), 7.47 (1H, dd, *J* = 2.0, 8.0 Hz), 7.10 (2H, m), 7.05 (1H, d, *J* = 8.0 Hz), 5.11 (2H, s), 4.53 (2H,

d, *J* = 5.6 Hz), 2.17 (3H, s), 2.15 (3H, s). HRMS: *m/z* calc. for $C_{21}H_{21}N_7O_2$ $(M+H)^+$: 404.1829, found: 404.1834. HPLC Purity: 95% (Retention Time = 8.25 min, Condition E).

(*R*)-*N*-(3,4-Dimethylphenyl)-1-(2-(1-(naphthalen-1-yl)ethylamino)-2-oxoethyl)-1*H*-1,2,4-triazole-3-carboxamide (160). Yield 71%, mp: 144 °C. ^{1}H NMR (400 MHz): δ 10.15 (1H, s, NH), 9.01 (1H, d, *J* = 7.6 Hz, NH), 8.66 (1H, s), 8.10 (1H, d, *J* = 8.4 Hz), 7.96–7.94 (1H, m), 7.85 (1H, d, *J* = 8.0 Hz), 7.60 (1H, d, *J* = 7.2 Hz), 7.59–7.50 (4H, m), 7.50 (1H, dd, *J* = 2.0, 8.4 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 5.75–5.70 (1H, m), 5.08 (2H, s), 2.20 (3H, s), 2.18 (3H, s), 1.55 (3H, d, *J* = 6.8 Hz). HRMS: *m/z* calc. for $C_{25}H_{25}N_5O_2$ $(M+H)^+$: 428.2081, found: 428.2090. HPLC Purity: 100% (Retention Time = 9.70 min, Condition E).

1-(2-(2-(1*H*-Indol-3-yl)ethylamino)-2-oxoethyl)-*N*-(3,4-dimethylphenyl)-1*H*-1,2,4-triazole-3-carboxamide (161). Yield 41%, mp: 177 °C. ^{1}H NMR (400 MHz): δ 10.83 (1H, s, NH), 10.14 (1H, s, NH), 8.67 (1H, s), 8.45 (1H, t, *J* = 5.6 Hz, NH), 7.60 (1H, d, *J* = 1.8 Hz), 7.53 (1H, d, *J* = 8.0 Hz), 7.51 (1H, dd, *J* = 1.8, 8.0 Hz), 7.34 (1H, d, *J* = 8.0 Hz), 7.18 (1H, d, *J* = 2.0 Hz), 7.10–7.07 (1H, m), 7.07 (1H, dd, *J* = 1.2, 14.8 Hz), 6.98 (1H, ddd, *J* = 0.8, 7.2, 7.5 Hz), 5.01 (2H, s), 3.40 (2H, dd, *J* = 6.8, 13.8 Hz), 2.86 (2H, t, *J* = 7.4 Hz), 2.21 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{23}H_{24}N_6O_2$ $(M+H)^+$: 417.2033, found: 417.2042. HPLC Purity: 100% (Retention Time = 8.66 min, Condition E).

***N*-(3,4-Dimethylphenyl)-1-(2-oxo-2-(2-phenylpropylamino)ethyl)-1*H*-1,2,4-triazole-3-carboxamide (162).** Yield 71%, mp: 147 °C. ^{1}H NMR (400 MHz): δ 10.13 (1H, s, NH), 8.64 (1H, s), 8.36 (1H, t, *J* = 5.6 Hz, NH), 7.59 (1H, s), 7.51 (1H, dd, *J* = 2.0, 8.4 Hz), 7.33–7.29 (2H, m), 7.25–7.19 (3H, m), 7.08 (1H, d, *J* = 8.0 Hz), 4.98 (2H, s), 3.28–3.25 (2H, m), 2.93–2.87 (1H, m), 2.21 (3H, s), 2.18 (3H, s), 1.21 (3H, d, *J* = 6.8 Hz). HRMS: *m/z* calc. for $C_{22}H_{25}N_5O_2$ $(M+H)^+$: 392.2081, found: 392.2079. HPLC Purity: 99% (Retention Time = 9.20 min, Condition E).

***N*-(3,4-Dimethylphenyl)-1-(2-(3-methoxypropylamino)-2-oxoethyl)-1*H*-1,2,4-triazole-3-carboxamide (163).** Yield 39%. ^{1}H NMR (400 MHz): δ 10.13 (1H, s, NH), 8.67 (1H, s), 8.31 (1H, t, *J* = 5.6 Hz, NH), 7.59 (1H, d, *J* = 2.0 Hz), 7.51 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 4.97 (2H, s), 3.34 (2H, t, *J* = 6.4 Hz), 3.22 (3H, s), 3.15 (2H, dd, *J* = 6.8, 12.8 Hz), 2.21 (3H, s), 2.18 (3H, s), 1.69–1.63 (2H, m). HRMS: *m/z* calc. for $C_{17}H_{23}N_5O_3$ $(M+H)^+$: 346.1874, found: 346.1880. HPLC Purity: 100% (Retention Time = 7.42 min, Condition E).

(*S*)-Methyl 2-(2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido)-4-methylpentanoate (164). Yield 62%, mp: 145 °C. ^{1}H NMR (400 MHz): δ 10.14 (1H, s, NH), 8.81 (1H, d, *J* = 7.6 Hz, NH), 8.67 (1H, s), 7.59 (1H, d, *J* = 1.8 Hz), 7.50 (1H, dd, *J* = 1.8, 8.0 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 5.09 (2H, 2d, *J* = 16.4, 18.4 Hz), 4.36–4.4.30 (1H, m), 3.64 (3H, s), 2.21 (3H, s), 2.18 (3H, s), 1.67–1.53 (3H, m), 0.91 (3H, d, *J* = 6.4 Hz), 0.86 (3H, d, *J* = 6.4 Hz). HRMS: *m/z* calc. for $C_{20}H_{27}N_5O_4$ $(M+H)^+$: 402.2136, found: 402.2135. HPLC Purity: 100% (Retention Time = 8.89 min, Condition E).

(*S*)-Dimethyl 2-(2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido) succinate (165). Yield 77%, mp: 174 °C. ^{1}H NMR (400 MHz): δ 10.15 (1H, s, NH), 8.93 (1H, d, *J* = 8.0 Hz, NH), 8.67 (1H, s), 7.59 (1H, s), 7.51 (1H, dd, *J* = 2.0, 8.4 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 5.10 (2H, m), 4.70 (1H, dd, *J* = 6.8, 14.0 Hz), 3.65 (3H, s), 3.63 (3H, s), 2.85 (1H, dd, *J* = 5.6, 16.4 Hz), 2.79 (1H, dd, *J* = 6.8, 16.6 Hz), 2.21 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{19}H_{23}N_5O_6$ $(M+H)^+$: 418.1721, found: 418.1721. HPLC Purity: 99% (Retention Time = 7.43 min, Condition E).

(*S*)-Diethyl 2-(2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido) pentanedioate (166). Yield 26%. ^{1}H NMR (400 MHz): δ 10.14 (1H, s, NH), 8.81 (1H, d, *J* = 7.6 Hz, NH), 8.67 (1H, s), 7.59 (1H, d, *J* = 1.6 Hz), 7.50 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 5.10 (2H, m), 4.32 (1H, ddd, *J* = 5.2, 8.1, 8.4 Hz), 4.13–4.02 (4H, m), 2.43–2.39 (2H, m), 2.20 (3H, s), 2.18 (3H, s), 2.05–1.95 (1H, m), 1.90–1.82 (1H, m), 1.81 (6H, ddd, *J* = 4.0, 7.1, 7.4 Hz). HRMS: *m/z* calc. for $C_{22}H_{29}N_5O_6$ $(M+H)^+$: 460.2191, found: 460.2193. HPLC Purity: 100% (Retention Time = 3.38 min; Bondclone 5μ C18 column, A: H_2O, B: MeOH, linear gradient from 70–90% B for 12 min; 1.0 mL/min).

(*S*)-Methyl 2-(2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido)-4-(methylthio)butanoate (167). Yield 75%, mp: 145 °C. ^{1}H NMR (400 MHz): δ 10.14 (1H, s, NH), 8.85 (1H, d, *J* = 7.6 Hz, NH), 8.68 (1H, s), 7.59 (1H, s), 7.50 (1H, dd, *J* = 2.2, 8.4 Hz), 7.08 (1H, d, *J* = 8.0 Hz), 5.10 (2H, m), 4.47–4.42 (1H, m), 3.66 (3H, s), 2.55–2.52 (2H, m), 2.21 (3H, s), 2.18 (3H, s), 2.05 (3H, s), 2.01–1.89 (2H, m). HRMS: *m/z* calc. for $C_{19}H_{25}N_5O_4S$ $(M+H)^+$: 420.1700, found: 420.1697. HPLC Purity: 100% (Retention Time = 8.21 min, Condition E).

(*S*)-Methyl 2-(2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido)-3-(4-hydroxyphenyl)propanoate (168). Yield 67%, mp: 215 °C. ^{1}H NMR (400 MHz): δ 10.13 (1H,

s, NH), 9.26 (1H, s, OH), 8.84 (1H, d, *J* = 8.0 Hz, NH), 8.63 (1H, s), 7.59 (1H, s), 7.50 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 7.00 (2H, d, 8.4 Hz), 6.68 (1H, d, 8.4 Hz), 5.06 (2H, m), 4.43 (2H, dd, *J* = 8.0, 13.6 Hz), 3.60 (3H, s), 2.93 (1H, dd, *J* = 6.0, 14.0 Hz), 2.83 (1H, dd, *J* = 8.4, 14.0 Hz), 2.20 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{23}H_{25}N_5O_5$ $(M+H)^+$: 452.1928, found: 452.1923. HPLC Purity: 100% (Retention Time = 7.82 min, Condition E).

(*S*)-Methyl 2-(2-(3-(3,4-dimethylphenylcarbamoyl)-1*H*-1,2,4-triazol-1-yl)acetamido)-3-phenylpropanoate (169). Yield 70%, mp: 188 °C. ^{1}H NMR (400 MHz): δ 10.13 (1H, s, NH), 8.90 (1H, d, *J* = 7.6 Hz, NH), 8.62 (1H, s), 7.59 (1H, s), 7.50 (1H, dd, *J* = 2.0, 8.0 Hz), 7.33–7.29 (2H, m), 7.25–7.22 (3H, m), 7.08 (1H, d, *J* = 8.4 Hz), 5.05 (2H, m), 4.53 (2H, dd, *J* = 8.4, 13.6 Hz), 3.62 (3H, s), 3.06 (1H, dd, *J* = 5.6, 14.0 Hz), 2.95 (1H, dd, *J* = 8.4, 14.0 Hz), 2.20 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{23}H_{25}N_5O_4$ $(M+H)^+$: 436.1979, found: 436.1973. HPLC Purity: 99% (Retention Time = 8.93 min, Condition E).

(*S*)-*N*-(3,4-Dimethylphenyl)-1-(2-(1-hydroxy-3-(1*H*-indol-3-yl)propan-2-ylamino)-2-oxoethyl)-1*H*-1,2,4-triazole-3-carboxamide (170). Yield 76%, mp: 112 °C. ^{1}H NMR (400 MHz): δ 10.79 (1H, s, NH), 10.14 (1H, s, NH), 8.63 (1H, s), 8.31 (1H, d, *J* = 8.0 Hz, NH), 7.60 (1H, d, *J* = 7.6 Hz), 7.59 (1H, s), 7.51 (1H, dd, *J* = 2.0, 8.6 Hz), 7.33 (1H, d, *J* = 8.0 Hz), 7.14 (1H, d, *J* = 2.4 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 7.05 (1H, t, *J* = 7.6 Hz), 6.97 (1H, d, *J* = 7.4 Hz), 5.04 (1H, d, *J* = 16.4 Hz), 4.99 (1H, d, *J* = 16.4 Hz), 4.82 (1H, t, *J* = 5.4 Hz, OH), 3.99 (1H, m), 3.41 (2H, t, *J* = 5.6 Hz), 2.93 (1H, dd, *J* = 7.2, 14.4 Hz), 2.80 (1H, dd, *J* = 6.8, 14.4 Hz), 2.21 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{24}H_{26}N_6O_3$ $(M+H)^+$: 447.2139, found: 447.2145. HPLC Purity: 100% (Retention Time = 8.24 min, Condition E).

***N*-(3,4-Dimethylphenyl)-1-(2-oxo-2-(4-(pyridin-2-yl)piperazin-1-yl)ethyl)-1*H*-1,2,4-triazole-3-carboxamide (171).** Yield 87%, mp: 230 °C. ^{1}H NMR (400 MHz): δ 10.12 (1H, s, NH), 8.64 (1H, s), 8.15–8.13 (1H, m), 7.60 (1H, d, *J* = 1.6 Hz), 7.58–7.55 (1H, m), 7.50 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 6.88 (1H, d, *J* = 8.4 Hz), 6.68 (1H, dd, *J* = 5.0, 7.2 Hz), 5.46 (2H, s), 3.64–3.53 (8H, m), 2.20 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{22}H_{25}N_7O_2$ $(M+H)^+$: 420.2142, found: 420.2143. HPLC Purity: 97% (Retention Time = 8.21 min, Condition E).

***N*-(3,4-Dimethylphenyl)-1-(2-oxo-2-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)ethyl)-1*H*-1,2,4-triazole-3-carboxamide (173).** Yield 79%, mp: 165 °C. ^{1}H NMR (400 MHz): δ 10.11 (1H, s, NH), 8.62 (1H, s), 7.60 (1H, d, *J* = 1.6 Hz), 7.50 (1H, dd, *J* = 2.0, 8.0 Hz), 7.08 (1H, d, *J* = 8.0

Hz), 6.82 (1H, s), 5.37 (2H, s), 3.44–3.41 (6H, m), 2.44 (2H, t, *J* = 4.4 Hz), 2.36 (2H, t, *J* = 4.8 Hz), 2.31 (3H, s), 2.11 (3H, s), 2.20 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{27}H_{34}N_6O_2$ $(M+H)^+$: 475.2816, found: 475.2822. HPLC Purity: 99% (Retention Time = 4.98 min; Isocratic 100% MeOH for 20 min; 1.0 mL/min).

1-(2-((3,4-Dimethoxybenzyl)(methyl)amino)-2-oxoethyl)-*N*-(3,4-dimethylphenyl)-1*H*-1,2,4-triazole-3-carboxamide (173). Yield 57%, mp: 138 ^oC. ^1H NMR (400 MHz): δ 10.13 (1H, s, NH), 8.65 (1H, s), 7.60 (1H, s), 7.51 (1H, d, *J* = 8.0 Hz), 7.08 (1H, d, *J* = 8.4 Hz), 6.99–6.79 (3H, m), 5.43 (2H, d, *J* = 6.0 Hz), 4.59–4.46 (2H, m), 3.79 (3H, s), 3.76 (3H, s), 3.00–2.81 (2H, m), 2.21 (3H, s), 2.18 (3H, s). HRMS: *m/z* calc. for $C_{23}H_{27}N_5O_4$ $(M+H)^+$: 438.2136, found: 438.2136. HPLC Purity: 100% (Retention Time = 8.17 min, Condition E).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-benzylacetamide (174). White Yield 64%, mp: 195 ^oC. ^1H NMR: δ 8.57 (1H, t, *J* = 5.4 Hz CONH), 7.51 (1H, d, *J* = 7.2 Hz), 7.41–7.22 (5H, m), 7.07 (2H, br), 5.65 (1H, d, *J* = 5.4 Hz), 4.33 (2H, s), 4.29 (2H, d, *J* = 6.0 Hz). HRMS: *m/z* calc. for $C_{13}H_{14}N_4O_2$ $(M+H)^+$: 259.1190, found: 259.1192. HPLC Purity: 94% (Retention Time = 5.43 min; Condition C).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(4-methoxybenzyl)acetamide (175). Yield 37%. ^1H NMR: δ 8.49 (1H, t, *J* = 3.8 Hz CONH), 7.49 (1H, d, *J* = 7.2 Hz), 7.19 (2H, d, *J* = 8.7 Hz), 6.98 (2H, br s), 6.87 (2H, d, *J* = 8.7 Hz), 5.63 (1H, d, *J* = 7.2 Hz), 4.30 (2H, s), 4.21 (2H, d, *J* = 6.0 Hz), 3.73 (3H, s). HRMS: *m/z* calc. for $C_{14}H_{16}N_4O_3$ $(M+H)^+$: 289.1295, found: 289.1300. HPLC Purity: 95% (Retention Time = 4.40 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(pyridin-2-ylmethyl)acetamide (176). Yield 97%, mp: 197 ^oC. ^1H NMR (400 MHz): δ 8.57 (1H, t, *J* = 5.8 Hz CONH), 8.49 (1H, d, *J* = 4.8 Hz), 7.37 (1H, ddd, *J* = 1.8, 7.7, 7.7 Hz), 7.50 (1H, d, *J* = 7.6 Hz), 7.34 (1H, d, *J* = 7.6 Hz), 7.24 (1H, ddd, *J* = 1.8, 6.0, 6.0 Hz), 6.93 (2H, br s), 5.65 (1H, d, *J* = 7.2 Hz), 4.33 (2H, s), 4.29 (2H, d, *J* = 6.0 Hz). HRMS: *m/z* calc. for $C_{12}H_{13}N_5O_2$ $(M+H)^+$: 260.1142, found: 260.1142. HPLC Purity: 97% (Retention Time = 4.05 min; Condition C).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(benzo[*d*][1,3]dioxol-5-ylmethyl)acetamide (177). Yield 89%, mp: 264 ^oC. ^1H NMR: δ 8.50 (1H, t, *J* = 6.1 Hz CONH), 7.50 (1H, d, *J* = 7.2 Hz), 6.99 (2H, br s), 6.84 (1H, d, *J* = 7.8 Hz), 6.83 (1H, s), 6.73 (1H, d, *J* = 9.3 Hz), 5.98 (2H, s), 5.63

(1H, d, *J* = 7.2 Hz), 4.30 (2H, s), 4.19 (2H, d, *J* = 5.7 Hz). HRMS: *m/z* calc. for $C_{14}H_{14}N_4O_4$ $(M+H)^+$: 303.1088, found: 303.1092. HPLC Purity: 99% (Retention Time = 4.32 min; Condition D).

***N*-((1*H*-Indol-5-yl)methyl)-2-(4-amino-2-oxopyrimidin-1(2*H*)-yl)acetamide (178).** Yield 76%, mp: 219 ^oC. ^1H NMR: δ 11.02 (1H, s, NH), 8.50 (1H, t, *J* = 5.0 Hz CONH), 7.50 (1H, d, *J* = 6.9 Hz), 7.43 (1H, s), 7.34–6.96 (3H, m), 6.98 (2H, br s), 6.37 (1H, s), 5.63 (1H, d, *J* = 7.2 Hz), 4.34 (2H, s), 4.32 (2H, s). HRMS: *m/z* calc. for $C_{15}H_{15}N_5O_2$ $(M+H)^+$: 298.1299, found: 298.1305. HPLC Purity: 99% (Retention Time = 3.98 min; Condition D).

***N*-((1*H*-Benzo[*d*]imidazol-2-yl)methyl)-2-(4-amino-2-oxopyrimidin-1(2*H*)-yl)acetamide (179).** Yield 46%. ^1H NMR: δ 12.15(1H, s NH), 8.81 (1H, t, *J* = 5.0 Hz, CONH), 7.54 (1H, d, *J* = 6.9 Hz), 7.52–7.12 (4H, m), 7.06 (2H, br s), 5.67 (1H, d, *J* = 7.2 Hz), 4.57 (1H, d, *J* = 5.7 Hz), 4.38 (3H, s). HRMS: *m/z* calc. for $C_{14}H_{14}N_6O_2$ $(M+H)^+$: 299.1251, found: 299.1254. HPLC Purity: 99% (Retention Time = 4.26 min; Condition D).

(*R*)-2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(1-(naphthalen-1-yl)ethyl)acetamide (180). Yyield 57%. ^1H NMR: δ 8.72 (1H, d, *J* = 7.5 Hz, CONH), 7.94 (1H, dd, *J* = 2.5, 9.0 Hz),7.83 (1H, d, *J* = 8.1 Hz), 7.58–7.45 (5H, m), 6.97 (2H, br s), 5.69 (1H, t, *J* = 7.2 Hz), 5.60 (1H, d, *J* = 7.2 Hz), 4.38 (1H, d, *J* = 15.6 Hz), 4.30 (1H, d, *J* = 15.6 Hz), 1.50 (1H, d, *J* = 6.9 Hz). HRMS: *m/z* calc. for $C_{18}H_{18}N_4O_2$ $(M+H)^+$: 323.1503, found: 323.1507. HPLC Purity: 99% (Retention Time = 7.10 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(2-phenylpropyl)acetamide (181). Yield 39%. ^1H NMR: δ 8.09 (1H, t, *J* = 4.5 Hz, CONH), 7.43 (1H, d, *J* = 7.2 Hz), 7.33–7.17 (5H, m), 6.97 (2H, br s), 5.62 (1H, d, *J* = 7.2 Hz), 4.26 (1H, d, *J* = 16.2 Hz), 4.20 (1H, d, *J* = 16.2 Hz), 3.26–3.17 (2H, m), 2.86 (1H, dd, *J* = 6.9, 18.4 Hz), 1.18 (3H, d, *J* = 6.9 Hz). HRMS: *m/z* calc. for $C_{15}H_{18}N_4O_2$ $(M+H)^+$: 287.1503, found: 287.1503. HPLC Purity: 99% (Retention Time = 5.72 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(2-(pyridin-2-yl)ethyl)acetamide (182). Yield 34%. ^1H NMR: δ 8.16 (1H, t, *J* = 5.4 Hz CONH), 7.70 (1H, ddd, *J* = 1.8, 7.5, 7.6 Hz), 7.46 (1H, d, *J* = 7.2 Hz), 7.28–7.20 (3H, m), 7.01 (2H, br s), 5.63 (1H, d, *J* = 7.2 Hz), 4.24 (2H, s), 3.41 (2H, dd,

J = 6.7, 17.4 Hz), 2.86 (2H, t, *J* = 7.5 Hz). HRMS: *m/z* calc. for $C_{13}H_{15}N_5O_2$ $(M+H)^+$: 274.1299, found: 274.1300. HPLC Purity: 99% (Retention Time = 3.71 min; Condition D).

***N*-(2-(1*H*-Indol-3-yl)ethyl)-2-(4-amino-2-oxopyrimidin-1(2*H*)-yl)acetamide (183).** Yield 36%. ^{1}H NMR: δ 10.85 (1H, s, NH), 8.22 (1H, t, *J* = 5.8 Hz, CONH), 7.53 (1H, d, *J* = 7.2 Hz), 7.47 (1H, d, *J* = 7.2 Hz), 7.33 (1H, d, *J* = 7.2 Hz), 7.16 (1H, d, *J* = 1.2 Hz), 7.07 (1H, t, *J* = 6.8 Hz), 6.99 (1H, t, *J* = 8.1 Hz), 5.65 (1H, d, *J* = 6.9 Hz), 6.93 (2H, br s), 4.27 (2H, s), 3.57–3.20 (2H, m), 2.81 (2H, t, *J* = 7.2 Hz). HRMS: *m/z* calc. for $C_{16}H_{17}N_5O_2$ $(M+H)^+$: 312.1455, found: 312.1453. HPLC Purity: 99% (Retention Time = 6.05 min; Condition C).

(*R*)-2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(1-hydroxy-3-(1*H*-indol-3-yl)propan-2-yl)acetamide (184). Yield 24%. ^{1}H NMR: δ 10.81 (1H, s, NH), 8.03 (1H, t, *J* = 5.0 Hz, CONH), 7.87 (1H, d, *J* = 6.6 Hz), 6.98 (2H, br s), 7.60 (1H, d, *J* = 8.4 Hz), 7.33 (1H, d, *J* = 7.8 Hz), 7.13–6.94 (3H, m), 6.03 (1H, d, *J* = 7.8 Hz), 4.81 (1H, br), 4.43 (2H, s), 4.00–3.82 (1H, m), 3.39 (2H, d, *J* = 5.7 Hz), 2.95–2.74 (2H, m). HRMS: *m/z* calc. for $C_{17}H_{19}N_5O_3$ $(M+H)^+$: 342.1561, found: 342.1564. HPLC Purity: 99% (Retention Time = 4.46 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(3-methoxypropyl)acetamide (185). Yield 41%. ^{1}H NMR: δ 8.03 (1H, t, *J* = 5.0 Hz, CONH), 7.47 (1H, d, *J* = 7.2 Hz), 6.98 (2H, br), 5.62 (1H, d, *J* = 7.2 Hz), 4.23 (2H, s), 3.30 (2H, s), 3.21 (3H, s), 3.09 (2H, dd, *J* = 6.7, 16.6 Hz), 1.67–1.58 (2H, m). HRMS: *m/z* calc. for $C_{10}H_{16}N_4O_3$ $(M+H)^+$: 241.1295, found: 241.1299. HPLC Purity: 99% (Retention Time = 3.21 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(3-phenylpropyl)acetamide (186). Yield 66%, mp: 205 ^{o}C. ^{1}H NMR: δ 8.09 (1H, t, *J* = 6.5 Hz CONH), 7.48 (1H, d, *J* = 4.8 Hz), 7.30–7.16 (5H, m), 6.98 (2H, br), 5.63 (1H, d, *J* = 7.4 Hz), 4.25 (2H, s), 3.07 (2H, dd, *J* = 6.6, 16.8 Hz), 2.58 (2H, t, *J* = 7.8 Hz), 1.72–1.64 (2H, m). HRMS: *m/z* calc. for $C_{15}H_{18}N_4O_2$ $(M+H)^+$: 287.1503, found: 287.1508. HPLC Purity: 99% (Retention Time = 5.95 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(3-(2-oxopyrrolidin-1-yl)propyl)acetamide (187). Yield 38%. ^{1}H NMR: δ 8.14 (1H, t, *J* = 6.1 Hz), 7.69 (1H, d, *J* = 7.2 Hz), 7.59 (2H, br s), 7.83 (1H, d, *J* = 7.2 Hz), 4.34 (2H, s), 3.31 (2H, s), 3.17 (2H, t, *J* = 7.1 Hz), 3.04 (2H, dd, *J* = 6.9, 16.8 Hz), 2.20 (2H, t, *J* = 8.0 Hz), 1.96–1.85 (2H, m), 1.63–1.54 (2H, m). HRMS: *m/z* calc. for

$C_{13}H_{19}N_5O_3$ $(M+H)^+$: 294.1561, found: 294.1566. HPLC Purity: 98% (Retention Time = 3.29 min; Condition D).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(2-(5-nitropyridin-2-ylamino)ethyl)acetamide (188). Yield 79%, mp: 254 °C. ^{1}H NMR: δ 8.92 (1H, d, *J* = 2.7 Hz), 8.23 (1H, t, *J* = 5.0 Hz, CONH), 8.12 (2H, br s), 7.47 (1H, d, *J* = 6.9 Hz), 7.05 (2H, br s), 6.57 (1H, d, *J* = 9.3 Hz), 5.64 (1H, d, *J* = 7.2 Hz), 4.25 (2H, s), 3.46–3.24 (4H, m). HRMS: *m/z* calc. for $C_{13}H_{15}N_7O_4$ $(M+H)^+$: 334.1258, found: 334.1263. HPLC Purity: 95% (Retention Time = 4.19 min; Condition D).

(*S*)-Methyl 2-(2-(4-amino-2-oxopyrimidin-1(2*H*)-yl)acetamido)-4-(methylthio)butanoate (189). Yield 36%, mp: 190 °C. ^{1}H NMR: δ 8.56 (1H, d, *J* = 7.5 Hz CONH), 7.47 (1H, d, *J* = 7.2 Hz), 6.98 (2H, br s), 5.62 (1H, d, *J* = 7.2 Hz), 4.44–4.27 (3H, m), 3.64 (3H, s), 2.55–2.43 (2H, m), 2.04 (3H, s), 2.00–1.85 (2H, m). HRMS: *m/z* calc. for $C_{12}H_{18}N_4O_4S$ $(M+H)^+$: 315.1122, found: 315.1120. HPLC Purity: 99% (Retention Time = 4.87 min; Condition C).

2-(4-Amino-2-oxopyrimidin-1(2*H*)-yl)-*N*-(3,4-dimethoxybenzyl)-*N*-methylacetamide (190). Yield 58%. ^{1}H NMR (400 MHz): δ 7.47 (1H, dd, *J* = 3.0, 7.4 Hz), 7.04–6.74 (3H, m), 5.66 (1H, dd, *J* = 2.8, 7.2 Hz), 7.01 (2H, br s), 4.64 (1H, s), 4.58 (1H, s), 4.51 (1H, s), 4.43 (1H, s), 3.79 (3H, s), 3.75 (3H, s), 2.94 (3H, s). HRMS: *m/z* calc. for $C_{16}H_{20}N_4O_4$ $(M+H)^+$: 333.1557, found: 333.1558. HPLC Purity: 98% (Retention Time = 4.51 min; Condition D).

4-Amino-1-(2-oxo-2-(4-(2,4,6-trimethylbenzyl)piperazin-1-yl)ethyl)pyrimidin-2(1*H*)-one (191). Yield 90%, mp: 231 °C. ^{1}H NMR (400 MHz): δ 7.41 (1H, d, *J* = 7.2 Hz), 7.03 (1H, br s), 6.92 (1H, br s), 6.81 (2H, s), 5.63 (1H, d, *J* = 7.2 Hz), 4.53 (2H, s), 3.43 (2H, s), 3.38 (4H, s), 2.39 (2H, s), 2.33 (2H, s), 2.30 (6H, s), 2.20 (3H, s). HRMS: *m/z* calc. for $C_{20}H_{27}N_5O_2$ $(M+H)^+$: 370.2237, found: 370.2237. HPLC Purity: 97% (Retention Time = 7.69 min; Condition D).

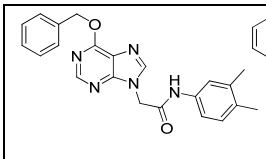
4-Amino-1-(2-oxo-2-(4-(pyridin-2-yl)piperazin-1-yl)ethyl)pyrimidin-2(1*H*)-one (192). Yield 84%, mp: 261 °C. ^{1}H NMR: δ 8.50 (1H, d, *J* = 7.2 Hz), 8.13 (1H, dd, *J* = 1.2, 6.4 Hz), 7.56 (1H, ddd, *J* = 2.4, 7.8, 7.9 Hz), 7.44 (1H, d, *J* = 7.2 Hz), 7.04 (2H, br s), 6.86 (1H, d, *J* = 8.7 Hz), 6.60 (1H, dd, *J* = 5.0, 9.0 Hz), 5.65 (1H, d, *J* = 7.2 Hz), 4.61 (2H, s), 3.59–3.49 (8H, m). HRMS: *m/z* calc. for $C_{15}H_{18}N_6O_2$ $(M+H)^+$: 315.1564, found: 315.1563. HPLC Purity: 100% (Retention Time = 4.43 min; Condition D).

Biological Studies

Cancer Cell Cytotoxicity Screening: All target purine, pyrimidine and triazole acetamide analogs were screened against three cancer cell lines (prostate, colon and breast) using a quantitative high-throughput screen (qHTS). In brief, liquid handling was performed on a Biomek FX with a 384-multichannel head. In 384 well plates, compounds were arrayed in columns 3-22 leaving 32 wells for positive and negative controls. All compounds were diluted together in a plate to plate transfer. Cells were then added to assay plates containing diluted compound using a Matrix/Thermo wellmate. Cells were incubated with compound for three cell doublings. Due to differences in growth rates between cell lines, the incubation period for PC3 and HT-29 cells was 72 hours, but was increased to 96 hours for MDA cells. Plates were incubated for the appropriate time 72 or 96 hours and cell viability determined using Cell Titer Glo (Promega). The dose response format employed a cross-plate method rather than an in-plate method, allowing for more efficient compound dilution and addition to assay plates. Two-fold dilutions of the compound mother plate were aliquoted to a series of 384-well plates using a stacked plate (or cross-plate) format. Object manager was used to create the assay plates by replicating the compound mother plate and assigning concentration values to the assay plates. Luminescence values were read on the envision plate reader for each of the assay plates. The entire experiment of assay plates was set up in a single day with a complete read of all plates occurring at 72 hours and or at 96 hours as required for the cell lines. Data were imported and analyzed within 24 hours of the endpoint read. From set up to final report, all data points were generated and reported within one week. Therefore, only a single passage was required for each cell line, eliminating potential variation due to passage and cell count. Data were analyzed using Activity Base software (IDBS). Data were imported directly into the database and calculated using an ActivityBase XE template where the Virtual Plate functionality was employed to maintain the link between the assay plates and the compound mother plate from which they were created. For each plate the median, standard deviations, CVs and Z values were calculated for the control wells. These values were used to assure quality and consistency across all test plates and to normalize percent cell viability for each well. XLFit and MathIQ were used within the ActivityBase XE template to plot the dose response curves and calculate CC50 values. The CC50s were calculated by plotting the cell viability relative to the mean of the cell control at each of the tested compound concentration. Compounds that caused cell viability < 80% were

considered active. CC50 were calculated only for active compounds using a 4-parameter Levenburg-Marquardt algorithm (XLFit #205), with the maximum and minimum locked at 0 and 100 respectively. Data and graphical results were then reported and compared across the three cell lines.

Compound Structures with Pubchem ID's



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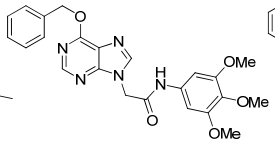

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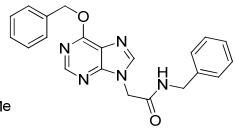

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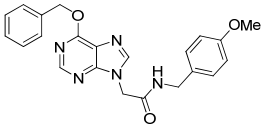

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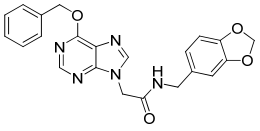

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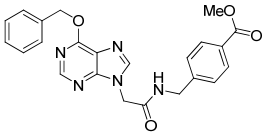

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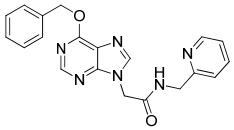

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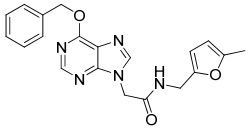

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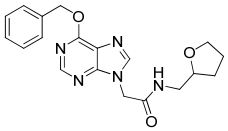

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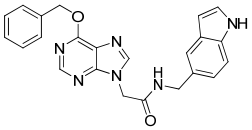

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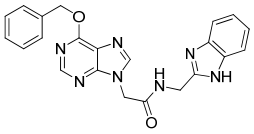

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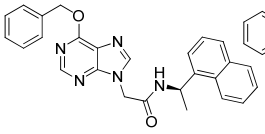

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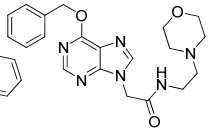

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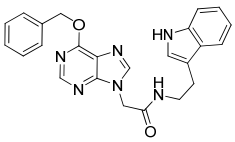

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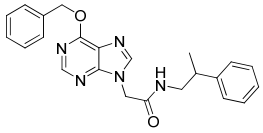

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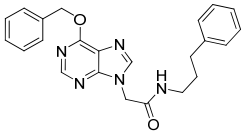

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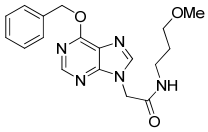

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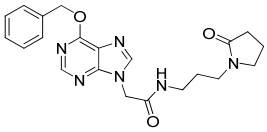

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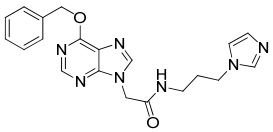

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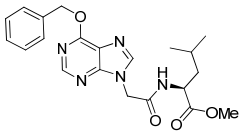

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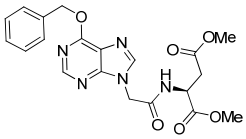

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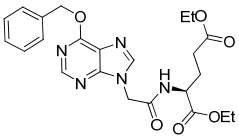

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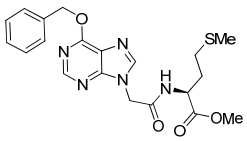

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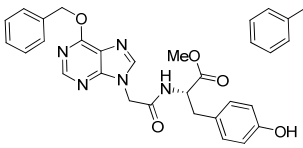

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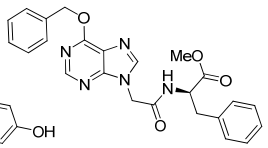

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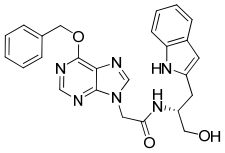

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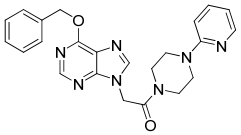

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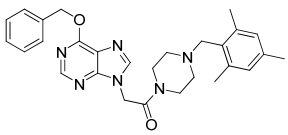

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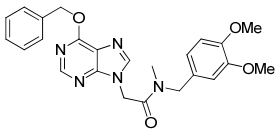

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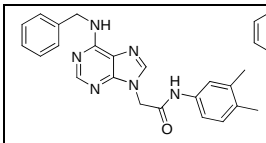

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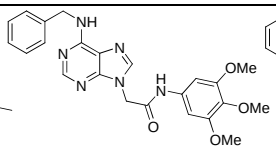

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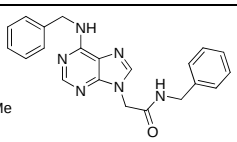

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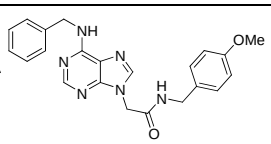

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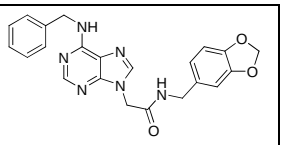

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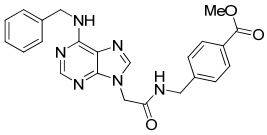

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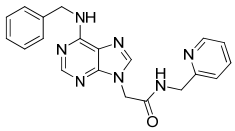

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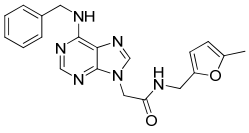

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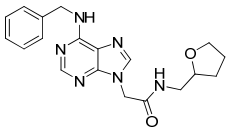

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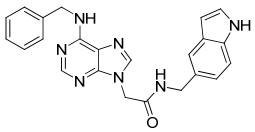

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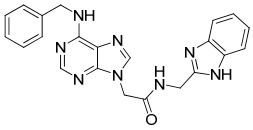

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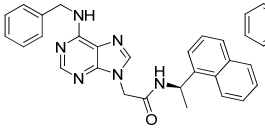

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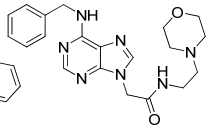

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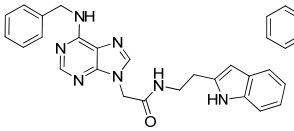

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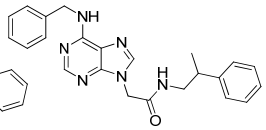

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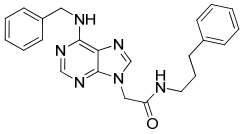

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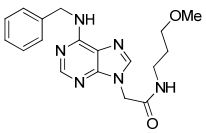

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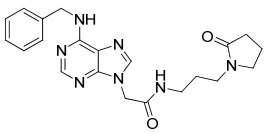

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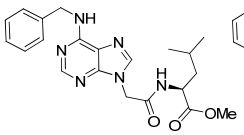

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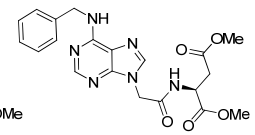

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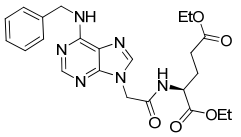

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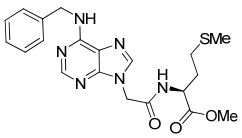

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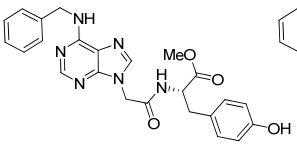

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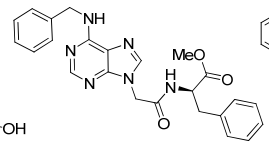

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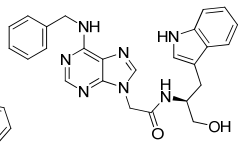

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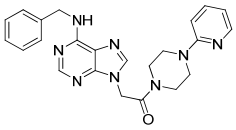

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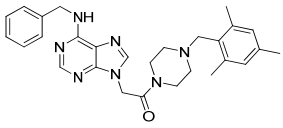

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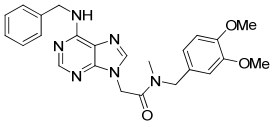

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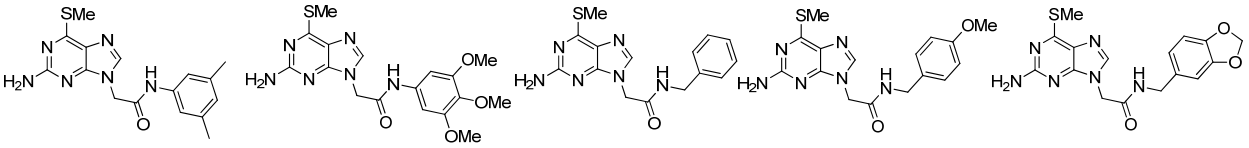

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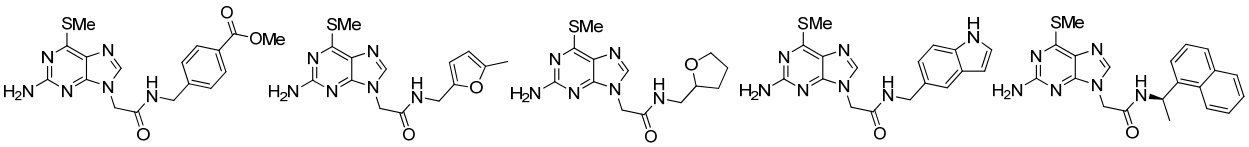

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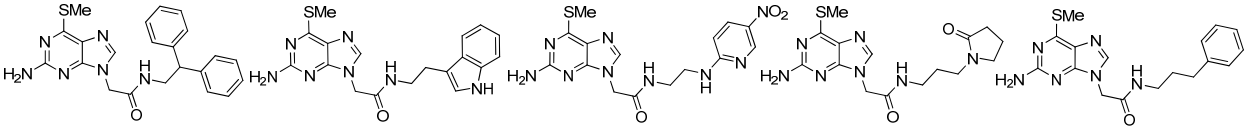

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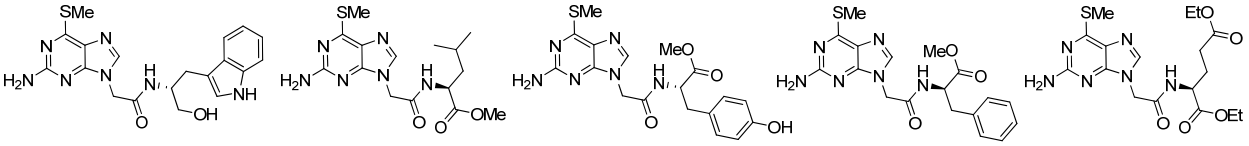

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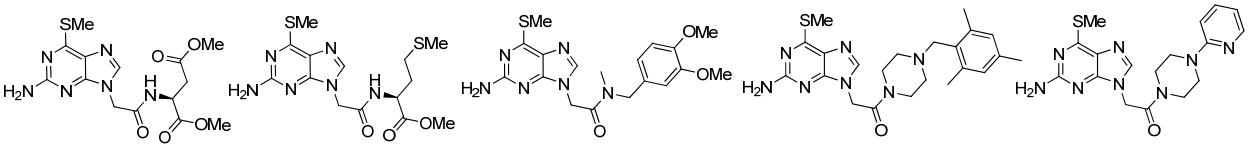

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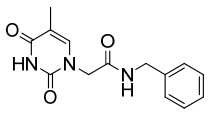

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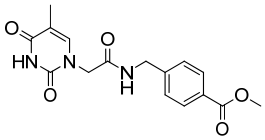

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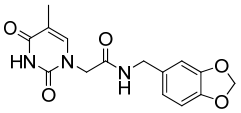

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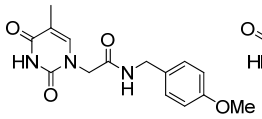

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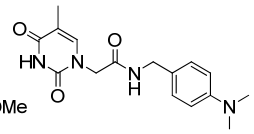

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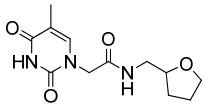

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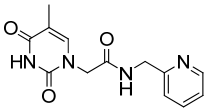

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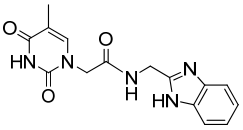

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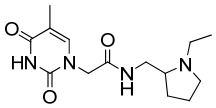

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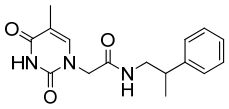

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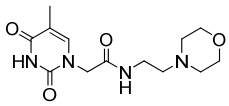

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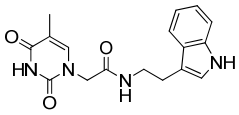

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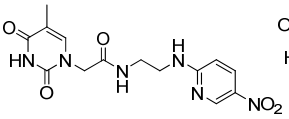

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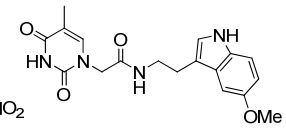

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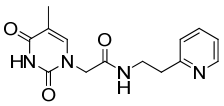

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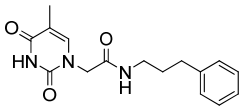

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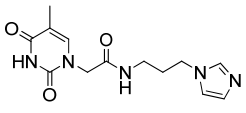

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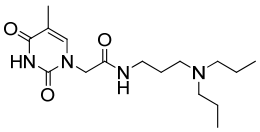

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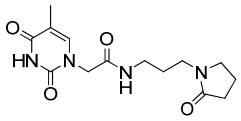

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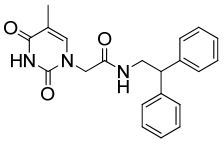

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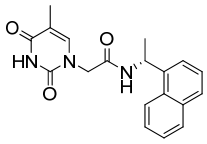

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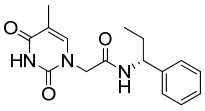

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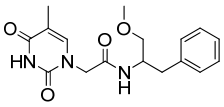

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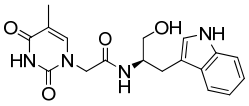

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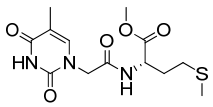

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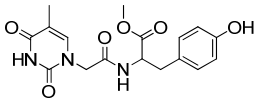

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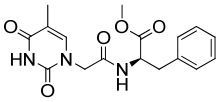

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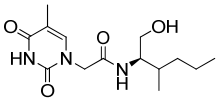

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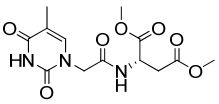

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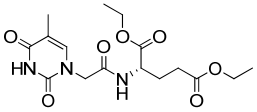

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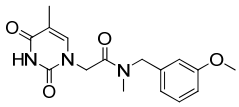

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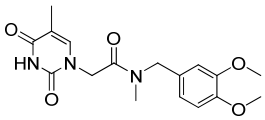

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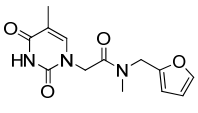

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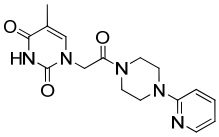

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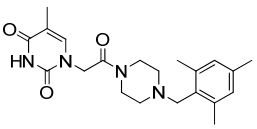

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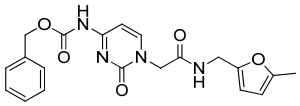

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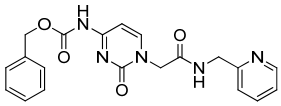

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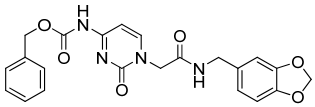

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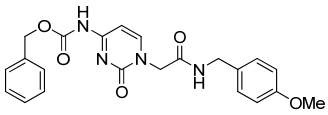

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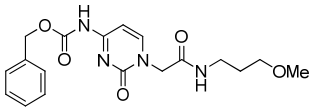

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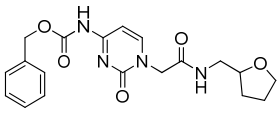

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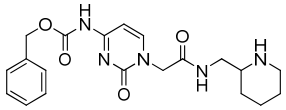

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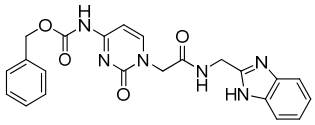

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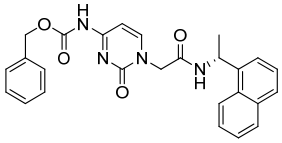

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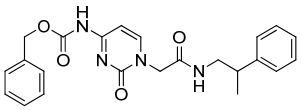
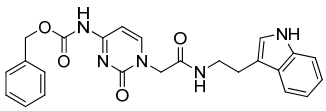
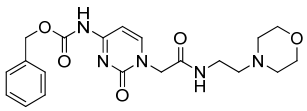


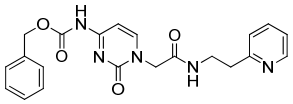
138 (44144241)



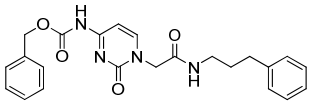
139 (44144231)



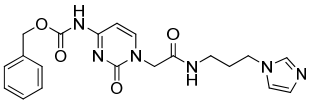
140 (44144229)



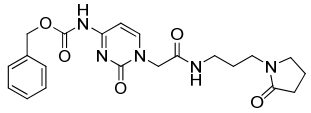
141 (44144246)



142 (44144235)



143 (44144240)



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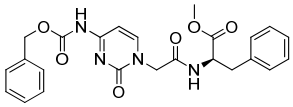

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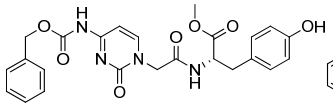

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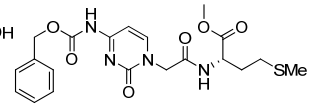
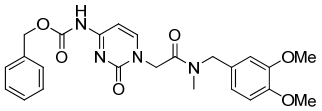
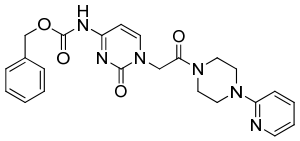


147 (44144232)



148 (44144247)



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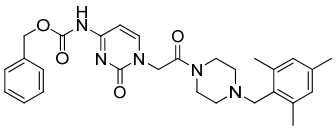

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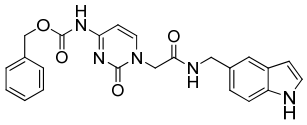

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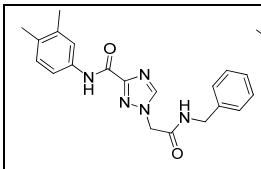
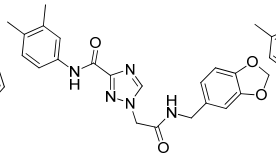
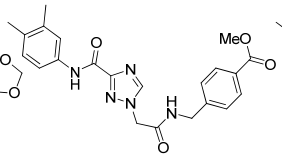


154 (44601549)



155 (44601557)



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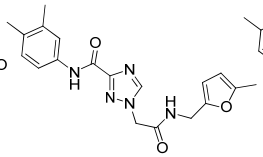

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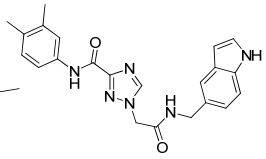
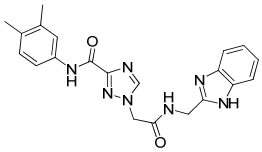


158 (44601553)



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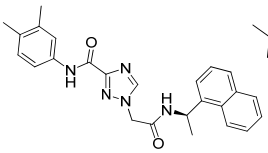

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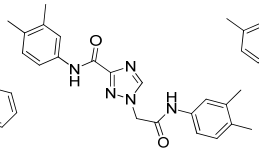

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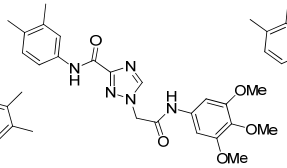

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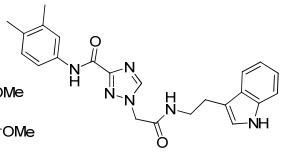

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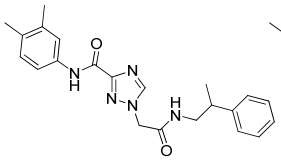

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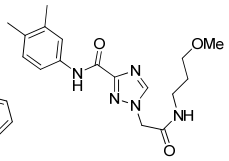

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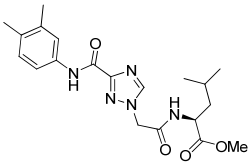

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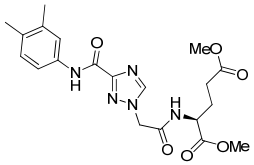

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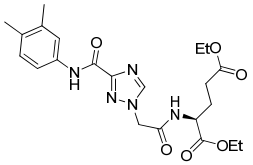

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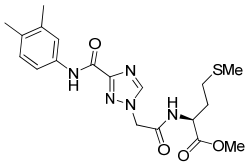
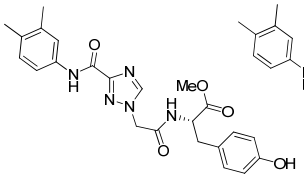


167 (44601568)



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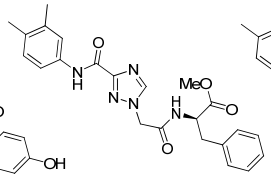
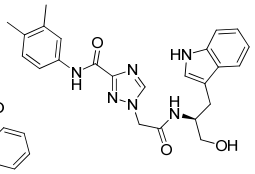


169 (44601565)



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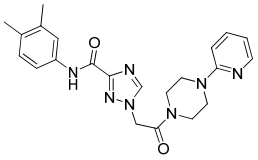
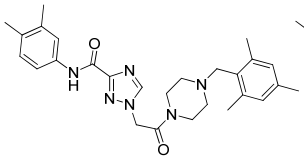


171 (44601561)



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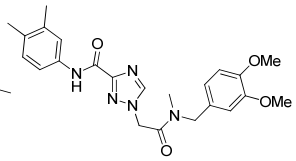
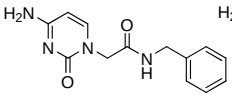


173 (44601562)



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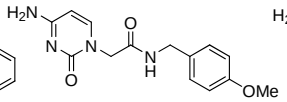
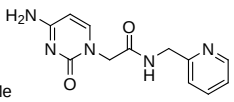


175 (44144254)



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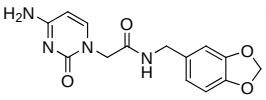
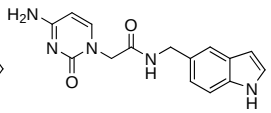


177 (44144261)



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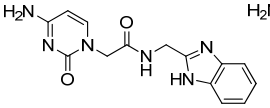

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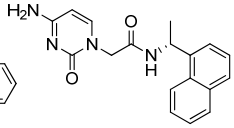

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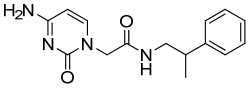
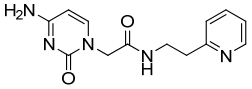
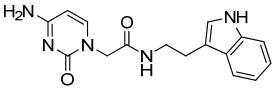


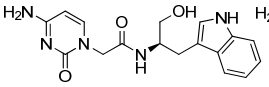
181 (44144260)



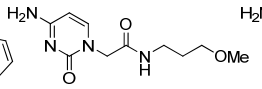
182 (44144263)



183 (*)



184 (44144256)



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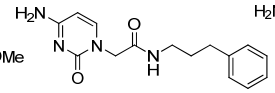
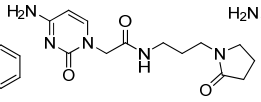
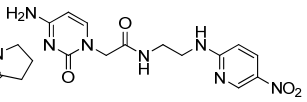


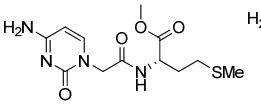
186 (44144253)



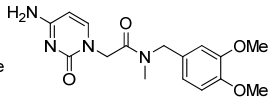
187 (*)



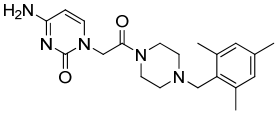
188 (44144258)



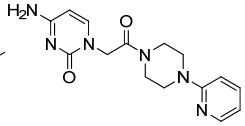
189 (44144252)



190 (44144264)



191 (44144265)



192 (44144262)

Table 4: Activity profiles of compounds from PubChem database

PubChem Assay ID	No. of Active	Activity Conc. uM	BioAssay
686979	16	0.2 - 29	qHTS for Inhibitors of human tyrosyl-DNA phosphodiesterase 1 (TDP1): qHTS in cells in presence of CPT
686978	15	0.6 - 29	qHTS for Inhibitors of human tyrosyl-DNA phosphodiesterase 1 (TDP1): qHTS in cells in absence of CPT
651820	12	0.5 - 35	qHTS Assay for Inhibitors of Hepatitis C Virus (HCV)
602438	9		uHTS identification of modulators of interaction between CendR and NRP-1 using Fluorescence Polarization assay
652048	6		qHTS of D3 Dopamine Receptor Agonist: qHTS
652051	6		qHTS of D3 Dopamine Receptor Potentiators: qHTS
652115	5		MLPCN SirT-5 Measured in Biochemical System
651640	5		DENV2 CPE-Based HTS Measured in Cell-Based and Microorganism Combination System Using Plate Reader
651610	4		HIV entry: Env-mediated Cell Fusion Measured in Cell-Based System Using Plate Reader
720504	4	21 - 26	qHTS for Inhibitors of PLK1-PDB (polo-like kinase 1 - polo-box domain)
493131	4		Activator for delta FosB/delta FosB homodimer Measured in Biochemical System Using Plate Reader
504467	4	1 - 29	qHTS screen for small molecules that inhibit ELG1-dependent DNA repair in human embryonic kidney (HEK293T) cells expressing luciferase-tagged ELG1
504692	3		Counterscreen for agonists of OPRM1-OPRD1 heterodimerization: luminescence-based cell-based full-deck high throughput screening assay to identify agonists of 5-hydroxytryptamine (serotonin) 5A receptor (HTR5A)
504444	3	1.8 - 29	Nrf2 qHTS screen for inhibitors
588824	3		Counterscreen for inhibitors of the Steroid Receptor Coactivator 1 (SRC1; NCOA1): Luminescence-based cell-based high throughput assay to identify inhibitors of the Herpes Virus Virion Protein 16 (VP16).
602229	3		Luminescence-based cell-based high throughput primary screening assay to identify agonists of nuclear receptor subfamily 2, group E, member 3 (NR2E3)
588405	3		HTS Assay for Peg3 Promoter Inhibitors
602449	3		uHTS identification of small molecule inhibitors of the mitochondrial permeability transition pore via an absorbance assay
624169	3		Luminescence-based cell-based primary high throughput screening assay to identify agonists of the mouse 5-hydroxytryptamine (serotonin) receptor 2A (HTR2A)
686940	3		Luminescence-based cell-based primary high throughput screening assay to identify inhibitors of COUP-TFII (NR2F2)
743287	3		Luminescent GLuc Reporter Gene Assay Primary HTS to Identify Small Molecule Activator of Glucose Dependent Insulin Secretion Measured in Cell-Based System Using Plate Reader
624504	3		Single concentration confirmation of uHTS inhibitor hits of the mitochondrial permeability transition pore via a

			fluorescent based assay
624297	3	0.005 - 32	A quantitative high throughput screen for small molecules that induce DNA re-replication in SW480 colon adenocarcinoma cells.
624417	2	1 - 28	qHTS of GLP-1 Receptor Inverse Agonists (Inhibition Mode)
651658	2		Small Molecule Inhibitors of FGF22-Mediated Excitatory Synaptogenesis & Epilepsy Measured in Biochemical System Using RT-PCR
651994	2		Single concentration validation of uHTS antagonist hits from Gli-SUFU in a luminescent cytotoxicity assay
651995	2		Single concentration confirmation of uHTS Gli-SUFU antagonist hits in a Wnt3a luminescent reporter assay
652040	2	25 - 70	Control Cell Fusion Counterscreen Assay Measured in Cell-Based System Using Plate Reader
652042	2	26 - 47	CEM21 Cytotoxicity Assay Measured in Cell-Based System Using Plate Reader
652062	2	1 - 4	HIV-1 Cell Fusion assay for clade B Env AD8 Measured in Cell-Based System Using Plate Reader
652054	2		qHTS of D3 Dopamine Receptor Antagonist: qHTS
720548	2	2 - 6	Luminescence-based cell-based high throughput dose response assay to identify inhibitors of COUP-TFII (NR2F2)
686970	2	2 - 32	qHTS for induction of synthetic lethality in tumor cells producing 2HG: qHTS for the HT-1080-NT fibrosarcoma cell line
686971	2	6 - 29	qHTS for induction of synthetic lethality in tumor cells producing 2HG: qHTS for the HT-1080-IDH1KD cell line
651719	2		Fluorescence-based cell-based primary high throughput screening assay to identify antagonists of the Galanin Receptor 3 (GalR3)
652245	2		Fluorescence-based cell-based primary high throughput confirmation assay to identify antagonists of the Galanin Receptor 3 (GalR3)
687008	2		Luminescence-based cell-based high throughput confirmation assay to identify inhibitors of COUP-TFII (NR2F2)
687013	2	0.3 – 3	Fluorescence-based cell-based primary high throughput dose response assay to identify antagonists of the Galanin Receptor 3 (GalR3).
720524	2	0.6 – 7	Nrf2 qHTS screen for inhibitors: Nrf2 A549 ARE-Fluc Confirmation Assay for Hit Validation
687020	2	24 - 36	Mammalian cell toxicity in Vero cells Measured in Cell-Based System Using Plate Reader
624202	2	10 – 35	qHTS Assay to Identify Small Molecule Activators of BRCA1 Expression
624132	2	0.4 - 6	Schnurri-3 Inhibitors: specific inducers of adult bone formation Measured in Cell-Based System Using Plate Reader
624133	2	0.8 – 2	Shn3: Dual-Go Shn3RL cells Measured in Cell-Based System Using Plate Reader
624134	2	0.7 - 34	Shn3: Cytotox assay Measured in Cell-Based System Using Plate Reader
588814	2		Fluorescence-based cell-based primary high throughput screening assay to identify agonists of the human cholinergic receptor, muscarinic 1 (CHRM1)
602428	2		Single concentration confirmation of uHTS antagonist hits from Gli-SUFU in a luminescent reporter assay

588855	2	0.1 - 35	qHTS for Inhibitors of TGF-b
504652	2		Antagonist of Human D 1 Dopamine Receptor: qHTS
540303	2	0.02 - 28	qHTS for Inhibitors of Cell Surface uPA Generation
588458	2		uHTS identification of DNMT1 inhibitors in a Fluorescent Molecular Beacon assay
504339	2	44 - 100	qHTS Assay for Inhibitors of JMJD2A-Tudor Domain
463229	2	2 - 7	ATP-based Luminescence in the Absence of Cytokines Measured in Cell-Based System Using Plate Reader - 2061-06_Inhibitor_Dose_CherryPick
449756	2	1 - 3	Luminescence Cell-Based Dose Retest to Confirm Inhibitors of Beta Cell Apoptosis
435005	2		Luminescence Cell-Based Primary HTS to Identify Inhibitors of Beta Cell Apoptosis.
485346	2		uHTS for identification of Inhibitors of Mdm2/MdmX interaction in luminescent format.
485353	1		qHTS of Yeast-based Assay for SARS-CoV PLP
485364	1	28	qHTS Assay for the Inhibitors of Schistosoma Mansoni Peroxiredoxins
488847	1		RNA aptamer-based HTS for inhibitors of GRK2
488942	1		Absorbance-based bacterial cell-based high throughput confirmation assay for inhibitors of AddAB recombination protein complex
488955	1		Counterscreen for AddAB inhibitors: absorbance-based high throughput cell-based assay to identify inhibitors of RecBCD
489022	1	0.5	Dose response counterscreen of uHTS chemical inhibitors of B-cell specific antigen receptor-induced NF-kB activation in a HEK-293T cell line using a luminescence assay
489030	1		uHTS Fluorescent assay for identification of inhibitors of Apaf-1
489041	1	2.6	Dose response counterscreen of uHTS chemical inhibitors of T-cell specific antigen receptor-induced NF-kB activation in a HEK-293T cell line using a luminescence assay
492953	1		Fluorescence polarization-based primary biochemical high throughput screening assay to identify inhibitors of human platelet-activating factor acetylhydrolase 1b, catalytic subunit 2 (PAFAH1B2)
492956	1		Fluorescence polarization-based primary biochemical high throughput screening assay to identify inhibitors of human platelet activating factor acetylhydrolase 2 (PAFAH2)
493034	1		Fluorescence polarization-based biochemical high throughput confirmation assay for inhibitors of human platelet-activating factor acetylhydrolase 1b, catalytic subunit 2 (PAFAH1B2)
435020	1		Single concentration confirmation of chemical inhibitors of T-cell specific antigen receptor-induced NF-kB activation
435022	1		uHTS luminescence assay for the identification of chemical inhibitors of B-cell specific antigen receptor-induced NF-kB activation
435030	1		Absorbance-based primary bacterial cell-based high throughput screening assay to identify inhibitors of AddAB recombination protein complex

449728	1		Counterscreen for inhibitors of AddAB: absorbance-based bacterial cell-based high throughput screening assay to identify inhibitors of bacterial viability
449746	1		Single concentration confirmation of chemical inhibitors of B-cell specific antigen receptor-induced NF-kB activation
2099	1		Fluorescence Biochemical Primary HTS to Identify Inhibitors of GASC-1 Activity
2557	1		HTS for Identification of VLA-4 Allosteric Modulators from MLPCN library
2629	1		Fluorescence Polarization Cell-Free Homogeneous Primary HTS to Identify Inhibitors of the LANA Histone H2A/H2B Interaction
434955	1	25	Screen to Identify Novel Compounds That Sensitize Mycobacterium Tuberculosis to Beta-lactam Antibiotics
434987	1	8.4	Screen and Counter Screen to Identify Novel Compounds that Selectively Sensitize Mycobacterium Tuberculosis to Beta-lactam Antibiotics
434989	1		Fluorescence-based cell-based primary high throughput screening assay to identify antagonists of the orexin 1 receptor (OX1R; HCRTR1)
435003	1		uHTS luminescence assay for the identification of chemical inhibitors of T-cell specific antigen receptor-induced NF-kB activation
463079	1		Fluorescence-based counterscreen for orexin 1 receptor (OX1R) antagonists: cell-based assay to identify antagonists of the parental CHO cell line
463206	1	42	Luminescence Cell-Based Counter Screen to Identify Inhibitors of Cytokine Induced Apoptosis
463212	1		uHTS identification of small molecule inhibitors of tim23-1 yeast via a luminescent assay
485270	1		FRET-based cell-based primary high throughput screening assay to identify antagonists of the orexin 1 receptor (OX1R; HCRTR1)
485275	1		Phenotypic HTS multiplex for antifungal efflux pump inhibitors
493187	1		uHTS Fluorescent assay for identification of activators of hexokinase domain containing I (HKDC1)
504441	1		Dyrk1 A HTS Measured in Biochemical System Using Plate Reader - 2124-01_Inhibitor_SinglePoint_HTS_Activity
504558	1		Inhibitors of Epstein-Barr LMP1 inducible NF-kappaB luciferase reporter Measured in Cell-Based System Using Plate Reader - 2122-01_Inhibitor_SinglePoint_HTS_Activity
504577	1		HTS of Small Molecules that Regulate V-ATPase Proton Transport in Yeast using pHLuorin
504708	1		Single concentration confirmation of activators of hexokinase domain containing I (HKDC1)
504720	1		uHTS identification of MazEF TA System activators via a fluorescence-based single-stranded RNase assay
504730	1	9	Dose Response confirmation of activators of hexokinase domain containing I (HKDC1)
504762	1	11	Dose Response confirmation of activators of hexokinase domain containing I (HKDC1) in the hexokinase 1 selectivity assay
504847	1	44	Inhibitors of the vitamin D receptor (VDR): qHTS

588475	1		uHTS identification of antagonists of the CRF-binding protein and CRF-R2 receptor complex
588664	1		TRFRET-based biochemical primary high throughput screening assay to identify inhibitors of the interaction of the Ras and Rab interactor 1 protein (Rin1) and the c-abl oncogene 1, non-receptor tyrosine kinase (Abl)
588674	1		Schnurri-3 Inhibitors: specific inducers of adult bone formation Measured in Cell-Based System Using Plate Reader - 2134-01_Inhibitor_SinglePoint_HTS_Activity_Set2
588335	1		Counterscreen for inhibitors of the fructose-bisphosphate aldolase (FBA) of M. tuberculosis: Absorbance-based biochemical high throughput Glycerophosphate Dehydrogenase-Triosephosphate Isomerase (GDH-TPI) full deck assay to identify assay artifacts
602123	1		Fluorescence polarization-based primary biochemical high throughput screening assay to identify inhibitors of Escherichia coli DNA-binding ATP-dependent protease La (eLon)
602124	1		TRFRET-based biochemical high throughput confirmation assay for inhibitors of the interaction of the Ras and Rab interactor 1 protein (Rin1) and the c-abl oncogene 1, non-receptor tyrosine kinase (Abl)
602141	1		uHTS determination of small molecule cytotoxicity in a fluorescence assay to identify cystic fibrosis induced NFkb Inhibitors
602250	1		Full deck counterscreen for antagonists of the human M1 muscarinic receptor (CHRM1): Fluorescence-based cell-based high throughput screening assay to identify nonselective inhibitors and assay artifacts using the parental CHOK1 cell line
602252	1		Fluorescence Polarization with CAL-PDZ Measured in Biochemical System Using Plate Reader - 2109-02_Inhibitor_SinglePoint_HTS_Activity
602340	1		HTS for suppressors of simvastatin-induced mytoxicity in differentiated C2C12 cells Measured in Cell-Based System Using Plate Reader
602417	1		Single concentration confirmation of uHTS hits for Peg3 Promoter Inhibitors via a luciferase reporter assay
588413	1		uHTS identification of Gli-Sufu Antagonists in a luminescence reporter assay
624038	1		Fluorescence-based cell-based primary high throughput screening assay to identify positive allosteric modulators (PAMs) of the human cholinergic receptor, muscarinic 5 (CHRM5)
624040	1		Fluorescence-based cell-based primary high throughput screening assay to identify antagonists of the human cholinergic receptor, muscarinic 5 (CHRM5)
624125	1		Fluorescence-based cell-based primary high throughput screening assay to identify antagonists of the human cholinergic receptor, muscarinic 4 (CHRM4)
624126	1		Fluorescence-based cell-based primary high throughput screening assay to identify positive allosteric modulators (PAMs) of the human cholinergic receptor, muscarinic 4 (CHRM4)
624168	1		uHTS identification of small molecule activators of alpha dystroglycan glycosylation
624249	1	0.7	qHTS screen for small molecules that inhibit ELG1-dependent DNA repair in human embryonic kidney (HEK293T) cells

			expressing luciferase-tagged ELG1: Hit Confirmation using MMS Stimulated ELG1
624251	1	1.2	qHTS screen for small molecules that inhibit ELG1-dependent DNA repair: Hit Confirmation with MMS Viability
624296	1	0.04	A quantitative high throughput screen for small molecules that induce DNA re-replication in MCF 10a normal breast cells
686992	1		Identification of agents that induce E-selectin on human endothelial cells Measured in Cell-Based System Using Imaging
720534	1	3.7	qHTS for Inhibitors of TGF-b: Confirmation of Cherry Picks
720511	1		Identification of Small Molecule Correctors of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) Delta508 Mutation Function in Human Bronchial Epithelial Cells. Measured in Cell-Based System Using Plate Reader
687014	1		Luminescence-based cell-based primary high throughput screening assay to identify agonists of the DAF-12 from the parasite H. glycines (hgDAF-12).
687016	1		Counterscreen for inhibitors of 5-meCpG-binding domain protein 2 (MBD2): TRFRET-based biochemical primary high throughput screening assay to identify inhibitors of binding of ubiquitin-like with PHD and ring finger domains 1 (UHRF1) to methylated oligonucleotide
720553	1		qHTS for Inhibitors of KCHN2 3.1: Mutant qHTS
720575	1	2.5	qHTS Assay for Inhibitors of Hepatitis C Virus (HCV): Confirmation Assay for Cherry-picked Compounds
720576	1	5.6	qHTS Assay for Inhibitors of Hepatitis C Virus (HCV): Cytotoxicity Counterscreen for Cherry-picked Compounds
720582	1		QFRET-based biochemical primary high throughput screening assay to identify exosite inhibitors of ADAM10 44601539
720648	1		QFRET-based biochemical primary high throughput screening assay to identify exosite inhibitors of ADAM17
739927	1		Antimycobacterial activity against Mycobacterium tuberculosis H37Rv ATCC 27294 assessed as growth inhibition by radiometric BACTEC assay in presence of 6.5 uM beta-lactam antibiotic, Meropenem
743256	1		Counterscreen for exosite inhibitors of ADAM17: Fluorescence resonance energy transfer (FRET)-based biochemical high throughput screening assay to identify inhibitors of ADAM10 44601539
743257	1		QFRET-based biochemical high throughput confirmation assay to identify exosite inhibitors of ADAM17 44601539
743279	1		qHTS for Inhibitors of Inflammasome Signaling: IL-1-beta AlphaLISA Primary Screen
652057	1	20.5	HIV entry: Env-mediated Cell Fusion Measured in Cell-Based System Using Plate Reader
652067	1		Luminescence-based cell-based primary high throughput screening assay to identify activators of the DAF-12 from the parasite H. contortus (hcDAF-12)
652105	1		qHTS for Inhibitors of phosphatidylinositol 5-phosphate 4-kinase (PI5P4K)
652126	1		Luminescence-based cell-based primary high throughput screening assay to identify activators of the DAF-12 from the parasite S. stercoralis (ssDAF-12)
652163	1		S100A4: HTS Measured in Biochemical System Using Plate Reader

652038	1		qHTS of Yeast-based Assay for SARS-CoV PLP: Hit Validation
651661	1		Luminescence Cell-Based Primary HTS to identify inhibitors of the oncoprotein EWS/Fli transcriptional activity Measured in Cell-Based System Using Plate Reader
651958	1		Fluorescence-based biochemical high throughput screening primary assay to identify inhibitors of Crimean-Congo Hemorrhagic Fever (CCHF) viral ovarian tumor domain protease (vOTU): Pep-AMC substrate
624466	1		Fluorescence-based cell-based primary high throughput screening assay to identify antagonists of the human trace amine associated receptor 1 (TAAR1)
624467	1		Fluorescence-based cell-based primary high throughput screening assay to identify agonists of the human trace amine associated receptor 1 (TAAR1)
624491	1	1.76	Luciferase Reporter Cell Based HTS to identify inhibitors of N-linked Glycosylation Measured in Cell-Based System Using Plate Reader - 2146-01_Inhibitor_Dose_CherryPick_Activity
624378	1		Luminescence-based cell-based high throughput confirmation assay for agonists of nuclear receptor subfamily 2, group E, member 3 (NR2E3)
624416	1		TRFRET-based biochemical primary high throughput screening assay to identify small molecules that bind to the HIV-1-gp120 binding antibody, PG9
602440	1		uHTS Fluorescent Assay Using Nedd8 Protein Substrate for Identification of Inhibitors of Sentrin-Specific Protease 8 (SENP8)
651571	1		TRFRET-based biochemical high throughput confirmation assay for small molecules that bind to the HIV-1-gp120 binding antibody, PG9
651572	1		Fluorescence polarization-based biochemical primary high throughput screening assay to identify inhibitors of ADP-ribosylation factor GTPase activating protein 1 (ARFGAP1)
651604	1		Counterscreen for discovery of small molecules that bind to the HIV-1-gp120 binding antibody, PG9: TR-FRET-based biochemical high throughput assay to identify small molecules that bind to the control antibody, PGV04, which binds to a site on the HIV envelope different from the PG9 binding site
651611	1		Counterscreen for inverse agonists of the liver receptor homolog-1 (LRH-1; NR5A2): Luminescence-based cell-based high throughput assay to identify nonselective inhibitors of the Steroidogenic acute regulatory protein (StAR) promoter or luminescence assay artifacts
651613	1		Luminescence-based cell-based high throughput confirmation assay for inverse agonists of the liver receptor homolog-1 (LRH-1; NR5A2) [Primary]
651614	1		Counterscreen for inverse agonists of the liver receptor homolog-1 (LRH-1; NR5A2): Luminescence-based cell-based high throughput assay to identify inverse agonists of the Steroidogenic Factor 1 Nuclear Receptor (SF1; NR5A1)
651615	1		Counterscreen for inverse agonists of the liver receptor homolog-1 (LRH-1; NR5A2): Luminescence-based cell-based high throughput assay to identify inhibitors of the Herpes Virus Virion Protein 16 (VP16)

Compound 2B

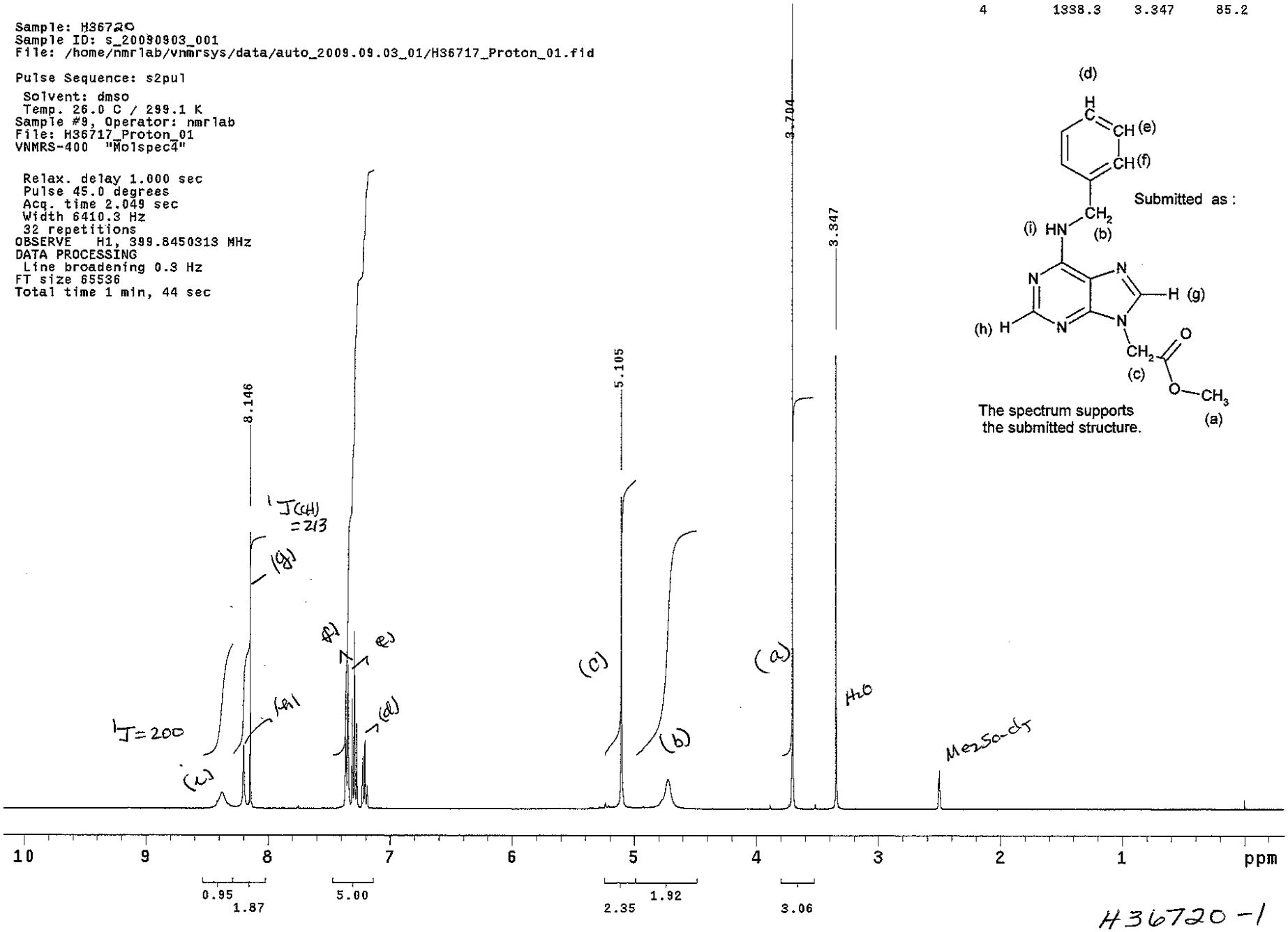
H36720
VIBHA PATHAK 12711.01.02
K813-69-1
? mg/0.6 mL Me2SO-d6

Sample: H36720
Sample ID: s_20090903_001
File: /home/nmrlab/vnmrsys/data/auto_2009.09.03_01/H36717_Proton_01.fid

Pulse Sequence: s2pul
Solvent: dmso
Temp. 26.0 C / 299.1 K
Sample #9, Operator: nmrlab
File: H36717_Proton_01
VNMRS-400 "Molspec4"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
32 repetitions
OBSERVE H1, 399.8450313 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 1 min, 44 sec

INDEX	FREQUENCY	PPM	HEIGHT
1	3257.0	8.146	51.9
2	2041.2	5.105	58.6
3	1481.1	3.704	151.2
4	1338.3	3.347	85.2



The spectrum supports the submitted structure.

H36720-1

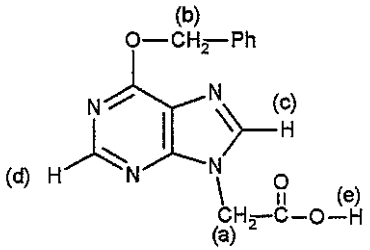
H36473
VIBHA PATHAK 12711.01.02
K796-157-1
? mg/0.6 mL Me2SO-d6

Sample: H36473
Sample ID: s_20090730_001
File: H36473_Proton_01.fid

Pulse Sequence: s2pul

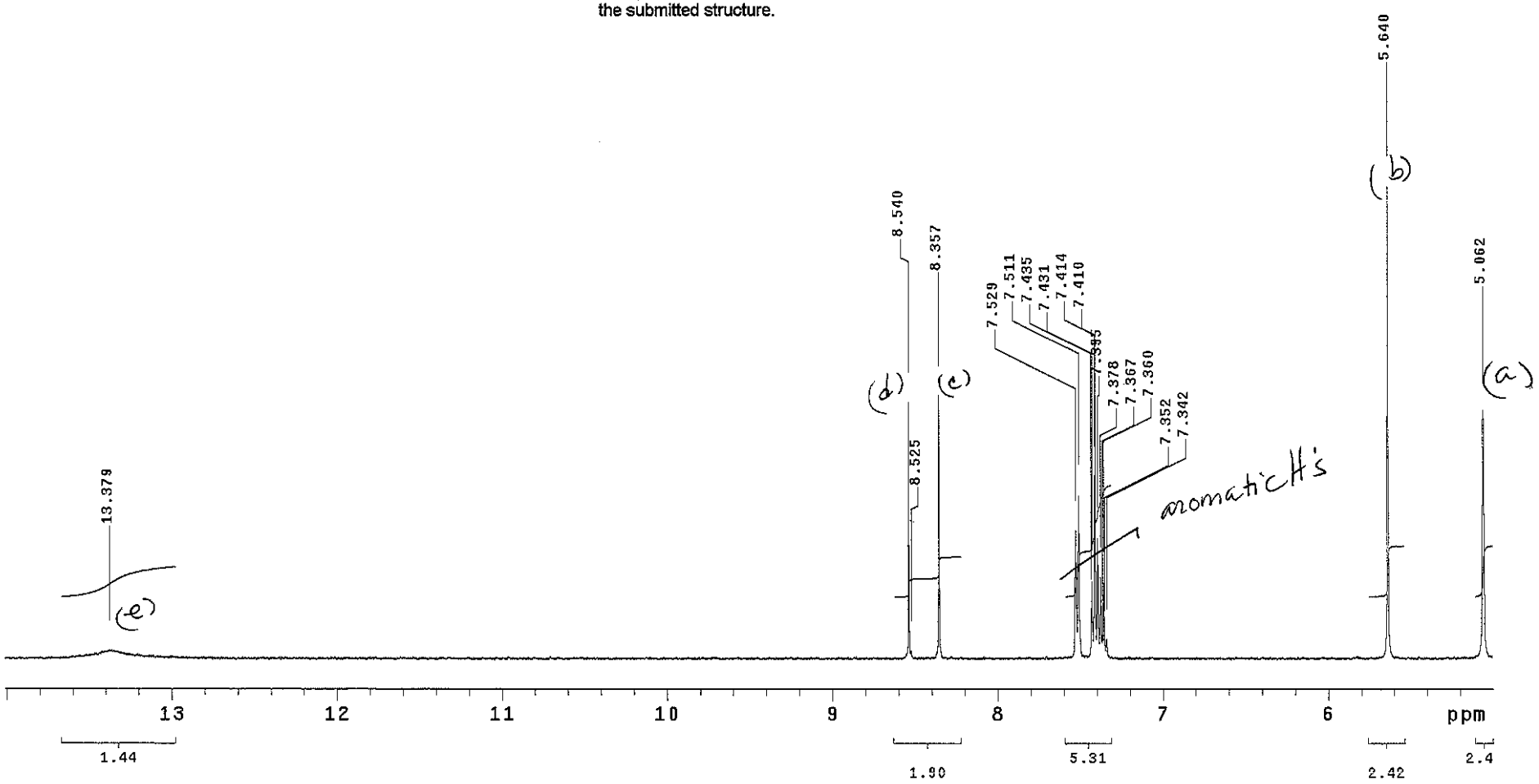
Compound 3A

Submitted as :



The spectrum supports the submitted structure.

INDEX	FREQUENCY	PPM	HEIGHT
1	5349.4	13.379	1.3
2	3414.8	8.540	41.4
3	3408.8	8.525	1.2
4	3341.7	8.357	42.4
5	3010.3	7.529	20.7
6	3003.0	7.511	26.4
7	2972.7	7.435	8.0
8	2971.2	7.431	12.4
9	2964.3	7.414	29.5
10	2962.7	7.410	16.0
11	2956.9	7.395	19.4
12	2950.0	7.378	13.1
13	2945.5	7.367	4.3
14	2942.8	7.360	12.2
15	2939.9	7.352	2.7
16	2935.6	7.342	3.0
17	2255.2	5.640	76.3
18	2023.9	5.062	40.2



H36718
VIBHA PATHAK 12711.01.02
K813-71-2
? mg/0.6 mL ME2SO-D6

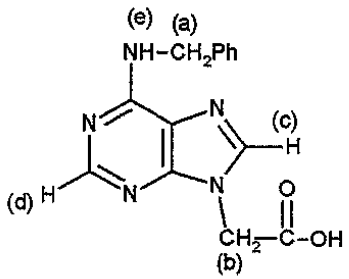
Sample: H36718
Sample ID: s_20090904_002
File: H36718_Proton_01.fid

Pulse Sequence: s2pul
 Solvent: dmso
 Temp. 26.0 C / 299.1 K
Sample #2, Operator: nmrlab
File: H36718_Proton_01
VNMRS-400 "Molspec4"

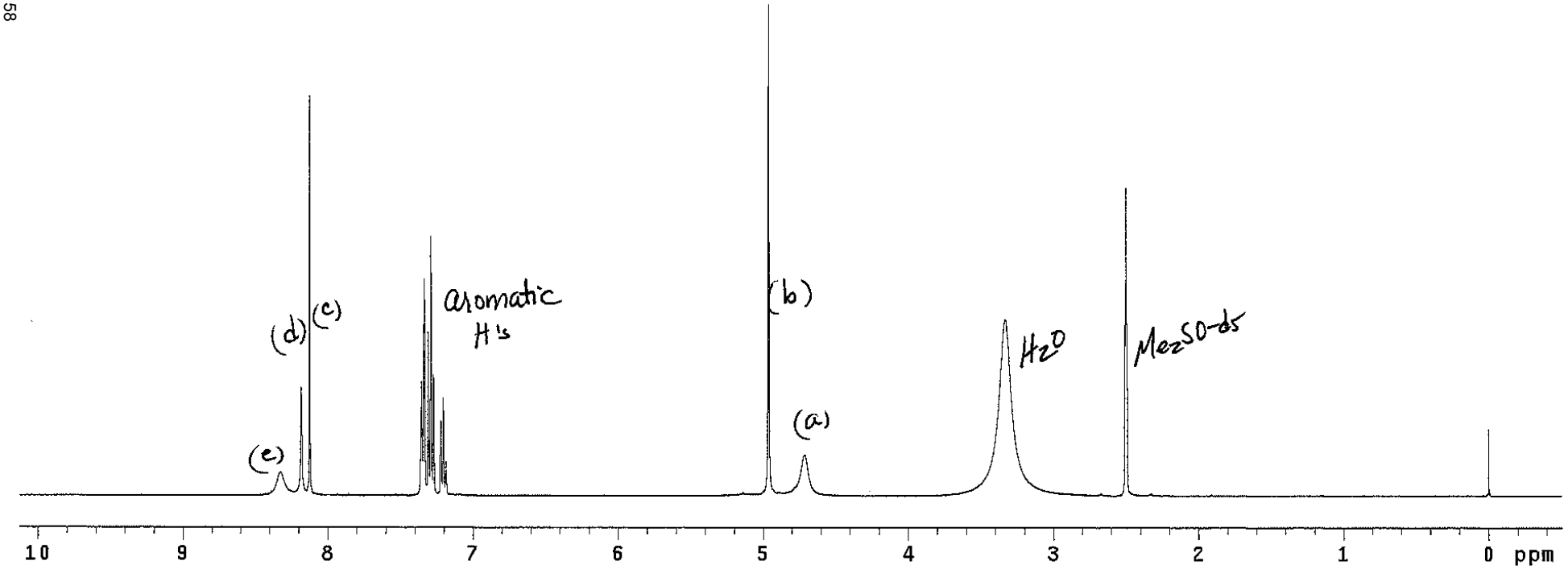
 Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.049 sec
 Width 6410.3 Hz
 32 repetitions
OBSERVE   H1, 399.8450313 MHz
DATA PROCESSING
 Line broadening 0.4 Hz
FT size 65536
Total time 1 min, 44 sec

Compound 3B

Submitted as :



The spectrum supports the submitted structure.



H36358
Vibha Pathak 12711.01.02
K796-79-1
? mg/0.6mL Me2SO-d6

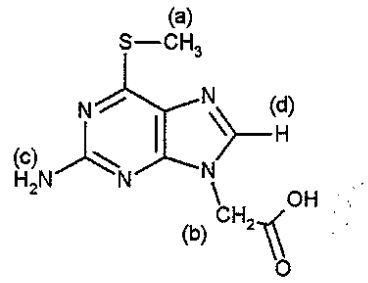
Sample: H36358
Sample ID: s_20090709_08
File: /home/nmrlab/vnmrsys/data/H36358/H36358.fid

Pulse Sequence: s2pul
 Solvent: dmso
 Temp. 26.0 C / 299.1 K
Sample #5, Operator: nmrlab
File: H36358
VNMRS-400 "Molspec4"

 Relax. delay 1.000 sec
 Pulse 45.0 degrees
 Acq. time 2.049 sec
 Width 6410.3 Hz
 32 repetitions
OBSERVE   H1, 399.8450311 MHz
DATA PROCESSING
 Resol. enhancement -0.0 Hz
FT size 65536
Total time 1 min, 44 sec

Compound 5

Submitted as :



The spectrum supports the submitted structure.

INDEX	FREQUENCY	PPM	HEIGHT
1	3120.0	7.803	31.0
2	2546.1	6.368	18.7
3	1771.0	4.429	26.9
4	1028.0	2.571	91.4
5	1003.8	2.510	23.1
6	1001.8	2.505	52.3
7	1000.0	2.501	76.4
8	998.3	2.497	58.2
9	996.3	2.492	31.1
10	0.0	0.000	26.8

H36021
Vibha Pathak 12711.01.02
K781-109-1
? mg/0.6 ml Me2SO-d6

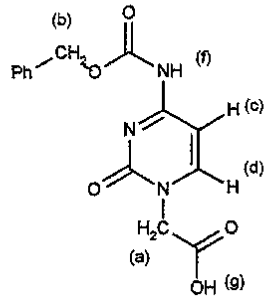
Sample: H36021 / K781-109-1
Sample ID: s_20090406_05
File: /home/nmrlab/vnmrsys/data/NMRDATA/H36021/H36021.fid

Pulse Sequence: s2pul
Solvent: dmso
Temp. 26.0 C / 299.1 K
Sample #3, Operator: nmrlab
File: H36021
VNMRS-400 "Molspec4"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
64 repetitions
OBSERVE H1, 399.8450326 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 3 min, 22 sec

Compound 9

Submitted as:



The spectrum supports the submitted structure.

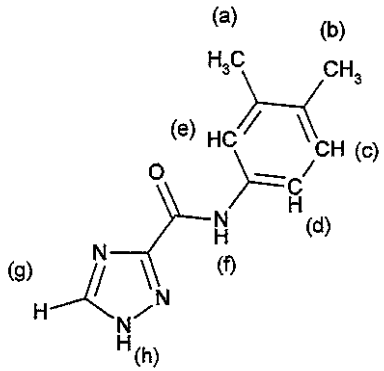
H36683-D2O
VIBHA PATHAK 12711.01.02
K813-65-1
? mg/0.6 mL Me2SO-d6
D2O EXCHANGE

Sample: H36683-D2O
Sample ID: s_20090902_009
File: H36683-D2O_Proton_02.fid

Pulse Sequence: s2pul

Solvent: dmso
Temp. 26.0 C / 299.1 K
Sample #8, Operator: nmrlab
File: H36683-D2O_Proton_02
VNMRS-400 "Molspec4"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
64 repetitions
OBSERVE H1, 399.8450203 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 3 min, 22 sec



Compound 10

INDEX	FREQUENCY	PPM	HEIGHT
1	1465.0	3.664	76.7
2	1016.3	2.542	51.2
3	1014.5	2.537	114.8
4	1012.6	2.532	163.5
5	1010.8	2.528	121.5
6	1009.0	2.524	57.2
7	889.3	2.224	66.4
8	880.3	2.202	59.5
9	2.5	0.006	24.9
10	1.8	0.004	23.9

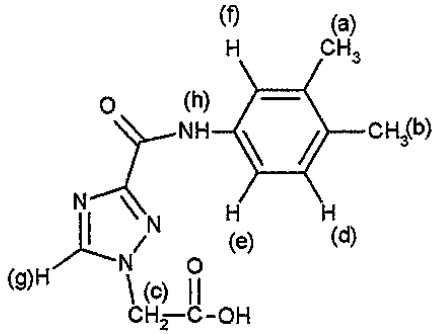
H36749
VIBHA PATHAK 12711.01.02
K813-99-1
? mg/0.6 mL Me2SO-d6

Sample: H36749
Sample ID: s_20090914_004
File: H36749_Proton_01.fid

Pulse Sequence: s2pul
Solvent: dmso
Temp. 26.0 C / 299.1 K
Sample #5, Operator: nmrlab
File: H36749_Proton_01
VNMRS-400 "Molspec4"

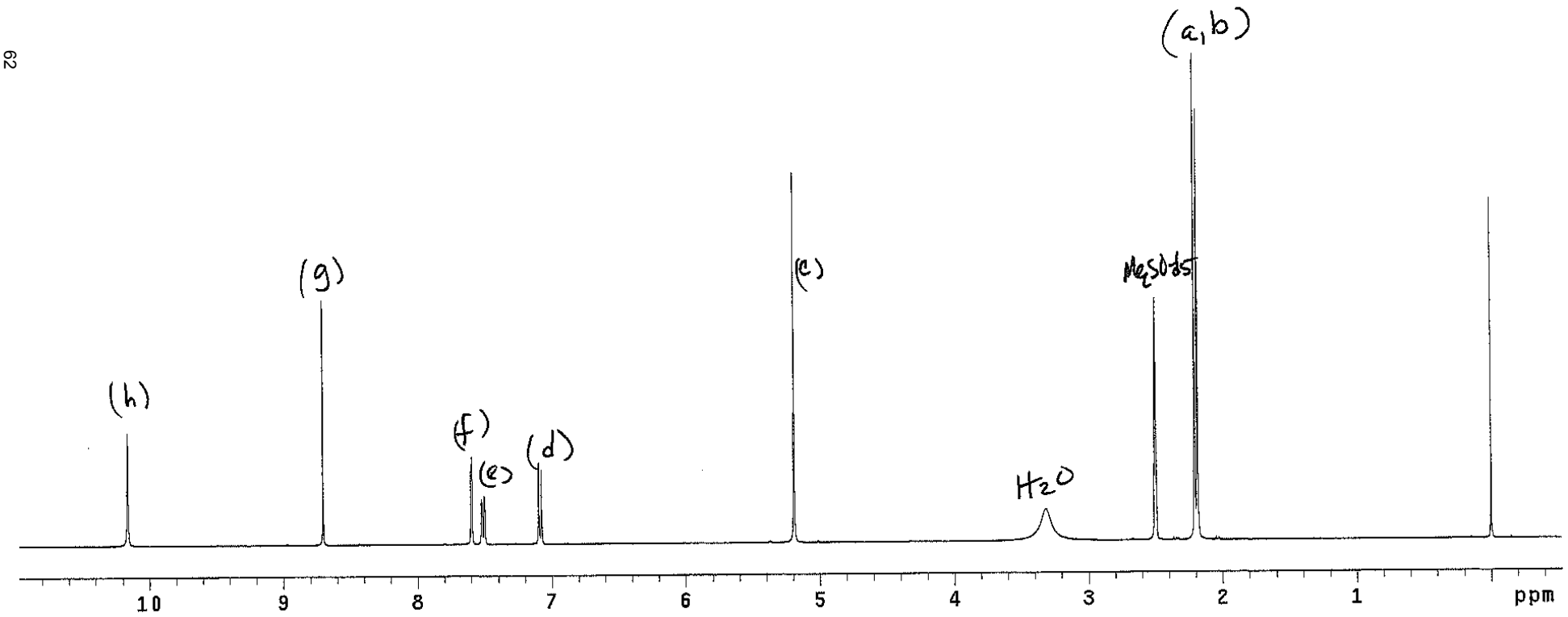
Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
32 repetitions
OBSERVE H1, 399.8450315 MHz
DATA PROCESSING
Line broadening 0.4 Hz
FT size 65536
Total time 1 min, 44 sec

Submitted as :



The spectrum supports the submitted structure.

Compound 11



Compound 25

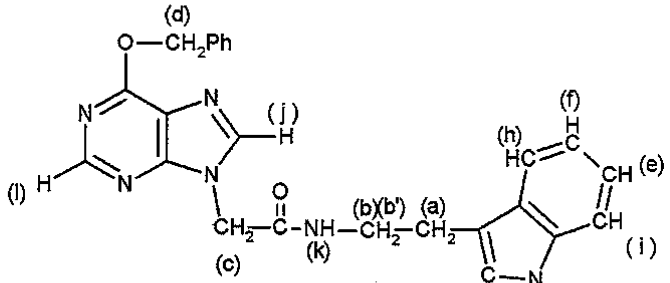
H36588
Vibha Pathak 12711.01.02
K813-N1-1
?mg/0.5 mL Me2SO-d6

Sample: H36588
Sample ID: s_20090816_002
File: H36588_Proton_01.fid

Pulse Sequence: s2pul
Solvent: dmso
Temp. 26.0 C / 299.1 K
Sample #2, Operator: nmrlab
File: H36588_Proton_01
VNMRS-400 "Molspec4"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
256 repetitions
OBSERVE H1, 399.8450324 MHz
DATA PROCESSING
Line broadening 0.2 Hz
FT size 65536
Total time 13 min, 9 sec

Submitted as :



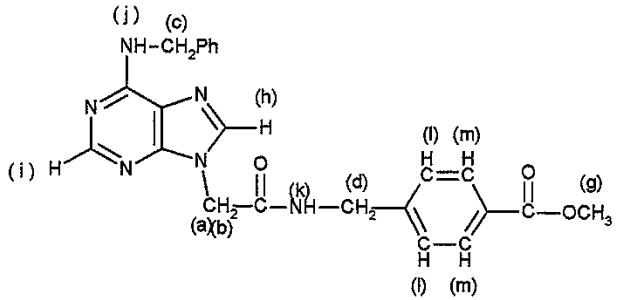
The spectrum supports the submitted structure.

INDEX	FREQUENCY	PPM	HEIGHT
1	2256.9	5.645	76.7
2	1323.6	3.310	3775.7
3	1003.4	2.509	160.7
4	1001.6	2.505	355.5
5	999.6	2.500	500.1
6	997.9	2.496	366.5
7	996.1	2.491	171.0
8	-0.0	-0.000	359.8

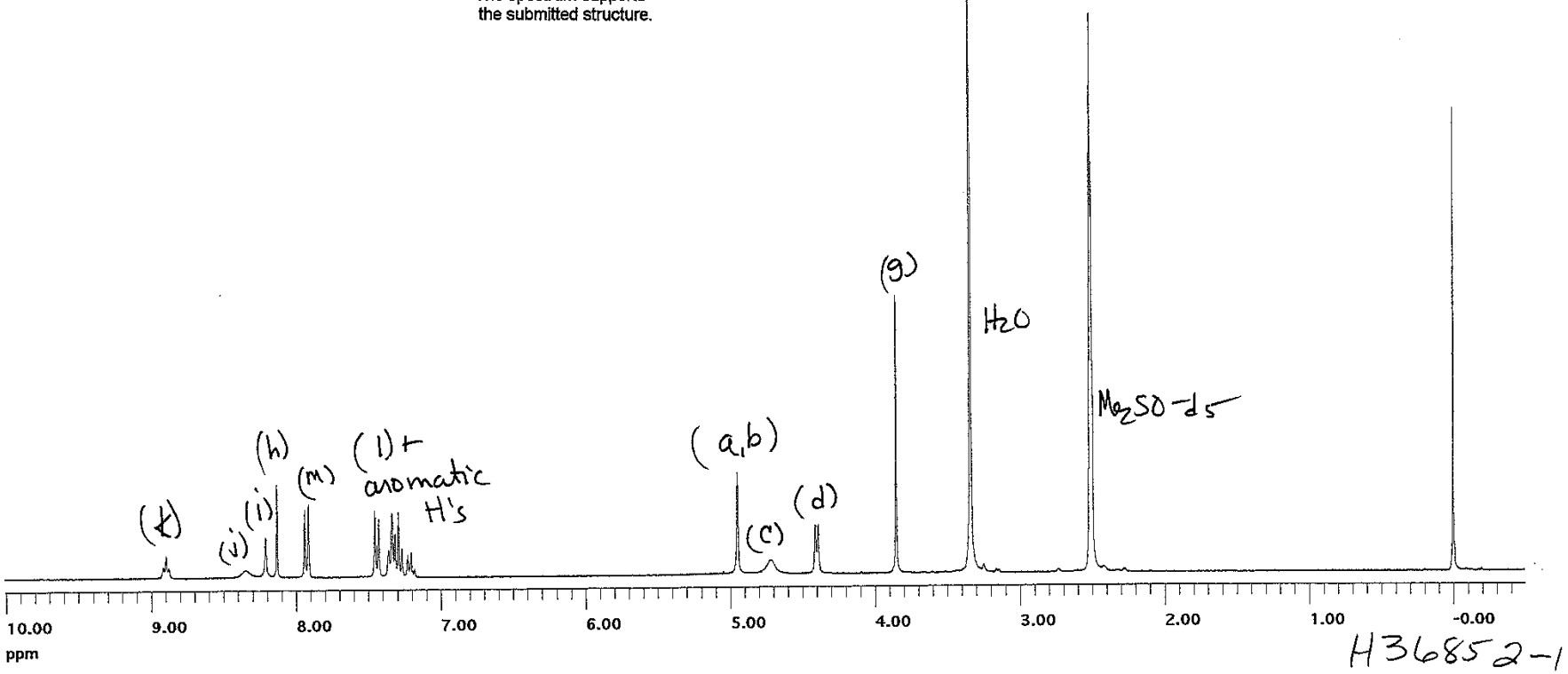
Compound 46

Filename	H36852.001
Solvent	DMSO
Nucleus	H1
Scans 1D	64
Dummy scan	2
Scan Count	64
Field	7.0649225
Obs Freq	300.6350499
Sequence	1PULSE
PW01	7U
Acq. Time	4.551s
Last Delay	3s
Acq. Points	16384
Points 1D	32768
SW +l-	1800.0
Dwell 1D	277.778u
FILTER	1800
F1 offset	255210.7994 KHz
F2 freq	300.6335351
F2 offset	300633.5351 KHz
DEC Scheme	DCPLR OFF
LB 1D	0.20
GB 1D	0.25
DM 1D	4.00
USER	TRUSS

Submitted as :



The spectrum supports the submitted structure.



H36852-1

Compound 84

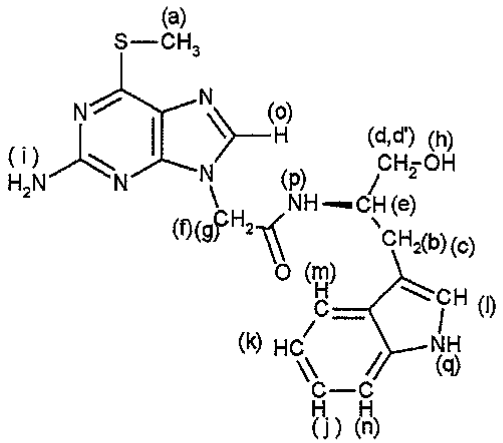
H36389
VIBHA PATHAK12711.01.02
K796-105-1
? mg/0.6mL ME2SO-D6

Sample: H36389
Sample ID: s_20090716_05
File: s_20090716_05/data/dmso_01.fid

Pulse Sequence: s2pul
Solvent: dmso
Temp. 26.0 C / 299.1 K
Sample #6, Operator: nmrlab
File: dmso_01
VNMRS-400 "Molspec4"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
32 repetitions
OBSERVE H1, 399.8450287 MHz
DATA PROCESSING
Line broadening 0.5 Hz
FT size 65536
Total time 1 min, 44 sec

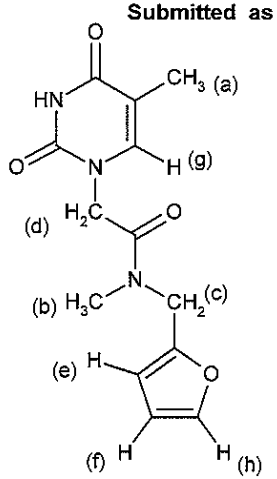
Submitted as :



The spectrum supports the submitted structure.

Filename	H35923.001
Solvent	DMSO
Nucleus	H1
Scans 1D	32
Dummy scan	2
Scan Count	32
Field	7.0649225
Obs Freq	300.6350499
Sequence	1PULSE
PW01	7U
Acq. Time	4.551s
Last Delay	3s
Acq. Points	16384
Points 1D	32768
SW +l-	1800.0
Dwell 1D	277.778u
FILTER	1800
F1 offset	255210.7994 KHz
F2 freq	300.6335351
F2 offset	300633.5351 KHz
DEC Scheme	DCPLR OFF
LB 1D	0.20
GB 1D	0.25
DM 1D	4.00
USER	TRUSS

Submitted as :



The spectrum supports the submitted structure.

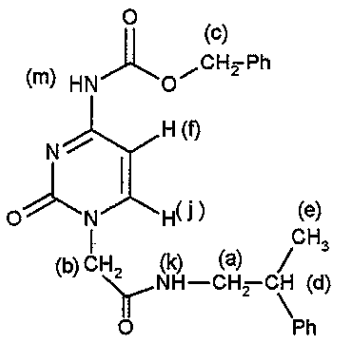
Multiple peaks are seen because of the partial double bond character of the amide bond.

Compound 126

Filename	H36152.001
Solvent	DMSO
Nucleus	H1
Scans 1D	256
Dummy scan	2
Scan Count	256
Field	7.0649225
Obs Freq	300.6356722
Sequence	1PULSE
PW01	10u
Acq. Time	3.413s
Last Delay	3s
Acq. Points	16384
Points 1D	32768
SW +l-	2400.0
Dwell 1D	208.333u
FILTER	2400
F1 offset	255210.7994 KHz
F2 freq	300.6356722
F2 offset	300635.6722 KHz
DEC Scheme	DCPLR OFF
LB 1D	0.20
GB 1D	0.25
DM 1D	4.00
USER	TRUSS

Compound 138

Submitted as :



The spectrum supports the submitted structure.

H36976
Vibha Pathak 12711.01.02
K822-19-1
? mg/0.6 ml Me2SO-d6

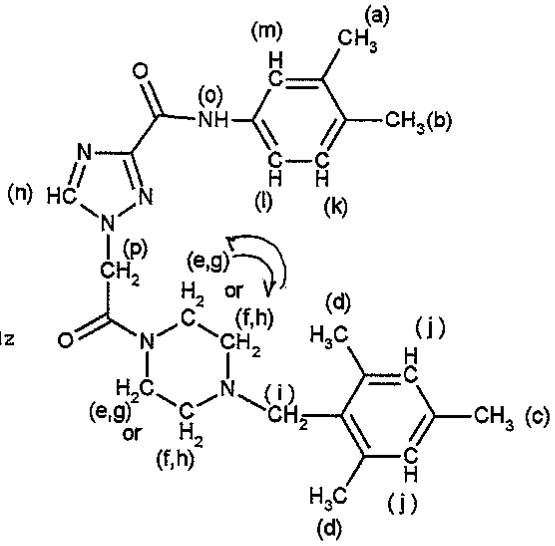
Sample: H36976
Sample ID: s_20091020_007
File: H36976_Proton_01.fid

Pulse Sequence: s2pul
Solvent: dmso
Ambient temperature
Sample #7, Operator: nmrlab
File: H36976_Proton_01
VNMRS-400 "Molspec4"

Relax. delay 1.000 sec
Pulse 45.0 degrees
Acq. time 2.049 sec
Width 6410.3 Hz
512 repetitions
OBSERVE H1, 399.8450317 MHz
DATA PROCESSING
Line broadening 0.3 Hz
FT size 65536
Total time 26 min, 12 sec

Compound 172

Submitted as :



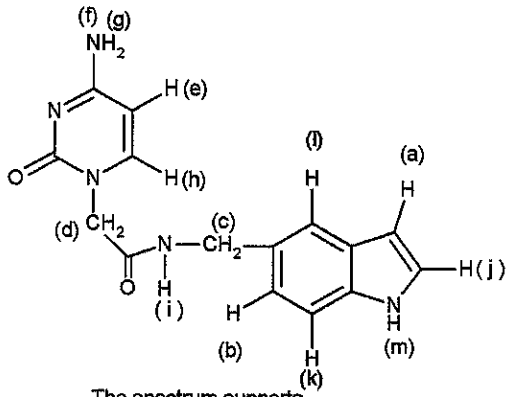
The spectrum supports the submitted structure.

INDEX	FREQUENCY	PPM	HEIGHT
1	1322.0	3.306	302.4
2	1001.4	2.504	47.4
3	999.6	2.500	68.9
4	997.7	2.495	51.4
5	923.7	2.310	86.2
6	882.5	2.207	45.9
7	880.1	2.201	43.9
8	873.7	2.185	37.1
9	-0.0	-0.000	35.6

Filename	H36246.001
Solvent	DMSO
Nucleus	H1
Scans 1D	128
Dummy scan	2
Scan Count	128
Field	7.0649225
Obs Freq	300.6356722
Sequence	1PULSE
PW01	10u
Acq. Time	3.413s
Last Delay	3s
Acq. Points	16384
Points 1D	32768
SW +l-	2400.0
Dwell 1D	208.333u
FILTER	2400
F1 offset	255210.7994 KHz
F2 freq	300.6356722
F2 offset	300635.6722 KHz
DEC Scheme	DCPLR OFF
LB 1D	0.20
GB 1D	0.25
DM 1D	4.00
USER	TRUSS

Compound 178

Submitted as :



The spectrum supports the submitted structure.