Supporting Information

Synthesis and Structure–Activity Relationship (SAR) Studies of 1,2,3-Triazole, Amide, and Ester-Based Benzothiazole Derivatives as Potential Molecular Probes for Tau Protein

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1. General Experimental Information

Unless stated otherwise, all chemicals were laboratory or reagent grade and were purchased from Merck (Australia) or AK Scientific, Inc (USA). All chemicals were used as received. All solvents were reagent grade and, when necessary, were purified and dried by standard methods. Water was purified via Millipore filtration prior to use. HOBT was purchased with added stabilizer (10% w/w H_2O), and therefore, the quantity required for reactions was adjusted accordingly and is reflected in the reagent mass reported in the experimental. All reactions requiring anhydrous conditions were conducted under a positive atmosphere of nitrogen in oven-dried glassware. Cold reaction temperatures were obtained by an ice bath (0 ºC). Heating of reaction was performed with a paraffin oil bath. Standard syringe and autopipette techniques were used for the anhydrous addition of liquids. Reactions were routinely monitored by TLC analysis performed on aluminium-backed SiO_2 gel plates (F254 grade – 0.20 mm thickness) or by low resolution mass spectrometry (LRMS) on Shimadzu LC-2010 mass spectrometer. Visualization on TLC plates was achieved with UV light (λ = 254, 365 nm), ninhydrin stain, or cerium ammonium molybdate stain. All filtrations were conducted as a gravity filtration through a filter paper Whatman Grade 4 (20 – 25 μm) or as a vacuum filtration through a sintered glass funnel (medium porosity). Vacuum filtration was achieved with the aid of vacuum pump. Organic solutions were dried over anhydrous Na_2SO_4. Solvent removal via concentration was performed on a rotary evaporator under reduced pressure. All solvent mixtures are expressed in terms of volume ratio (i.e. v/v). Normal phase flash column chromatography was performed on SiO_2 gel 60 with a positive air pressure. Preparative TLC was run using PLC silica gel 60 F_{254} 1 mm plates (20 x 20 cm^2). All synthesized compounds were dried under high vacuum (< 1 mbar) before determination of chemical yields and spectroscopic characterization. All synthesized compounds were subjected to full spectroscopic characterization and assignment. Melting points were determined on a Gallenkamp melting point apparatus in open capillary tubes and were uncorrected. ^1H and ^{13}C NMR spectra were recorded on a Bruker Avance 400 (400 MHz) or Varian Inova 500 (500 MHz) NMR spectrometer. Chemical shifts (δ) were reported in parts per million (ppm) relative to the internal standard. Samples were dissolved in $CDCl_3$ (with TMS as the internal standard – 0.00 ppm), CD_3OD (solvent resonance as internal standard – 3.31 ppm) or DMSO-d_6 (solvent resonance as internal standard – 2.50 ppm). ^{13}C NMR signal assignments were confirmed by analysis of NMR experiments: APT, gCOSY, gHSQC, gHMBC, zTOCSY, NOESY and/or gHSQC-TOCSY. Low resolution mass spectrometry (LRMS) spectra were recorded on a

Shimadzu LC-2010 mass spectrometer in electrospray positive and negative ionization modes (ESI-MS). High resolution mass spectrometry (HRMS) spectra were recorded on a Waters Quadrupole-Time of Flight (QTOF) Xevo spectrometer in electrospray positive and negative ionization modes (ESI-MS). All mass spectrometry samples were dissolved in HPLC grade MeOH. Solid-state infrared spectroscopy was performed on a Bruker Vertex 70 FTIR spectrometer in combination with a MIRacle 10 Single Reflection Attenuated Total Reflectance accessory outfitted with a 1.5 mm round diamond crystal. IR peaks are reported as the wavenumber ($_{max}$ in cm^{-1}) of the maximum absorption. Analytical HPLC was performed on a Shimadzu LC-2030C 3D UV/vis detector (λ = 254 nm) using a C-18 column (5 μm, 4.9 x 150 mm) at 25 °C using mobile phases A (water and 0.1% trifluoroacetic acid (TFA)) and B (MeCN and 0.1% TFA) at a flow rate of 1 $mL.min^{-1}$. The following gradient was applied: gradient elution for 35 min at 0 – 100% of solvent B, linear increase from 0 – 100% of solvent B over 25 min, hold at 100% of solvent B for 10 min (tau ligands).The purity of all final compounds was found to be higher than 95%.

2. Synthesis of 1,2,3-Triazole, Amide, and Ester Derivatives

General Procedure A: Synthesis of 1,2,3-triazole product (CuAAC reaction)

General Procedure A_1: To a stirred solution of alkyne (1.0 eq) in *t*-BuOH/H_2O (1:1, 20 mL/mmol alkyne) was added $CuSO_4.5H_2O$ (0.1 eq), sodium ascorbate (0.2 eq), and the appropriate azide (2.0 eq). Stirring was prolonged at rt for 24 h under N_2 atmosphere, and the resulting reaction mixture was poured into H_2O (25 mL), and extracted with EtOAc (3 x 25 mL). The organic solution was separated, washed with H_2O (2 x 25 mL), brine (2 x 25 mL), dried (Na_2SO_4), filtered, and concentrated. The residue was purified by preparative TLC plate chromatography to afford the 1,4-disubstituted-1,2,3-triazole product.

General Procedure A_2: To a stirred solution of alkyne (1.0 eq) in *t*-BuOH/H_2O (1:1, 20 mL/mmol alkyne) was added $CuSO_4.5H_2O$ (0.1 eq), sodium ascorbate (0.2 eq), and the appropriate azide (2.0 eq). Stirring was prolonged at rt for 24 h under N_2 atmosphere, and the resulting precipitate was filtered. The residue was triturated with sequential addition of CH_2Cl_2, MeCN, and hot MeOH to afford the 1,4-disubstituted-1,2,3-triazole product.

General Procedure B: Azidation of alkyl bromide

The appropriate alkyl bromide or benzyl bromide or phenylethyl bromide (1.0 eq) and NaN_3 (1.5 eq) were combined in anhydrous DMF (20 mL), and stirred at 55 ºC for 24 h. The resulting

reaction mixture was poured into H_2O (25 mL) and extracted with CH_2Cl_2 (3 x 25 mL). The organic layer was washed with H_2O (2 x 25 mL), brine (2 x 25 mL), dried (Na_2SO_4), filtered, and concentrated. The azide product was used for the next reaction without further purification (alkyl azide) or purified by flash chromatography (benzyl azide and phenylethyl azide) over SiO_2 gel (CH_2Cl_2/MeOH).

General Procedure C: Amide Coupling

The acid (1.0 eq), the appropriate aromatic amine (1.0 eq), HOBT (1.0 eq), EDCI (1.3 eq), and DIPEA (4.0 eq) were combined in anhydrous DMF (10 mL/mmol), and stirred at rt for 24 h under N_2 atmosphere. The resulting reaction mixture was poured into H_2O (50 mL), and extracted with EtOAc (3 x 50 mL). The organic layer was washed with H_2O (2 x 50 mL), brine (2 x 50 mL), dried (Na_2SO_4), filtered, and concentrated. The residue was purified by preparative TLC plate chromatography to afford the desired amide product.

General Procedure D: Ester Formation

The benzothiazole salt (1.0 eq) and the appropriate alkyl bromide (1.0 eq) were combined in anhydrous DMF (10 mL/mmol), and stirred at rt for 24 h under N_2 atmosphere. The resulting reaction mixture was poured into H_2O (50 mL), and extracted with EtOAc (3 x 50 mL). The organic layer was washed with H_2O (2 x 50 mL), brine (2 x 50 mL), dried (Na_2SO_4), filtered, and concentrated. The residue was purified by preparative TLC plate chromatography to afford the desired ester product.

2-aminobenzo[*d*]thiazol-6-ol 35.[1] To a stirred solution of thiourea **34** (7.60 g, 0.10 mol) in EtOH (200 mL) and concentrated HCl (9.0 mL) was added a hot solution of 1,4-benzoquinone **33** (21.60 g, 0.20 mol) in EtOH (400 mL). The mixture was stirred at rt for 48 h. The solvent was evaporated, and the residue triturated with hot MeCN (100 mL). This process was repeated until TLC analysis of the solid showed only one component. The solid was collected and washed with cold EtOH (10 mL) to afford the product as the hydrochloride salt. The free base was obtained by dissolving the salt in a minimal volume of H_2O, followed by neutralisation using NaOAc. The resulting precipitated was collected by filtration, yielding the hydroxy benzothiazole **35** (12.05 g, 72%) as a dark grey solid. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.41. ^{1}H NMR (400 MHz, CD_3OD) δ 7.20 (d, *J* = 8.8 Hz, 1H), 7.01 (d, *J* = 2.4 Hz, 1H), 6.73 (dd, *J* = 8.8, 2.4 Hz, 1H).

^{13}C NMR (400 MHz, CD_3OD) δ 164.4, 152.6, 146.1, 132.3, 118.6, 114.0, 107.4. MS (ESI +ve) *m/z* 167 ($[M + H]^+$, 100%).

6-((*tert*-butyldimethylsilyl)oxy)benzo[*d*]thiazol-2-amine 36. To a stirred solution of hydroxy benzothiazole **35** (5.00 g, 30.1 mmol) in anhydrous DMF was added TBDMS-Cl (5.40 g, 36.1 mmol) and imidazole (2.46 g, 36.1 mmol). The reaction was stirred at rt for 24 h, and partitioned between H_2O (150 mL) and EtOAc (150 mL). The aqueous phase was extracted with EtOAc (2 x 100 mL), and the combined organic layers dried (Na2SO4), filtered, and concentrated. The residue was subjected to flash chromatography over SiO_2 gel (EtOAc/hexanes – 30:70) to afford the protected phenol **36** (0.35 g, 41%) as a reddish oil. The spectroscopic data was in agreement with that previously reported. TLC (EtOAc/hexanes – 30:70): R_f = 0.57. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.35 (d, *J* = 8.4 Hz, 1H), 7.05 (d, *J* = 2.4 Hz, 1H), 6.80 (dd, *J* = 8.4, 2.4 Hz, 1H), 5.85 (br s, 2H), 0.98 (s, 9H), 0.19 (s, 6H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 165.2, 151.2, 146.5, 132.2, 119.2, 118.9, 112.0, 25.8, 18.3, -4.67. MS (ESI +ve) *m/z* 281 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{13}H_{21}N_2OSSi^+$ 281.1138, found 281.1138 ($[M + H]^+$).

6-((*tert*-butyldimethylsilyl)oxy)-2-iodobenzo[*d*]thiazole 37. To a solution of protected phenol **36** (0.52 g, 1.86 mmol) and *p*-toluenesulfonic acid monohydrate (1.12 mg, 6.51 mmol) in MeCN (55 mL) was added a solution of $NaNO_2$ (0.26 g, 3.72 mmol) and KI (0.80 g, 4.83 mmol) in H_2O (2.0 mL) at 0 ºC. The reaction was allowed to reach rt, and was stirred for 18 h. The reaction mixture was quenched with H_2O (100 mL) and basified with 2 M $NaHCO_3$ to pH 8-9, followed by addition of $Na_2S_2O_3$ (10 mL), yielding a brown precipitate. The precipitate was collected by filtration, washed with H_2O (20 mL), and dried *in vacuo*. The residue was subjected to flash chromatography over SiO_2 gel (EtOAc/hexanes – 30:70) to afford the iodobenzothiazole **37** (0.46 g, 63%) as a grey solid. TLC (EtOAc/hexanes – 30:70): R_f = 0.69. Mp 68 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.86 (d, *J* = 8.4 Hz, 1H), 7.26 (d, *J* = 2.4 Hz, 1H), 6.94 (dd, *J* = 8.4, 2.4 Hz, 1H), 1.00 (s, 9H), 0.22 (s, 6H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 154.3, 149.6, 140.3, 123.0, 120.2, 110.7, 102.2, 25.8, 18.4, -4.28. IR (neat) ν_{max} 2954 (m), 2924 (m), 2852 (m), 1595 (m), 1555 (m), 1468 (s), 1438 (s), 1401 (m), 1360 (w), 1269 (s), 1252 (s), 1210 (s), 1004 (m), 928 (s), 834 (s), 780 (s) cm^{-1}. MS (ESI +ve) *m/z* 392 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{13}H_{19}INOSSi^+$ 391.9996, found 391.9997 ($[M + H]^+$).

6-((*tert*-butyldimethylsilyl)oxy)-2-((trimethylsilyl)ethynyl)benzo[*d*]thiazole 38. To a solution of iodobenzothiazole **37** (200 mg, 0.51 mmol), $PdCl_2(PPh_3)_2$ (10 mg, 0.01 mmol), CuI (3 mg, 0.02 mmol), and triethylamine (0.46 mL, 3.30 mmol) in anhydrous DMF (2.0 mL) was added a solution of ethynyltrimethylsilane (100 mg, 1.02 mmol). The resulting mixture was stirred at 65 ºC for 6 h. After cooling to rt, the solution was filtered through a layer of Celite, and concentrated. The residue was subjected to flash chromatography over SiO_2 gel (EtOAc/hexanes – 20:80) to afford the protected alkyne **38** (136 mg, 74%) as a brown oil. The product was used in the next reaction step immediately or stored in the freezer for a limited time due to stability issues. TLC (EtOAc/hexanes – 20:80): R_f = 0.86. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.88 (d, *J* = 8.5 Hz, 1H, H4), 7.25 (d, *J* = 2.5 Hz, 1H, H7), 7.01 (dd, *J* = 8.5, 2.5 Hz, 1H, H5), 1.00 (s, 9H, H2''), 0.30 (s, 9H, H3'), 0.22 (s, 6H, H1''). ^{13}C NMR (400 MHz, $CDCl_3$) δ 155.0, 147.8, 146.2, 137.0, 124.3, 120.9, 112, 102.5, 97.1, 25.8, 18.4, -0.38, -4.25. IR (neat) ν_{max} 2912 (m), 1610 (m), 1552 (m), 1461 (s), 1438 (s), 1404 (m), 1366 (w), 1289 (s), 1111 (m), 930 (s), 844 (s), 788 (s) cm^{-1}. MS (ESI +ve) *m/z* 362 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{28}NOSSi_2^+$ 362.1425, found 362.1426 ([M + H]$^+$).

2-ethynylbenzo[*d*]thiazol-6-ol 39. To a solution of the protected alkyne **38** (110 mg, 0.30 mmol) in MeOH (5.0 mL) was added KF (220 mg, 3.78 mmol), and the mixture was stirred at rt for 4 h. The solvent was removed, and the residue was purified by preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10) to afford the free alkyne **39** (45 mg, 86%) as a pale yellow solid. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.10. Mp 101 ºC (decomp). ^{1}H NMR (500 MHz, DMSO) δ 10.14 (s, 1H), 7.85 (d, *J* = 8.5 Hz, 1H), 7.74 (d, *J* = 2.5 Hz, 1H), 7.22 (dd, *J* = 8.5, 2.5 Hz, 1H), 4.33 (s, 1H). ^{13}C NMR (500 MHz, DMSO) δ 157.0, 145.7, 143.2, 136.3, 124.2, 117.0, 106.4, 87.1, 77.0. IR (neat) ν_{max} 3310 (w), 2977 (w), 2188 (w), 2134 (w), 1732 (s), 1615 (w), 1589 (w), 1530 (m), 1480 (m), 1450 (m), 1394 (m), 1370 (m), 1254 (s), 1153 (s), 1097 (s), 1030 (m), 798 (m), 761 (m) cm^{-1}. MS (ESI +ve) *m/z* 174 ([M – H]$^-$, 100%). HRMS (ESI –ve TOF) calcd for $C_9H_4NOS^-$ 174.0019, found 174.0019 ([M – H]$^-$).

2-iodo-6-methylbenzo[*d*]thiazole 41. To a solution of 6-methylbenzo[*d*]thiazol-2-amine **40** (4.11 g, 25.00 mmol) and *p*-toluenesulfonic acid monohydrate (15.07 g, 87.50 mmol) in MeCN (150 mL) was added a solution of $NaNO_2$ (4.45 g, 50.00 mmol) and KI (10.79 g, 65.00 mmol) in H_2O (16 mL) at 0 ºC. The reaction was allowed to reach rt, and was stirred for 18 h. The reaction mixture was quenched with H_2O (350 mL) and basified with 2 M $NaHCO_3$ to pH 8-9, followed by addition of $Na_2S_2O_3$ (20 mL), yielding a light brown precipitate. The precipitate

was collected by filtration, washed with H_2O (20 mL), and dried *in vacuo* to afford the iodobenzothiazole **41** (4.90 g, 71%) as a light orange solid. The product was used directly for the next step without further purification. TLC (EtOAc/hexanes – 60:40): R_f = 0.88. Mp 96 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.89 (d, *J* = 8.4 Hz, 1H), 7.60 (br s, 1H), 7.23 (dd, *J* = 8.4, 1.6 Hz, 1H), 2.46 (s, 3H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 152.6, 139.4, 136.0, 128.0, 122.1, 120.3, 104.3, 21.6. IR (neat) ν_{max} 2910 (w), 1886 (w), 1609 (m), 1505 (m), 1428 (m), 1394 (m), 1307 (m), 1232 (m), 1056 (m), 1042 (w), 954 (s), 875 (m), 854 (m), 807 (s), 584 (s). MS (ESI +ve) *m/z* 276 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_8H_7INS^+$ 275.9338, found 275.9344 ([M + H]$^+$).

6-methyl-2-((trimethylsilyl)ethynyl)benzo[*d*]thiazole 42. To a solution of iodobenzothiazole **41** (1.76 g, 6.40 mmol), $PdCl_2(PPh_3)_2$ (90 mg, 0.13 mmol), CuI (26 mg, 0.14 mmol), and triethylamine (4.0 mL, 28.70 mmol) in anhydrous DMF (8.0 mL) was added a solution of ethynyltrimethylsilane (1.26 g, 12.83 mmol). The resulting mixture was stirred at 65 ºC for 6 h. After cooling to rt, the solution was filtered through a layer of Celite, and concentrated. The residue was subjected to flash chromatography over SiO_2 gel (EtOAc/hexanes – 60:40) to afford the protected alkyne **42** (1.21 g, 76%) as a light yellow oil. The product was used in the next reaction step immediately or stored in the freezer for a limited time due to stability issues. TLC (EtOAc/hexanes – 60:40): R_f = 0.89. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.91 (d, *J* = 8.4 Hz, 1H), 7.62 (br s, 1H), 7.30 (dd, *J* = 8.4, 1.6 Hz, 1H), 2.48 (s, 3H), 0.30 (s, 9H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 151.0, 147.3, 136.9, 135.6, 128.5, 123.3, 121.1, 102.7, 97.1, 21.7, 0.40. IR (neat) ν_{max} 3215 (br), 2990 (w), 1608 (m), 1558 (m), 1493 (m), 1439 (m), 1384 (m), 1302 (m), 1211 (s), 1109 (m), 1053 (m), 922 (s), 877 (s), 708 (m). MS (ESI +ve) *m/z* 246 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{13}H_{16}NSSi^+$ 246.0767, found 246.0767 ([M + H]$^+$).

2-ethynyl-6-methylbenzo[*d*]thiazole 43. To a solution of the protected alkyne **42** (0.94 g, 3.83 mmol) in MeOH (30 mL) was added KF (1.00 g, 17.21 mmol), and the mixture was stirred at rt for 2 h. The solvent was removed, and the residue was subjected to flash chromatography over SiO_2 gel (EtOAc/hexanes – 60:40) to afford the free alkyne **43** (0.64 g, 96%) as a pale yellow solid. TLC (EtOAc/hexanes – 60:40): R_f = 0.77. Mp 60 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.94 (d, *J* = 8.4 Hz, 1H), 7.65 (br s, 1H), 7.32 (dd, *J* = 8.4, 1.6 Hz, 1H), 3.56 (s, 1H), 2.49 (s, 3H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 150.9, 146.4, 137.2, 135.5, 128.8, 123.6, 121.1, 83.6, 77.0, 21.8. IR (neat) ν_{max} 3185 (br), 2945 (w), 2103 (m), 1604 (m), 1552 (m), 1476 (m), 1401 (m), 1310 (m), 1247 (w), 1116 (s), 1052 (m), 1034 (m), 874 (m), 809 (s), 742 (m), 686 (m), 559 (s).

MS (ESI +ve) *m/z* 174 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{10}H_8NS^+$ 174.0372, found 174.0377 ([M + H]$^+$).

1-(azidomethyl)-4-fluorobenzene 54.[2] **Following General Procedure B**, alkyl bromide **44** (756 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **54** (500 mg, 83%) as a pale yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.71. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 – 7.28 (m, 2H), 7.10 – 7.06 (m, 2H), 4.32 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.8 (d, $^1J_{CF}$ = 245.0 Hz), 131.3 (d, $^4J_{CF}$ = 4.0 Hz), 130.13 (d, $^3J_{CF}$ = 8.0 Hz), 115.9 (d, $^2J_{CF}$ = 22.0 Hz), 54.2. MS (ESI +ve) *m/z* 152 ([M + H]$^+$, 100%).

1-(azidomethyl)-3-fluorobenzene 55.[2] **Following General Procedure B**, alkyl bromide **45** (756 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **55** (455 mg, 75%) as a pale yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.86. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.40 – 7.33 (m, 1H), 7.12 – 7.02 (m, 3H), 4.35 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 163.1 (d, $^1J_{CF}$ = 245.0 Hz), 138.0 (d, $^3J_{CF}$ = 7.0 Hz), 130.6, 123.8, 115.2 (d, $^2J_{CF}$ = 41.0 Hz), 115.2, 54.2. MS (ESI +ve) *m/z* 152 ([M + H]$^+$, 100%).

1-(azidomethyl)-4-(trifluoromethyl)benzene 56.[3] **Following General Procedure B**, alkyl bromide **46** (956 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **56** (698 mg, 87%) as a pale yellow oil after flash chromatography (CH_2Cl_2/MeOH – 99:1). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 99:1): R_f = 0.67. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 (d, *J* = 8.0 Hz, 2H), 7.46 (d, *J* = 8.0 Hz, 2H), 4.43 (s, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 139.6, 130.7 (q, $^2J_{CF}$ = 32.3 Hz), 128.4, 126.0 (q, $^3J_{CF}$ = 3.8 Hz), 125.7 (q, $^1J_{CF}$ = 270.4 Hz), 54.3. MS (ESI +ve) *m/z* 202 ([M + H]$^+$, 100%).

Azidomethylbenzene 57.[2] **Following General Procedure B**, alkyl bromide **47** (684 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **57** (480 mg, 90%) as a pale yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC

(CH_2Cl_2/MeOH – 90:10): R_f = 0.86. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.43 – 7.33 (m, 5H), 4.35 (s, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 135.5, 129.0, 128.4, 128.3, 54.9. MS (ESI +ve) *m/z* 134 ($[M + H]^+$, 100%).

1-(azidomethyl)-4-nitrobenzene 58.[3] **Following General Procedure B**, alkyl bromide **48** (864 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **58** (550 mg, 77%) as a yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.65. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.20 (d, *J* = 8.8 Hz, 2H), 7.49 (d, *J* = 8.8 Hz, 2H), 4.49 (s, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 147.7, 142.8, 128.6, 124.0, 53.7. MS (ESI +ve) *m/z* 179 ($[M + H]^+$, 100%).

4-(azidomethyl)benzonitrile 59.[2] **Following General Procedure B**, alkyl bromide **49** (784 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **59** (490 mg, 77%) as a yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.88. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.67 (d, *J* = 8.8 Hz, 2H), 7.43 (d, *J* = 8.8 Hz, 2H), 4.44 (s, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 140.9, 132.7, 128.6, 118.5, 112.3, 54.1. MS (ESI +ve) *m/z* 159 ($[M + H]^+$, 100%).

1-(2-azidoethyl)-4-fluorobenzene 60.[2] **Following General Procedure B**, alkyl bromide **50** (812 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **60** (488 mg, 74%) as a pale yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.69. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.20 – 7.16 (m, 2H), 7.03 – 6.99 (m, 2H), 3.49 (t, *J* = 6.8 Hz, 2H), 2.87 (t, *J* = 6.8 Hz, 2H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.0 (d, $^1J_{CF}$ = 245.0 Hz), 133.9 (d, $^4J_{CF}$ = 4.0 Hz), 130.36 (d, $^3J_{CF}$ = 8.0 Hz), 115.6 (d, $^2J_{CF}$ = 22.0 Hz), 52.6, 34.7. MS (ESI +ve) *m/z* 166 ($[M + H]^+$, 100%).

1-(2-azidoethyl)-4-(trifluoromethyl)benzene 61.[4] **Following General Procedure B**, alkyl bromide **51** (1.01 g, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **61** (711 mg, 83%) as a pale yellow oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.77. ^{1}H NMR (500 MHz, $CDCl_3$) δ

7.59 (d, J = 6.4 Hz, 2H), 7.34 (d, J = 6.4 Hz, 2H), 3.55 (t, J = 5.6 Hz, 2H), 2.95 (t, J = 5.6 Hz, 2H). ^{13}C NMR (125 MHz, $CDCl_3$) δ 142.3, 129.4 (q, $^2J_{CF}$ = 32.3 Hz), 129.3, 125.7 (q, $^3J_{CF}$ = 3.8 Hz), 125.6 (q, $^1J_{CF}$ = 270.4 Hz), 52.1, 35.3. MS (ESI +ve) *m/z* 216 ([M + H]$^+$, 100%).

4-(2-azidoethyl)phenol 62.[2] **Following General Procedure B**, alkyl bromide **52** (805 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **62** (511 mg, 78%) as a colourless oil after flash chromatography (CH_2Cl_2/MeOH – 90:10). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.60. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.09 (d, J = 8.8 Hz, 2H), 6.79 (d, J = 8.8 Hz, 2H), 5.15 (s, 1H), 3.46 (t, J = 7.2 Hz, 2H), 2.83 (t, J = 7.2 Hz, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 154.5, 130.3, 130.1, 115.6, 52.8, 34.6. MS (ESI +ve) *m/z* 164 ([M + H]$^+$, 100%).

1-(2-azidoethyl)-4-nitrobenzene 63.[5] **Following General Procedure B**, alkyl bromide **53** (920 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **63** (601 mg, 78%) as a yellow oil after flash chromatography (CH_2Cl_2/MeOH – 95:5). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.63. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.17 (d, J = 7.2 Hz, 2H), 7.40 (d, J = 7.2 Hz, 2H), 3.58 (t, J = 5.2 Hz, 2H), 2.99 (t, J = 5.2 Hz, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 147.1, 145.9, 129.8, 123.9, 51.8, 35.3. MS (ESI +ve) *m/z* 193 ([M + H]$^+$, 100%).

2-(1-(4-fluorobenzyl)-1*H*-1,2,3-triazol-4-yl)-6-methoxybenzo[*d*]thiazole 64. **Following General Procedure A$_1$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **54** (64 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **64** (55 mg, 77%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.55. Mp 175 ºC. ^{1}H NMR (500 MHz, DMSO) δ 8.95 (s, 1H), 7.90 (d, J = 9.0 Hz, 1H), 7.73 (d, J = 2.4 Hz, 1H), 7.51 – 7.47 (m, 2H), 7.26 – 7.22 (m, 2H), 7.15 (dd, J = 9.0, 2.4 Hz, 1H), 5.84 (s, 2H), 3.85 (s, 3H). ^{13}C NMR (125 MHz, DMSO) δ 162.0 (d, $^1J_{CF}$ = 243.3 Hz), 157.6, 156.3, 147.6, 142.3, 135.4, 131.8 (d, $^4J_{CF}$ = 2.8 Hz), 130.5 (d, $^3J_{CF}$ = 8.6 Hz), 123.4, 123.1, 115.8 (d, $^2J_{CF}$ = 44.4 Hz), 115.8, 104.9, 55.7, 52.5. IR (neat) ν_{max} 3200 (w), 2831 (w), 2230 (w), 1605 (m), 1580 (w), 1557 (m), 1508 (m), 1489 (m), 1465 (m), 1435 (s), 1259 (s), 1219 (m), 1184 (m), 1157 (m), 1128 (s), 948 (m), 887 (s) cm^{-1}. MS (ESI +ve) *m/z*

341 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 339 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{14}FN_4OS^+$ 341.0867, found 341.0872 ([M + H]$^+$).

2-(1-(4-fluorophenethyl)-1*H*-1,2,3-triazol-4-yl)-6-methoxybenzo[*d*]thiazole 65. **Following General Procedure A$_1$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **60** (69 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **65** (51 mg, 69%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.57. Mp 149 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.80 (s, 1H), 7.89 (d, *J* = 9.0 Hz, 1H), 7.72 (d, *J* = 2.4 Hz, 1H), 7.28 – 7.24 (m, 2H), 7.14 – 7.10 (m, 2H), 7.09 (dd, *J* = 9.0, 2.4 Hz, 1H), 4.73 (t, *J* = 7.2 Hz, 2H), 3.85 (s, 3H), 3.25 (t, *J* = 7.2 Hz, 2H). ^{13}C NMR (100 MHz, DMSO) δ 161.1 (d, $^1J_{CF}$ = 240.7 Hz), 157.5, 156.5, 147.6, 141.9, 135.3, 133.6 (d, $^4J_{CF}$ = 3.1 Hz), 130.6 (d, $^3J_{CF}$ = 8.0 Hz), 123.3, 123.1, 115.9, 115.2 (d, $^2J_{CF}$ = 21.0 Hz), 104.9, 55.7, 50.9, 34.5. IR (neat) ν_{max} 3107 (w), 2841 (w), 2229 (w), 1610 (m), 1582 (m), 1554 (m), 1489 (m), 1466 (m), 1437 (s), 1325 (m), 1278 (s), 1215 (s), 1161 (m), 1116 (m), 943 (m), 877 (s) cm^{-1}. MS (ESI +ve) *m/z* 355 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{16}FN_4OS^+$ 355.1023, found 355.1029 ([M + H]$^+$).

2-(1-(3-fluorobenzyl)-1*H*-1,2,3-triazol-4-yl)-6-methoxybenzo[*d*]thiazole 66. **Following General Procedure A$_1$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **55** (63 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **66** (60 mg, 84%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.50. Mp 170 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.98 (s, 1H), 7.90 (d, *J* = 9.0 Hz, 1H), 7.73 (d, *J* = 2.4 Hz), 7.46 – 7.42 (m, 1H), 7.30 – 7.18 (m, 3H), 7.14 (dd, *J* = 9.0, 2.4 Hz, 1H), 4.74 (s, 2H), 3.85 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 162.2 (d, $^1J_{CF}$ = 243.0 Hz), 157.6, 156.6, 147.6, 142.3, 138.2 (d, $^3J_{CF}$ = 7.8 Hz), 135.4, 131.0, 130.9, 124.2, 123.7, 116.0, 115.1 (d, $^2J_{CF}$ = 40.4 Hz), 115.1, 104.9, 55.7, 52.6. IR (neat) ν_{max} 3121 (w), 2840 (w), 2220 (w), 1608 (m), 1582 (m), 1553 (m), 1490 (m), 1460 (m), 1431 (s), 1319 (m), 1268 (s), 1211 (s), 1159 (m), 1130 (m), 943 (m), 878 (s) cm^{-1}. MS (ESI +ve) *m/z* 341 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 339 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{14}FN_4OS^+$ 341.0867, found 341.0872 ([M + H]$^+$).

6-methoxy-2-(1-(4-(trifluoromethyl)benzyl)-1*H*-1,2,3-triazol-4-yl)benzo[*d*]thiazole 67. **Following General Procedure A_1**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **56** (84 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **67** (61 mg, 74%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.66. Mp 174 ºC. ^{1}H NMR (400 MHz, DMSO) δ 9.01 (s, 1H), 7.90 (d, *J* = 8.8 Hz, 1H), 7.78 (d, *J* = 8.0 Hz, 2H), 7.74 (d, *J* = 2.4 Hz, 1H), 7.60 (d, *J* = 8.0 Hz, 2H), 7.14 (dd, *J* = 8.8, 2.4 Hz, 1H), 5.85 (s, 2H), 3.85 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 158.1, 156.7, 148.1, 142.9, 140.7, 135.9, 129.3, 129.3 (q, $^2J_{CF}$ = 31.8 Hz), 126.3 (q, $^3J_{CF}$ = 3.8 Hz), 125.0 (q, $^1J_{CF}$ = 270.4 Hz), 124.3, 123.6, 116.5, 105.4, 56.2, 53.1. IR (neat) ν_{max} 3142 (w), 2841 (w), 2215 (w), 1608 (m), 1579 (m), 1553 (m), 1491 (m), 1459 (m), 1436 (s), 1324 (m), 1272 (s), 1215 (s), 1160 (m), 1120 (m), 948 (m), 874 (s) cm^{-1}. MS (ESI +ve) *m/z* 391 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 389 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{14}F_3N_4OS^+$ 391.0835, found 391.0840 ([M + H]$^+$).

6-methoxy-2-(1-(4-(trifluoromethyl)phenethyl)-1*H*-1,2,3-triazol-4-yl)benzo[*d*]thiazole 68. **Following General Procedure A_1**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **61** (90 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **68** (60 mg, 71%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.71. Mp 167 ºC. ^{1}H NMR (500 MHz, DMSO) δ 8.86 (s, 1H), 7.89 (d, *J* = 8.8 Hz, 1H), 7.72 (d, *J* = 2.4 Hz, 1H), 7.65 (d, *J* = 8.0 Hz, 2H), 7.47 (d, *J* = 8.0 Hz, 2H), 7.13 (dd, *J* = 8.8, 2.4 Hz, 1H), 4.80 (t, *J* = 5.6 Hz, 2H), 3.85 (s, 3H), 3.37 (t, *J* = 5.6 Hz, 2H). ^{13}C NMR (125 MHz, DMSO) δ 157.6, 156.4, 147.6, 142.4, 142.0, 135.3, 129.6, 127.4 (q, $^2J_{CF}$ = 31.8 Hz), 125.3 (q, $^3J_{CF}$ = 3.8 Hz), 124.6 (q, $^1J_{CF}$ = 270.4 Hz), 123.3, 123.1, 115.9, 104.9, 55.7, 50.4, 35.0. IR (neat) ν_{max} 3107 (w), 2922 (w), 2229 (w), 1606 (m), 1570 (m), 1516 (s), 1484 (m), 1452 (m), 1344 (s), 1312 (m), 1228 (m), 1178 (m), 1130 (m), 1106 (m), 948 (s), 882 (s) cm^{-1}. MS (ESI +ve) *m/z* 405 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 403 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{19}H_{16}F_3N_4OS^+$ 405.0991, found 405. 0997 ([M + H]$^+$).

2-(1-benzyl-1*H*-1,2,3-triazol-4-yl)-6-methoxybenzo[*d*]thiazole 69. **Following General Procedure A_1**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **57** (56 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **69** (58 mg, 86%) as a pale yellow

solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.67. Mp 162 ºC. ^{1}H NMR (500 MHz, DMSO) δ 8.95 (s, 1H), 7.90 (d, *J* = 9.0 Hz, 1H), 7.73 (d, *J* = 3.0 Hz, 1H), 7.34 – 7.12 (m, 5H), 7.13 (dd, *J* = 9.0, 3.0 Hz, 1H), 5.71 (s, 2H), 3.85 (s, 3H). ^{13}C NMR (500 MHz, DMSO) δ 157.6, 156.3, 147.6, 142.3, 135.6, 135.4, 128.9, 128.3, 128.1, 123.5, 123.1, 116.0, 104.9, 55.7, 53.3. IR (neat) ν_{max} 3140 (w), 2980 (w), 2241 (w), 1607 (s), 1576 (m), 1556 (m), 1489 (m), 1465 (m), 1430 (m), 1322 (s), 1255 (s), 1222 (m), 1180 (s), 1040 (m), 1026 (m), 945 (m), 887 (s) cm^{-1}. MS (ESI +ve) *m/z* 323 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{15}N_4OS^+$ 323.0961, found 323.0967 ([M + H]$^+$).

4-(2-(4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)ethyl)phenol 70. **Following General Procedure A$_2$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **62** (69 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **70** (52 mg, 70%) as a white solid after sequential trituration with CH_2Cl_2, MeCN, and hot MeOH. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.05. Mp 160 ºC (decomp). ^{1}H NMR (400 MHz, DMSO) δ 9.25 (s, 1H), 8.74 (s, 1H), 7.89 (d, *J* = 8.8 Hz, 1H), 7.72 (d, *J* = 2.4 Hz, 1H), 7.13 (dd, *J* = 8.8, 2.4 Hz), 7.00 (d, *J* = 8.4 Hz, 2H), 6.66 (d, *J* = 8.4 Hz, 2H), 4.66 (t, *J* = 7.2 Hz, 2H), 3.85 (s, 3H), 3.12 (t, *J* = 7.2 Hz, 2H). ^{13}C NMR (400 MHz, DMSO) δ 157.5, 156.5, 156.0, 147.6, 141.8, 135.3, 129.6, 127.3, 123.2, 123.1, 115.9, 115.2, 104.9, 55.7, 51.3, 34.7. IR (neat) ν_{max} 3133 (w), 2981 (w), 2092 (br), 1610 (m), 1555 (m), 1516 (m), 1489 (m), 1463 (m), 1378 (w), 1356 (w), 1320 (s), 1238 (s), 1216 (m), 1131 (m), 1102 (m), 950 (m), 864 (s) cm^{-1}. MS (ESI +ve) *m/z* 353 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 351 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{17}N_4O_2S^+$ 353.1067, found 353.1072 ([M + H]$^+$).

6-methoxy-2-(1-(4-nitrobenzyl)-1*H*-1,2,3-triazol-4-yl)benzo[*d*]thiazole 71. **Following General Procedure A$_2$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **58** (75 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **71** (61 mg, 79%) as a pale yellow solid after sequential trituration with CH_2Cl_2, MeCN, and hot MeOH. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.24. Mp 162 ºC (decomp). ^{1}H NMR (400 MHz, DMSO) δ 8.85 (s, 1H), 8.23 (d, *J* = 8.4 Hz, 2H), 7.89 (d, *J* = 8.8 Hz, 1H), 7.66 (d, *J* = 2.4 Hz, 1H), 7.65 (d, *J* = 8.4 Hz, 2H), 7.14 (dd, *J* = 8.8, 2.4 Hz, 1H), 5.88 (s, 2H), 3.89 (s, 3H). ^{13}C NMR (500 MHz, DMSO) δ 157.6, 156.2, 147.6, 147.3, 142.9, 142.4, 135.4, 129.2, 124.0, 123.2, 122.3, 116.0,

104.9, 55.7, 52.4. IR (neat) ν_{max} 3121 (w), 2900 (w), 2089 (w), 1610 (m), 1555 (s), 1516 (s), 1489 (m), 1432 (m), 1378 (s), 1356 (m), 1320 (m), 1272 (s), 1215 (s), 1174 (s), 1044 (m), 1027 (m), 949 (m), 818 (m) cm^{-1}. MS (ESI +ve) *m/z* 368 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{14}N_5O_3S^+$ 368.0812, found 368.0817 ($[M + H]^+$).

6-methoxy-2-(1-(4-nitrophenethyl)-1*H*-1,2,3-triazol-4-yl)benzo[*d*]thiazole 72. **Following General Procedure A_2**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **63** (81 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **72** (60 mg, 75%) as a pale yellow solid after sequential trituration with CH_2Cl_2, MeCN, and hot MeOH. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.22. Mp 172 ºC (decomp). ^{1}H NMR (400 MHz, DMSO) δ 8.85 (s, 1H), 8.15 (d, *J* = 8.4 Hz, 2H), 7.89 (d, *J* = 8.8 Hz, 1H), 7.72 (d, *J* = 2.8 Hz, 1H), 7.53 (d, *J* = 8.4 Hz, 2H), 7.13 (dd, *J* = 8.8, 2.8 Hz, 1H), 4.83 (t, *J* = 7.2 Hz, 2H), 3.85 (s, 3H), 3.43 (t, *J* = 7.2 Hz, 2H). ^{13}C NMR (400 MHz, DMSO) δ 157.6, 156.4, 147.6, 146.4, 145.7, 142.0, 135.3, 130.1, 123.5, 123.3, 123.1, 115.9, 104.9, 55.7, 50.2, 34.9. IR (neat) ν_{max} 3131 (w), 2924 (w), 1604 (m), 1558 (s), 1512 (s), 1490 (m), 1438 (m), 1374 (s), 1342 (m), 1315 (m), 1259 (s), 1226 (s), 1178 (s), 1040 (m), 1021 (m), 945 (m), 827 (m) cm^{-1}. MS (ESI +ve) *m/z* 382 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{16}N_5O_3S^+$ 382.0968, found 382.0974 ($[M + H]^+$).

4-((4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)methyl)benzonitrile 73. **Following General Procedure A_1**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **59** (66 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **73** (53 mg, 73%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.25. Mp 178 ºC (decomp). ^{1}H NMR (400 MHz, DMSO) δ 9.00 (s, 1H), 7.92 (d, *J* = 8.8 Hz, 1H), 7.87 (d, *J* = 8.4 Hz, 2H), 7.73 (d, *J* = 2.4 Hz, 1H), 7.56 (d, *J* = 8.4 Hz, 2H), 7.15 (dd, *J* = 8.8, 2.4 Hz, 1H), 5.84 (s, 2H), 3.85 (s, 3H). ^{13}C NMR (400 MHz, DMSO) δ 157.6, 156.2, 147.6, 142.4, 140.9, 135.4, 132.8, 128.8, 123.9, 123.2, 118.5, 116.0, 111.1, 104.9, 55.8, 52.6. IR (neat) ν_{max} 3143 (w), 2231 (w), 1607 (s), 1580 (m), 1509 (m), 1490 (m), 1459 (m), 1375 (w), 1253 (s), 1228 (s), 1038 (m), 1023 (m), 950 (m), 874 (s), 824 (m) cm^{-1}. MS (ESI +ve) *m/z* 348 ($[M + H]^+$, 100%), 370 ($[M + Na]^+$, 20%); (ESI –ve) *m/z* 346 ($[M – H]^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{14}N_5OS^+$ 348.0914, found 348.0919 ($[M + H]^+$).

2-(1-(4-fluorobenzyl)-1*H*-1,2,3-triazol-4-yl)-6-methylbenzo[*d*]thiazole 74. **Following General Procedure A_1**, alkyne **43** (36 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **54** (63 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **74** (53 mg, 78%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.84. Mp 184 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.99 (s, 1H), 7.93 (br s, 1H), 7.89 (d, *J* = 9.0 Hz, 1H), 7.51 – 7.47 (m, 2H), 7.35 (dd, *J* = 9.0, 2.4 Hz, 1H), 7.27 – 7.22 (m, 2H), 5.71 (s, 2H), 2.45 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 162.0 (d, $^1J_{CF}$ = 243.3 Hz), 157.8, 151.3, 142.3, 135.4, 134.0, 131.8 (d, $^4J_{CF}$ = 2.8 Hz), 130.5 (d, $^3J_{CF}$ = 8.6 Hz), 128.1, 123.77, 122.2, 121.9, 115.7 (d, $^2J_{CF}$ = 44.4 Hz), 52.5, 21.0. IR (neat) ν_{max} 3123 (w), 2912 (w), 1605 (m), 1551 (m), 1508 (m), 1486 (m), 1461 (m), 1435 (s), 1353 (m), 1333 (m), 1221 (s), 1158 (m), 1128 (m), 1117 (s), 1090 (m), 950 (m), 818 (s) cm^{-1}. MS (ESI +ve) *m/z* 325 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{14}FN_4S^+$ 325.0918, found 325.0923 ([M + H]$^+$).

2-(1-(4-fluorophenethyl)-1*H*-1,2,3-triazol-4-yl)-6-methylbenzo[*d*]thiazole 75. **Following General Procedure A_1**, alkyne **43** (36 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **60** (69 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **75** (49 mg, 69%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.79. Mp 178 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.83 (s, 1H), 7.92 (br s, 1H), 7.89 (d, *J* = 9.0 Hz, 1H), 7.35 (dd, *J* = 9.0, 2.4 Hz, 1H), 7.28 – 7.24 (m, 2H), 7.13 – 7.08 (m, 2H), 4.73 (t, *J* = 7.2 Hz, 2H), 3.25 (t, *J* = 7.2 Hz, 2H), 2.45 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 161.1 (d, $^1J_{CF}$ = 240.7 Hz), 158.0, 151.3, 142.0, 135.3, 133.9, 133.5 (d, $^4J_{CF}$ = 3.1 Hz), 130.6 (d, $^3J_{CF}$ = 8.0 Hz), 128.0, 123.6, 122.1, 121.9, 115.2 (d, $^2J_{CF}$ = 21.0 Hz), 50.9, 34.5, 21.0. IR (neat) ν_{max} 3129 (w), 2950 (w), 1609 (m), 1578 (m), 1516 (m), 1487 (m), 1450 (m), 1431 (s), 1382 (m), 1357 (m), 1269 (m), 1236 (m), 1131 (m), 1055 (m), 1024 (m), 973 (m), 809 (s) cm^{-1}. MS (ESI +ve) *m/z* 339 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{16}FN_4S^+$ 339.1074, found 339.1080 ([M + H]$^+$).

6-methyl-2-(1-(4-(trifluoromethyl)benzyl)-1*H*-1,2,3-triazol-4-yl)benzo[*d*]thiazole 76. **Following General Procedure A_1**, alkyne **43** (36 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **56** (84 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **76** (57 mg, 73%) as a

pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.87. Mp 175 ºC. ^{1}H NMR (400 MHz, DMSO) δ 9.05 (s, 1H), 7.94 (br s, 1H), 7.91 (d, *J* = 9.0 Hz, 1H), 7.77 (d, *J* = 8.4 Hz, 2H), 7.60 (d, *J* = 8.4 Hz, 2H), 7.36 (dd, *J* = 8.4, 1.2 Hz), 5.85 (s, 2H), 2.45 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 156.8, 151.33, 142.34, 140.2, 135.4, 134.0, 128.9 (q, $^2J_{CF}$ = 31.8 Hz), 128.8, 128.1, 125.7 (q, $^3J_{CF}$ = 3.8 Hz), 124.4 (q, $^1J_{CF}$ = 270.4 Hz), 124.2, 122.2, 122.0, 52.7, 21.0. IR (neat) ν_{max} 3138 (w), 2930 (w), 1609 (m), 1556 (m), 1507 (m), 1488 (m), 1454 (m), 1436 (s), 1323 (m), 1228 (s), 1174 (m), 1161 (m), 1119 (s), 1106 (m), 1066 (m), 949 (m), 808 (s) cm^{-1}. MS (ESI +ve) *m/z* 375 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 373 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{14}F_3N_4S^+$ 375.0886, found 375.0891 ([M + H]$^+$).

4-(2-(4-(6-methylbenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)ethyl)phenol 77. Following General Procedure A_2, alkyne **43** (36 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **62** (69 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **77** (57 mg, 81%) as a pale yellow solid after sequential trituration with CH_2Cl_2, MeCN, and hot MeOH. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.41. Mp 150 ºC (decomp). ^{1}H NMR (400 MHz, DMSO) δ 9.24 (s, 1H), 8.78 (s, 1H), 7.93 (br s, 1H), 7.89 (d, *J* = 8.4 Hz, 1H), 7.36 (dd, *J* = 8.4, 2.0 Hz, 1H), 7.00 (d, *J* = 8.0 Hz, 2H), 6.65 (d, *J* = 8.0 Hz, 2H), 4.66 (t, *J* = 7.2 Hz, 2H), 3.13 (t, *J* = 7.2 Hz, 2H), 2.49 (s, 3H). ^{13}C NMR (400 MHz, DMSO) δ 158.0, 156.0, 151.3, 141.8, 135.3, 133.9, 129.6, 128.0, 127.3, 123.6, 122.1, 121.9, 115.2, 51.3, 34.7, 21.0. IR (neat) ν_{max} 3128 (br), 2950 (w), 1609 (m), 1589 (m), 1516 (m), 1486 (m), 1449 (m), 1381 (w), 1357 (w), 1314 (s), 1296 (m), 1268 (m), 1237 (s), 1197 (m), 1175 (m), 1131 (m), 973 (m), 872 (s). MS (ESI +ve) *m/z* 337 ([M + H]$^+$, 100%); (ESI –ve) *m/z* 335 ([M – H]$^-$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{17}N_4OS^+$ 337.1118, found 337.1123 ([M + H]$^+$).

6-methyl-2-(1-(4-nitrobenzyl)-1*H*-1,2,3-triazol-4-yl)benzo[*d*]thiazole 78. Following General Procedure A_2, alkyne **43** (36 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **63** (75 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **78** (55 mg, 75%) as a pale yellow solid after sequential trituration with CH_2Cl_2, MeCN, and hot MeOH. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.44. Mp 152 ºC (decomp). ^{1}H NMR (500 MHz, DMSO) δ 9.06 (s, 1H), 8.25 (d, *J* = 9.0 Hz, 2H), 7.93 (br s, 1H), 7.90 (d, *J* = 8.5 Hz, 1H), 7.63 (d, *J* = 9.0 Hz, 2H), 7.36 (dd, *J* = 8.5, 2.0 Hz, 1H), 5.91 (s, 2H), 2.45 (s, 3H). ^{13}C NMR (500 MHz, DMSO) δ

157.7, 151.3, 147.4, 142.9, 142.4, 135.4, 134.0, 129.3, 128.1, 124.3, 124.0, 122.2, 122.0, 52.4, 21.1. IR (neat) ν_{max} 3108 (w), 2900 (w), 2106 (w), 1607 (m), 1515 (s), 1484 (m), 1451 (m), 1345 (s), 1312 (m), 1269 (s), 1228 (s), 1174 (m), 1131 (m), 1039 (m), 1016 (m), 947 (m), 815 (s), 775 (s). MS (ESI +ve) *m/z* 352 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{14}N_5O_2S^+$ 352.0863, found 352.0868 ([M + H]$^+$).

2-azidoethan-1-ol 84.[6] **Following General Procedure B**, alkyl bromide **79** (500 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **84** (315 mg, 90%) as a pale yellow oil which was used for the next reaction without further purification. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 99:1): R_f = 0.41. ^{1}H NMR (400 MHz, $CDCl_3$) δ 3.77 (t, *J* = 5.2 Hz, 2H), 3.44 (t, *J* = 5.2 Hz, 2H) 2.14 (br s, 1H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 61.6, 53.7. MS (ESI +ve) *m/z* 88 ([M + H]$^+$, 100%).

3-azidopropan-1-ol 85.[7] **Following General Procedure B**, alkyl bromide **80** (556 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **85** (390 mg, 96%) as a pale yellow oil which was used for the next reaction without further purification. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 99:1): R_f = 0.44. ^{1}H NMR (400 MHz, $CDCl_3$) δ 3.70 (t, *J* = 6.0 Hz, 2H), 3.41 (t, *J* = 6.0 Hz, 2H) 2.42 (br s, 1H), 1.79 (quint, *J* = 6.0 Hz, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 59.7, 48.5, 31.5. MS (ESI +ve) *m/z* 102 ([M + H]$^+$, 100%).

7-azidoheptan-1-ol 86.[8] **Following General Procedure B**, alkyl bromide **81** (780 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **86** (588 mg, 94%) as a pale yellow oil which was used for the next reaction without further purification. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.40. ^{1}H NMR (400 MHz, $CDCl_3$) δ 3.59 (t, *J* = 6.8 Hz, 2H), 3.35 (t, *J* = 6.8 Hz, 1H) 3.22 (t, *J* = 6.8 Hz, 2H), 1.58 – 1.49 (m, 4H), 1.36 – 1.26 (m, 6H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 62.8, 51.5, 32.8, 29.0, 28.8, 26.7, 25.7. MS (ESI +ve) *m/z* 158 ([M + H]$^+$, 100%).

8-azidooctan-1-ol 87.[9] **Following General Procedure B**, alkyl bromide **82** (836 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **87** (622 mg, 91%) as a pale yellow oil which was used for the next reaction without

further purification. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.38. ^{1}H NMR (400 MHz, $CDCl_3$) δ 3.60 (t, *J* = 6.4 Hz, 2H), 3.23 (t, *J* = 6.8 Hz, 2H), 1.75 (br s, 1H), 1.61 – 1.50 (m, 4H), 1.36 – 1.30 (m, 8H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 63.0, 51.5, 32.8, 29.3, 29.2, 28.9, 26.7, 25.7. MS (ESI +ve) *m/z* 172 ($[M + H]^+$, 100%).

2-(2-azidoethoxy)ethan-1-ol 88.[10] **Following General Procedure B**, alkyl bromide **83** (676 mg, 4.00 mmol) and NaN_3 (390 mg, 6.00 mmol) were stirred in anhydrous DMF (20 mL) to afford the azide **88** (499 mg, 95%) as a pale yellow oil which was used for the next reaction without further purification. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.41. ^{1}H NMR (400 MHz, $CDCl_3$) δ 3.78 – 3.74 (m, 2H), 3.71 – 3.69 (m, 2H) 3.63 – 3.61 (m, 2H), 3.43 – 3.41 (m, 2H), 2.38 (t, *J* = 6.0 Hz, 1H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 72.5, 70.1, 61.8, 50.8. MS (ESI +ve) *m/z* 132 ($[M + H]^+$, 100%).

2-(4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)ethan-1-ol 89. **Following General Procedure A_1**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **84** (37 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **89** (49 mg, 84%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.74. Mp 178 ºC (decomp). ^{1}H NMR (400 MHz, DMSO) δ 8.78 (s, 1H), 7.91 (d, *J* = 8.8 Hz, 1H), 7.73 (d, *J* = 2.4 Hz, 1H), 7.14 (dd, *J* = 8.8, 2.4 Hz, 1H), 5.09 (t, *J* = 5.2 Hz, 1H), 4.52 (t, *J* = 5.6 Hz, 2H), 3.86 (s, 3H), 3.85 (dt, *J* = 5.6, 5.2 Hz, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 157.5, 156.6, 147.6, 141.8, 135.3, 123.7, 123.1, 115.9, 105.0, 59.6, 55.7, 52.7. IR (neat) ν_{max} 3216 (br), 2922 (w), 2853 (w), 1608 (m), 1560 (w), 1434 (m), 1420 (m), 1258 (s), 1229 (s), 1081 (s), 1069 (m), 959 (m), 834 (s), 715 (w), 676 (m) cm^{-1}. MS (ESI +ve) *m/z* 277 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{12}H_{13}N_4O_2S^+$ 277.0754, found 277.0754 ($[M + H]^+$).

3-(4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)propan-1-ol 90.[11] **Following General Procedure A_1**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **85** (43 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **90** (50 mg, 82%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH –

95:5): R_f = 0.77. Mp 131 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.85 (s, 1H), 7.91 (d, *J* = 8.8 Hz, 1H), 7.73 (d, *J* = 2.4 Hz, 1H), 7.15 (dd, *J* = 8.8, 2.4 Hz, 1H), 4.71 (t, *J* = 5.2 Hz, 1H), 4.53 (t, *J* = 6.8 Hz, 2H), 3.85 (s, 3H), 3.44 (dt, *J* = 6.8, 5.2 Hz, 2H), 2.05 (quint, *J* = 6.8 Hz, 2H). ^{13}C NMR (400 MHz, DMSO) δ 157.5, 156.6, 147.6, 142.0, 135.4, 123.4, 123.1, 115.9, 105.0, 57.6, 55.7, 47.3, 32.7. IR (neat) ν_{max} 3306 (br), 2926 (w), 2834 (w), 1604 (m), 1556 (w), 1434 (m), 1411 (m), 1266 (s), 1223 (s), 1066 (s), 1040 (s), 950 (s), 838 (s), 711 (w), 679 (m) cm^{-1}. MS (ESI +ve) *m/z* 291 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{13}H_{15}N_4O_2S^+$ 291.0910, found 291.0910 ([M + H]$^+$).

7-(4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)heptan-1-ol 91. **Following General Procedure A$_1$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **86** (66 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **91** (55 mg, 76%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.67. Mp 108 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.87 (s, 1H), 7.90 (d, *J* = 8.8 Hz, 1H), 7.73 (d, *J* = 2.4 Hz, 1H), 7.13 (dd, *J* = 8.8, 2.4 Hz, 1H), 4.46 (t, *J* = 6.8 Hz, 2H), 4.32 (t, *J* = 5.2 Hz, 1H), 3.85 (s, 3H), 3.35 (dt, *J* = 6.8, 5.2 Hz, 2H), 1.89 (quint, *J* = 6.8 Hz, 2H), 1.42 – 1.25 (m, 8H). ^{13}C NMR (400 MHz, DMSO) δ 157.5, 156.6, 147.6, 142.0, 135.4, 123.2, 123.1, 115.9, 104.9, 60.6, 55.7, 49.9, 32.5, 29.5, 28.3, 25.8, 25.3. IR (neat) ν_{max} 3423 (br), 3128 (w), 2930 (m), 2854 (m), 1609 (m), 1554 (w), 1493 (s), 1436 (s), 1268 (s), 1216 (s), 1070 (s), 1057 (m), 944 (s), 833 (s), 704 (w), 666 (m) cm^{-1}. MS (ESI +ve) *m/z* 347 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{23}N_4O_2S^+$ 347.1536, found 347.1542 ([M + H]$^+$).

8-(4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)octan-1-ol 92. **Following General Procedure A$_1$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **87** (72 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **92** (56 mg, 74%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.66. Mp 106 ºC. ^{1}H NMR (400 MHz, DMSO) δ 8.87 (s, 1H), 7.90 (d, *J* = 8.8 Hz, 1H), 7.73 (d, *J* = 2.4 Hz, 1H), 7.14 (dd, *J* = 8.8, 2.4 Hz, 1H), 4.46 (t, *J* = 6.8 Hz, 2H), 4.30 (t, *J* = 5.2 Hz, 1H), 3.85 (s, 3H), 3.36 (dt, *J* = 6.8, 5.2 Hz, 2H), 1.93 – 1.86 (m, 2H), 1.41 – 1.23 (m, 10H). ^{13}C NMR (400 MHz, DMSO) δ 157.5, 156.6, 147.6, 142.0, 135.3, 123.2, 123.1, 115.9, 104.9, 60.7, 55.7, 49.9, 32.5, 29.5, 28.7, 28.4, 25.7, 25.4. IR (neat)

ν_{max} 3425 (br), 3127 (w), 2929 (m), 2852 (m), 1609 (m), 1554 (w), 1493 (s), 1435 (s), 1269 (s), 1215 (s), 1070 (s), 1056 (m), 945 (s), 836 (s), 704 (w), 667 (m) cm^{-1}. MS (ESI +ve) *m/z* 361 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{18}H_{25}N_4O_2S^+$ 361.1693, found 361.1693 ($[M + H]^+$).

2-(2-(4-(6-methoxybenzo[*d*]thiazol-2-yl)-1*H*-1,2,3-triazol-1-yl)ethoxy)ethan-1-ol 93. **Following General Procedure A$_1$**, alkyne **25** (40 mg, 0.21 mmol), $CuSO_4.5H_2O$ (5 mg, 0.02 mmol), sodium ascorbate (8 mg, 0.04 mmol), and azide **88** (55 mg, 0.42 mmol) were stirred in *t*-BuOH/H_2O (1:1, 4.2 mL) to afford the 1,4-disubstituted-1,2,3-triazole **93** (49 mg, 73%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.54. Mp 106 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.38 (s, 1H), 7.89 (d, *J* = 8.8 Hz, 1H), 7.39 (d, *J* = 2.4 Hz, 1H), 7.09 (dd, *J* = 8.8, 2.4 Hz, 1H), 4.66 (t, *J* = 5.2 Hz, 2H), 3.95 (t, *J* = 5.2 Hz, 2H), 3.89 (s, 3H), 3.76 (t, *J* = 5.2 Hz, 2H), 3.61 (t, *J* = 5.2 Hz, 2H), 2.34 (br s, 1H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 158.1, 157.2, 148.2, 143.5, 136.2, 123.5, 122.9, 116.1, 104.3, 72.9, 69.3, 61.8, 56.0, 50.8. IR (neat) ν_{max} 3258 (br), 3153 (w), 2958 (m), 2836 (m), 1608 (m), 1560 (s), 1490 (s), 1431 (s), 1260 (s), 1223 (s), 1062 (s), 1040 (m), 940 (s), 827 (s), 700 (w), 656 (m) cm^{-1}. MS (ESI +ve) *m/z* 321 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{14}H_{17}N_4O_3S^+$ 321.1016, found 321.1021 ($[M + H]^+$).

6-methoxybenzo[*d*]thiazole-2-carboxylic acid 95.[12] To a solution of benzothiazole nitrile **94** (1.00 g, 5.26 mmol) in EtOH (30 mL) was added a solution of 1.0 N NaOH (6.0 mL, 6.00 mmol). The reaction was stirred at reflux for 18 h. The EtOH was removed under reduced pressure at 40 ºC, and the minimum volume of H_2O was added to the residue to dissolve completely any solid material. A solution of 18% HCl (1.6 mL) was added until pH reached 3, yielding a yellow precipitate. The resulting precipitate was collected by filtration, washed with H_2O (30 mL), and dried *in vacuo* to afford the benzothiazole carboxylic acid **95** (1.01 g, 92%) as a pale yellow solid. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.53. ^{1}H NMR (400 MHz, DMSO) δ 8.06 (d, *J* = 9.2 Hz, 1H), 7.74 (d, *J* = 2.0 Hz, 1H), 7.22 (dd, *J* = 9.2, 2.0 Hz, 1H), 3.86 (s, 3H). ^{13}C NMR (400 MHz, DMSO) δ 161.6, 159.0, 158.0, 147.5, 138.3, 125.4, 117.4, 104.5, 55.9. MS (ESI +ve) *m/z* 208 ($[M – H]^–$, 100%).

6-methoxy-*N*-(6-methylpyridin-3-yl)benzo[*d*]thiazole-2-carboxamide 109. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **96** (52

mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **109** (101 mg, 70%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 97:3). TLC (CH_2Cl_2/MeOH – 97:3): R_f = 0.63. Mp 114 ºC. ^{1}H NMR (400 MHz, DMSO) δ 11.17 (br s, 1H), 8.93 (br s, 1H), 8.15 (dd, *J* = 8.4, 2.4 Hz, 1H), 8.05 (d, *J* = 9.2 Hz, 1H), 7.82 (d, *J* = 2.0 Hz, 1H), 7.29 – 7.23 (m, 2H), 3.88 (s, 3H), 2.45 (s, 3H). ^{13}C NMR (400 MHz, DMSO) δ 161.2, 158.8, 158.5, 153.4, 147.0, 141.5, 138.3, 132.3, 128.4, 124.8, 122.8, 117.4, 102.8, 55.9, 23.4. IR (neat) ν_{max} 3200 (w), 3088 (w), 1652 (m), 1605 (s), 1555 (s), 1492 (s), 1450 (m), 1430 (m), 1330 (m), 1293 (s), 1263 (s), 1226 (m), 1182 (m), 1045 (m), 1026 (m), 876 (m), 835 (m), 741 (m) cm^{-1}. MS (ESI +ve) *m/z* 300 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{15}H_{14}N_3O_2S^+$ 300.0801, found 300.0807 ([M + H]$^+$).

6-methoxy-*N*-(pyridin-4-yl)benzo[*d*]thiazole-2-carboxamide 110. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **97** (45 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **110** (105 mg, 77%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.46. Mp 220 ºC (decomp). ^{1}H NMR (500 MHz, DMSO) δ 11.41 (s, 1H), 8.52 (d, *J* = 6.5 Hz, 2H), 8.11 (d, *J* = 9.0 Hz, 1H), 7.93 (d, *J* = 6.5 Hz, 2H), 7.84 (d, *J* = 2.5 Hz, 1H), 7.27 (dd, *J* = 9.0, 2.5 Hz, 1H), 3.89 (s, 3H). ^{13}C NMR (500 MHz, DMSO) δ 160.8, 159.3, 158.9, 150.4, 147.0, 145.0, 138.5, 125.0, 117.7, 114.5, 104.8, 55.9. IR (neat) ν_{max} 2944 (w), 2840 (w), 2224 (w), 1741 (m), 1682 (m), 1596 (m), 1551 (m), 1495 (s), 1432 (m), 1326 (m), 1275 (m), 1226 (s), 1209 (s), 1187 (m), 1044 (m), 1024 (m), 907 (m), 830 (m), 810 (s) cm^{-1}. MS (ESI +ve) *m/z* 286 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{14}H_{12}N_3O_2S^+$ 286.0645, found 286.0645 ([M + H]$^+$).

(3-cyanophenyl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 111. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **98** (57 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **111** (111 mg, 75%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.39. Mp 168 ºC. ^{1}H NMR (500 MHz, $CDCl_3$) δ 9.30 (s, 1H), 8.16 (s, 1H), 7.98 (d, *J* = 9.0 Hz, 1H), 7.95 – 7.93 (m, 1H), 7.50 – 7.46 (m, 2H), 7.40 (d, *J* = 2.0 Hz, 1H), 7.19 (dd, *J* = 9.0, 2.5 Hz, 1H), 3.92 (s, 3H). ^{13}C NMR (500 MHz,

$CDCl_3$) δ 160.2, 159.6, 158.2, 147.2, 139.2, 138.1, 130.3, 128.3, 125.3, 123.9, 122.9, 118.4, 118.0, 113.5, 104.1, 56.0. IR (neat) ν_{max} 3329 (m), 2956 (w), 2224 (m), 1784 (w), 1675 (m), 1589 (m), 1533 (s), 1499 (s), 1426 (s), 1326 (m), 1259 (m), 1237 (m), 1218 (s), 1188 (m), 1044 (m), 1023 (m), 886 (m), 849 (s), 789 (s), 674 (s) cm^{-1}. MS (ESI –ve) *m/z* 308 ($[M - H]^-$, 100%). HRMS (ESI –ve TOF) calcd for $C_{16}H_{10}N_3O_2S^-$ 308.0499, found 308.0488 ($[M - H]^-$).

***N*-(5-fluoropyridin-3-yl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 112**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **99** (54 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 μL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **112** (106 mg, 73%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.60. Mp 204 ºC. ^{1}H NMR (500 MHz, DMSO) δ 11.37 (br s, 1H), 8.72 (s, 1H), 8.46 – 8.41 (m, 1H), 8.09 (d, *J* = 9.2 Hz, 1H), 7.83 (d, *J* = 2.0 Hz, 1H), 7.27 – 7.22 (m, 2H), 3.88 (s, 3H). ^{13}C NMR (125 MHz, DMSO) δ 160.9, 159.2 (d, $^1J_{CF}$ = 232.5 Hz), 158.8, 158.7, 147.0, 139.5 (d, $^2J_{CF}$ = 15.6 Hz), 138.4, 134.3, 133.2, 124.9, 117.6, 109.4 (d, $^2J_{CF}$ = 39.1 Hz), 104.8, 55.9. IR (neat) ν_{max} 3254 (br), 3066 (w), 1686 (m), 1590 (m), 1540 (s), 1499 (s), 1448 (m), 1426 (m), 1333 (m), 1312 (s), 1296 (s), 1247 (s), 1228 (m), 1124 (m), 1048 (m), 1018 (m), 871 (m), 727 (s) cm^{-1}. MS (ESI +ve) *m/z* 304 ($[M + H]^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{14}H_{11}FN_3O_2S^+$ 304.0551, found 304.0556 ($[M + H]^+$).

***N*-(4-fluoropyridin-2-yl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 113**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **100** (54 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 μL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **113** (110 mg, 76%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.61. Mp 202 ºC. ^{1}H NMR (500 MHz, DMSO) δ 10.61 (br s, 1H), 8.49 – 8.47 (m, 1H), 8.12 (d, *J* = 9.2 Hz, 1H), 7.97 – 7.94 (m, 1H), 7.87 (d, *J* = 2.0 Hz, 1H), 7.28 (dd, *J* = 9.2, 2.0 Hz, 1H), 7.22 – 7.18 (m, 1H), 3.89 (s, 3H). ^{13}C NMR (125 MHz, DMSO) δ 169.0 (d, $^1J_{CF}$ = 255.8 Hz), 159.9, 159.0, 158.6, 152.7, 151.3, 146.8, 138.7, 125.2, 117.8, 108.7 (d, $^2J_{CF}$ = 17.4 Hz), 104.9, 101.7 (d, $^2J_{CF}$ = 23.4 Hz), 55.9. IR (neat) ν_{max} 3179 (br), 3071 (w), 1668 (m), 1595 (m), 1555 (s), 1507 (s), 1466 (m), 1427 (m), 1416 (m), 1329 (s), 1297 (s), 1258 (s), 1220 (m), 1130 (m), 1043 (m), 1016 (m), 857 (m), 767 (s) cm^{-1}.

MS (ESI +ve) *m/z* 304 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{14}H_{11}FN_3O_2S^+$ 304.0551, found 304.0556 ([M + H]$^+$).

***N*-(6-fluoropyridin-3-yl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 114**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **101** (54 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 μL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **114** (112 mg, 77%) as a brown solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.66. Mp 202 ºC. ^{1}H NMR (500 MHz, DMSO) δ 11.50 (br s, 1H), 8.98 (s, 1H), 8.35 – 8.31 (m, 1H), 8.26 – 8.22 (m, 1H), 8.09 (d, *J* = 9.2 Hz, 1H), 7.82 (d, *J* = 2.0 Hz, 1H), 7.25 (dd, *J* = 9.2, 2.0 Hz), 3.88 (s, 3H). ^{13}C NMR (125 MHz, DMSO) δ 160.7, 158,5 (d, $^1J_{CF}$ = 252.0 Hz), 159.0, 158.9, 147.0, 138.5, 138.4, 136.1, 132.8 (d, $^2J_{CF}$ = 30.0 Hz), 125.0, 117.6, 114.4 (d, $^3J_{CF}$ = 22.5 Hz), 104.8, 55.9. IR (neat) ν_{max} 3234 (br), 3052 (w), 1656 (m), 1603 (m), 1532 (s), 1499 (s), 1449 (m), 1429 (m), 1381 (m), 1331 (m), 1298 (s), 1271 (s), 1220 (m), 1121 (m), 1045 (m), 1022 (m), 870 (m), 733 (s) cm^{-1}. MS (ESI +ve) *m/z* 304 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{14}H_{11}FN_3O_2S^+$ 304.0551, found 304.0556 ([M + H]$^+$).

***N*-(4-(hydroxymethyl)phenyl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 115**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **102** (59 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 μL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **115** (112 mg, 71%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 90:10). TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.35. Mp 158 ºC (decomp). ^{1}H NMR (400 MHz, $CDCl_3$) δ 10.93 (s, 1H), 8.08 (d, *J* = 9.2 Hz, 1H), 7.84 (d, *J* = 8.4 Hz, 2H), 7.81 (d, *J* = 2.4 Hz, 1H), 7.32 (d, *J* = 8.4 Hz, 2H), 7.25 (dd, *J* = 9.2, 2.4 Hz, 1H), 5.14 (t, *J* = 5.6 Hz, 1H), 4.48 (d, *J* = 5.6 Hz, 2H), 3.88 (s, 3H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 161.9, 158.6, 158.1, 147.1, 138.6, 138.3, 136.5, 126.8, 124.8, 120.4, 117.3, 104.8, 62.6, 55.8. IR (neat) ν_{max} 3452 (br), 3258 (br), 1645 (m), 1596 (m), 1529 (s), 1494 (s), 1412 (m), 1332 (m), 1269 (m), 1223 (s), 1186 (m), 1048 (m), 1018 (m), 977 (m), 910 (m), 876 (m), 824 (s), 733 (m) cm^{-1}. MS (ESI +ve) *m/z* 315 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{16}H_{15}N_2O_3S^+$ 315.0798, found 315.0798 ([M + H]$^+$).

6-methoxy-*N*-((6-methylpyridin-3-yl)methyl)benzo[*d*]thiazole-2-carboxamide 116. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol),

amine **103** (59 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **116** (123 mg, 82%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.71. Mp 201 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.44 (br s, 1H), 8.32 (br s, 1H), 7.96 (dd, *J* = 8.4, 2.4 Hz, 1H), 7.49 (d, *J* = 9.2 Hz, 1H), 7.37 (d, *J* = 2.0 Hz, 1H), 7.26 (d, *J* = 8.4 Hz, 1H), 7.14 (dd, *J* = 9.2, 2.0 Hz, 1H), 4.76 (d, *J* = 6.0 Hz, 2H) 3.90 (s, 3H), 2.34 (s, 3H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 161.1, 160.3, 159.0, 153.4, 149.9, 147.7, 139.0, 137.6, 132.2, 125.2, 121.7, 117.2, 104.0, 56.0, 44.7, 18.3. IR (neat) ν_{max} 3366 (m), 3300 (w), 1657 (s), 1604 (m), 1516 (s), 1497 (s), 1448 (m), 1428 (m), 1326 (s), 1263 (s), 1226 (m), 1226 (m), 1183 (m), 1058 (s), 1023 (m), 872 (m), 822 (s), 764 (m) cm^{-1}. MS (ESI +ve) *m/z* 314 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{16}H_{16}N_3O_2S^+$ 314.0958, found 314.0963 ([M + H]$^+$).

***N*-benzyl-6-methoxybenzo[*d*]thiazole-2-carboxamide 117**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **104** (51 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **117** (122 mg, 85%) as a white solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.76. Mp 155ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.89 (d, *J* = 9.2 Hz, 1H), 7.67 (br s, 1H), 7.40 – 7.30 (m, 5H), 7.13 (dd, *J* = 9.2, 2.0 Hz, 1H), 4.68 (d, *J* = 6.0 Hz, 2H) 3.90 (s, 3H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 161.1, 160.1, 159.1, 147.5, 139.0, 137.6, 129.0, 128.2, 127.9, 125.0, 117.4, 104.0, 56.0, 44.0. IR (neat) ν_{max} 3363 (w), 3296 (w), 1656 (s), 1603 (m), 1526 (s), 1495 (s), 1457 (m), 1428 (m), 1328 (m), 1265 (s), 1249 (m), 1228 (m), 1187 (m), 1055 (m), 1023 (m), 894 (m), 831 (s), 764 (s) cm^{-1}. MS (ESI +ve) *m/z* 299 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{16}H_{15}N_2O_2S^+$ 299.0849, found 299.0854 ([M + H]$^+$).

6-methoxy-*N*-(3-methylbenzyl)benzo[*d*]thiazole-2-carboxamide 118. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **105** (58 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **118** (125 mg, 83%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 98:2). TLC (CH_2Cl_2/MeOH – 98:2): R_f = 0.77. Mp 99 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.88 (d, *J* = 9.2 Hz, 1H), 7.64 (br s, 1H), 7.37 – 7.05 (m, 6H), 4.63 (s, 2H), 3.89 (s, 3H), 2.35 (s,

3H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 161.2, 160.1, 159.1, 147.5, 139.0, 138.7, 137.5, 128.9, 128.8, 128.7, 125.2, 125.0, 117.3, 104.0, 56.0, 44.0, 21.5. IR (neat) ν_{max} 3363 (w), 3296 (w), 1656 (s), 1603 (m), 1528 (s), 1495 (s), 1457 (m), 1431 (m), 1327 (m), 1263 (s), 1252 (m), 1227 (m), 1187 (m), 1055 (m), 1021 (m), 897 (s), 831 (s), 763 (s) cm^{-1}. MS (ESI +ve) *m/z* 313 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{17}N_2O_2S^+$ 313.1005, found 313.1011 ([M + H]$^+$).

***N*-(4-fluorobenzyl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 119**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **106** (60 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **119** (115 mg, 76%) as a yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.63. Mp 103 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.88 (d, *J* = 8.8 Hz, 1H), 7.70 (br s, 1H), 7.37 – 7.32 (m, 3H), 7.13 (dd, *J* = 8.8, 2.4 Hz, 1H), 7.05 – 7.01 (m, 2H), 4.64 (d, *J* = 6.4 Hz, 2H), 3.89 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ 162.4 (d, $^1J_{CF}$ = 244.6 Hz), 160.9, 160.0, 159.0, 147.4, 138.9, 133.4, 129.7 (d, $^3J_{CF}$ = 8.1 Hz), 124.9, 117.3, 156.7 (d, $^2J_{CF}$ = 21.2 Hz), 103.9, 55.9, 43.2. IR (neat) ν_{max} 33365 (m), 3010 (w), 1653 (s), 1603 (m), 1556 (s), 1456 (s), 1440 (m), 1425 (m), 1328 (m), 1304 (s), 1282 (s), 1255 (s), 1217 (m), 1118 (m), 1058 (m), 1025 (m), 848 (m), 747 (s) cm^{-1}. MS (ESI +ve) *m/z* 317 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{16}H_{14}FN_2O_2S^+$ 317.0755, found 317.0760 ([M + H]$^+$).

***N*-(3-fluorobenzyl)-6-methoxybenzo[*d*]thiazole-2-carboxamide 120**. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **107** (60 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 µL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **120** (103 mg, 68%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.69. Mp 122 ºC. ^{1}H NMR (400 MHz, DMSO) δ 9.67 (t, *J* = 6.4 Hz, 1H), 8.01 (d, *J* = 9.2 Hz, 1H), 7.78 (d, *J* = 2.4 Hz, 1H), 7.40 – 7.35 (m, 1H), 7.25 – 7.15 (m, 3H), 7.10 – 7.06 (m, 1H), 4.50 (d, *J* = 6.4 Hz, 2H), 3.87 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 162.2 (d, $^1J_{CF}$ = 242.0 Hz), 161.4, 159.7, 158.5, 147.1, 141.9 (d, $^3J_{CF}$ = 7.0 Hz), 138.0, 130.3 (d, $^3J_{CF}$ = 8.4 Hz), 124.6, 123.42 (d, $^4J_{CF}$ = 2.4 Hz), 117.2, 114.1 (d, $^2J_{CF}$ = 21.7 Hz), 113.7 (d, $^2J_{CF}$ = 20.7 Hz), 104.8, 55.8, 42.2. IR (neat) ν_{max} 3303 (m), 1655 (s), 1603 (m), 1589 (s), 1530 (s), 1495 (s), 1466 (m), 1448 (m), 1328 (m), 1301 (s), 1270 (s), 1248 (s), 1229 (m), 1149 (m), 1055 (m), 1023 (m), 888 (m), 831 (m), 733 (m) cm^{-1}. MS (ESI +ve) *m/z*

317 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{16}H_{14}FN_2O_2S^+$ 317.0755, found 317.0760 ([M + H]$^+$).

6-methoxy-*N*-(4-(trifluoromethyl)benzyl)benzo[*d*]thiazole-2-carboxamide 121. **Following General Procedure C**, benzothiazole carboxylic acid **95** (100 mg, 0.48 mmol), amine **108** (84 mg, 0.48 mmol), HOBT (72 mg, 0.48 mmol), EDCI (119 mg, 0.62 mmol), and DIPEA (334 μL, 1.92 mmol) were stirred in anhydrous DMF (4.8 mL) for 24 h to afford the amide **121** (129 mg, 73%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.71. Mp 123 ºC. ^{1}H NMR (400 MHz, DMSO) δ 9.74 (t, *J* = 6.4 Hz, 1H), 8.01 (d, *J* = 9.2 Hz, 1H), 7.78 (d, *J* = 2.8 Hz, 1H), 7.70 (d, *J* = 8.0 Hz, 2H), 7.57 (d, *J* = 8.0 Hz, 2H), 7.22 (dd, *J* = 9.2, 2.8 Hz, 1H), 4.57 (d, *J* = 6.4 Hz, 2H), 3.87 (s, 3H). ^{13}C NMR (100 MHz, DMSO) δ 161.3, 159.8, 158.5, 147.1, 143.8, 138.0, 128.1, 127.7 (q, $^2J_{CF}$ = 31.8 Hz), 126.5 (q, $^3J_{CF}$ = 3.5 Hz), 125.2 (q, $^1J_{CF}$ = 270.4 Hz), 124.6, 117.2, 104.8, 55.8, 42.4. IR (neat) ν_{max} 3392 (m), 1676 (m), 1620 (m), 1602 (s), 1554 (s), 1494 (s), 1453 (m), 1436 (m), 1332 (m), 1300 (s), 1270 (s), 1247 (s), 1224 (m), 1150 (m), 1056 (m), 1015 (m), 848 (m), 831 (m), 747 (m) cm^{-1}. MS (ESI +ve) *m/z* 367 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{14}F_3N_2O_2S^+$ 367.0723, found 367.0728 ([M + H]$^+$).

Sodium 6-methoxybenzo[*d*]thiazole-2-carboxylate 122.[13] To a solution of benzothiazole carboxylic acid **95** (500 mg, 2.39 mmol) in MeOH (25 mL) was added a solution of 0.1 M NaOH (25 mL, 2.50 mmol), and the reaction was stirred at rt for 2 h. The solvents were removed under reduced pressure at 40 ºC, and the resulting material suspended in H_2O (1.0 mL) and EtOH (5.0 mL), and evaporated to dryness. The solid was dissolved in CH_2Cl_2, and evaporated to afford the benzothiazole salt **122** (520 mg, 98%) as a pale yellow solid. The spectroscopic data was in agreement with that previously reported. TLC (CH_2Cl_2/MeOH – 90:10): R_f = 0.73. ^{1}H NMR (400 MHz, DMSO) δ 7.92 (d, *J* = 8.8 Hz, 1H), 7.57 (d, *J* = 2.8 Hz, 1H), 7.09 (dd, *J* = 8.8, 2.8 Hz, 1H), 3.82 (s, 3H). ^{13}C NMR (400 MHz, DMSO) δ 170.1, 162.0, 157.6, 147.7, 138.0, 124.2, 115.4, 104.4, 55.6. MS (ESI) *m/z* 231 ([M], 100%).

4-cyanobenzyl 6-methoxybenzo[*d*]thiazole-2-carboxylate 127. **Following General Procedure D**, benzothiazole salt **122** (90 mg, 0.39 mmol) and alkyl bromide **123** (76 mg, 0.39 mmol) were stirred in anhydrous DMF (3.9 mL) for 24 h to afford the ester **127** (108 mg, 85%) as a yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 97:3). TLC (CH_2Cl_2/MeOH – 97:3): R_f = 0.79. Mp 120 ºC. ^{1}H NMR (500 MHz, $CDCl_3$) δ 8.11 (d, *J* = 8.8 Hz, 1H), 7.70 (d, *J* = 8.0 Hz, 2H), 7.61 (d, *J* = 8.0 Hz, 2H), 7.36 (d, *J* = 2.8 Hz, 1H), 7.19 (dd,

J = 8.8, 2.8 Hz, 1H), 5.53 (s, 2H), 3.91 (s, 3H). ^{13}C NMR (500 MHz, $CDCl_3$) δ 160.6, 160.0, 154.5, 148.0, 140.4, 139.0, 132.9, 128.9, 126.4, 118.6, 118.1, 112.7, 103.5, 67.0, 56.0. IR (neat) ν_{max} 2944 (w), 2840 (w), 2224 (m), 1741 (s), 1682 (w), 1604 (m), 1547 (m), 1494 (s), 1452 (m), 1325 (m), 1274 (m), 1236 (s), 1221 (m), 1179 (m), 1056 (m), 1028 (m), 903 (m), 858 (m), 830 (s), 751 (m) cm^{-1}. MS (ESI +ve) *m/z* 325 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{13}N_2O_3S^+$ 325.0641, found 325.0613 ([M + H]$^+$).

3-fluorobenzyl 6-methoxybenzo[*d*]thiazole-2-carboxylate 128. **Following General Procedure D**, benzothiazole salt **122** (90 mg, 0.39 mmol) and alkyl bromide **124** (74 mg, 0.39 mmol) were stirred in anhydrous DMF (3.9 mL) for 24 h to afford the ester **128** (109 mg, 88%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.71. Mp 89 ºC. ^{1}H NMR (500 MHz, DMSO) δ 8.10 (d, *J* = 8.8 Hz, 1H), 7.80 – 7.78 (m, 1H), 7.50 – 7.46 (m, 1H), 7.38 – 7.34 (m, 2H), 7.25 – 7.21 (m, 2H), 5.45 (s, 2H), 3.86 (s, 3H). ^{13}C NMR (125 MHz, DMSO) δ 162.2 (d, $^1J_{CF}$ = 242.8 Hz), 159.9, 159.4, 154.8, 147.3, 138.3, 138.0 (d, $^3J_{CF}$ = 7.6 Hz), 130.8, 125.8, 124.5, 118.0, 115.3 (d, $^2J_{CF}$ = 43.0 Hz), 115.3, 104.5, 66.9, 56.0. IR (neat) ν_{max} 3667 (w), 2951 (w), 2224 (w), 1740 (s), 1690 (m), 1599 (m), 1552 (m), 1493 (s), 1452 (m), 1433 (m), 1378 (m), 1331 (m), 1306 (m), 1247 (m), 1224 (s), 1180 (s), 1047 (m), 1024 (m), 956 (s), 873 (m), 738 (s) cm^{-1}. MS (ESI +ve) *m/z* 318 ([M + H]$^+$, 100%), 340 ([M + Na]$^+$, 20%). HRMS (ESI +ve TOF) calcd for $C_{16}H_{13}FNO_3S^+$ 318.0595, found 318.0595 ([M + H]$^+$).

4-(trifluoromethyl)benzyl 6-methoxybenzo[*d*]thiazole-2-carboxylate 129. **Following General Procedure D**, benzothiazole salt **122** (90 mg, 0.39 mmol) and alkyl bromide **125** (93 mg, 0.39 mmol) were stirred in anhydrous DMF (3.9 mL) for 24 h to afford the ester **129** (112 mg, 78%) as a pale yellow crystal after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 95:5). TLC (CH_2Cl_2/MeOH – 95:5): R_f = 0.81. Mp 106 ºC. ^{1}H NMR (500 MHz, DMSO) δ 8.11 (d, *J* = 8.8 Hz, 1H), 7.82 – 7.79 (m, 3H), 7.73 (d, *J* = 8.0 Hz, 2H), 7.25 (dd, *J* = 8.8, 2.4 Hz, 1H), 5.55 (s, 2H), 3.87 (s, 3H). ^{13}C NMR (125 MHz, DMSO) δ 159.9, 159.4, 154.7, 147.3, 140.1, 138.4, 128.9, 127.7 (q, $^2J_{CF}$ = 32.0 Hz), 126.6 (q, $^3J_{CF}$ = 3.2 Hz), 125.8, 125.6 (q, $^1J_{CF}$ = 270.4 Hz), 118.0, 104.5, 66.8, 56.0. IR (neat) ν_{max} 2965 (w), 2926 (w), 2840 (w), 1700 (m), 1600 (m), 1550 (m), 1498 (s), 1455 (m), 1434 (m), 1419 (m), 1381 (m), 1326 (s), 1305 (m), 1244 (s), 1223 (m), 1116 (s), 1107 (s), 1092 (s), 1066 (s), 1048 (s), 829 (s), 760 (m), 737 (m) cm^{-1}. MS (ESI +ve) *m/z* 368 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{13}F_3NO_3S^+$ 368.0563, found 368.0616 ([M + H]$^+$).

4-nitrophenethyl 6-methoxybenzo[*d*]thiazole-2-carboxylate 130. **Following General Procedure D**, benzothiazole salt **122** (90 mg, 0.39 mmol) and alkyl bromide **126** (90 mg, 0.39 mmol) were stirred in anhydrous DMF (3.9 mL) for 24 h to afford the ester **130** (105 mg, 75%) as a pale yellow solid after preparative TLC plate chromatography (CH_2Cl_2/MeOH – 97:3). TLC (CH_2Cl_2/MeOH – 97:3): R_f = 0.77. Mp 130 ºC. ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.19 (d, *J* = 8.4 Hz, 2H), 8.11 (d, *J* = 8.8 Hz, 1H), 7.48 (d, *J* = 8.4 Hz, 2H), 7.36 (d, *J* = 2.4 Hz, 1H), 7.19 (dd, *J* = 8.8, 2.4 Hz, 1H), 4.71 (t, *J* = 7.2 Hz, 2H), 3.91 (s, 3H), 3.27 (t, *J* = 7.2 Hz, 2H). ^{13}C NMR (400 MHz, $CDCl_3$) δ 160.5, 160.0, 154.7, 148.0, 147.2, 145.1, 138.9, 130.1, 126.4, 124.0, 118.0, 103.5, 66.0, 56.0, 35.1. IR (neat) ν_{max} 3122 (w), 2900 (w), 1609 (m), 1554 (s), 1520 (s), 1490 (m), 1433 (m), 1377 (m), 1356 (m), 1310 (m), 1270 (s), 1214 (m), 1159 (m), 1059 (m), 1025 (m), 898 (m), 811 (m) cm^{-1}. MS (ESI +ve) *m/z* 359 ([M + H]$^+$, 100%). HRMS (ESI +ve TOF) calcd for $C_{17}H_{15}N_2O_5S^+$ 359.0696, found 359.0697 ([M + H]$^+$).

3. ^{1}H NMR and ^{13}C NMR Spectra of Final Compounds

Figure S1. ^{1}H NMR for **30** (400 MHz, DMSO-d_6)

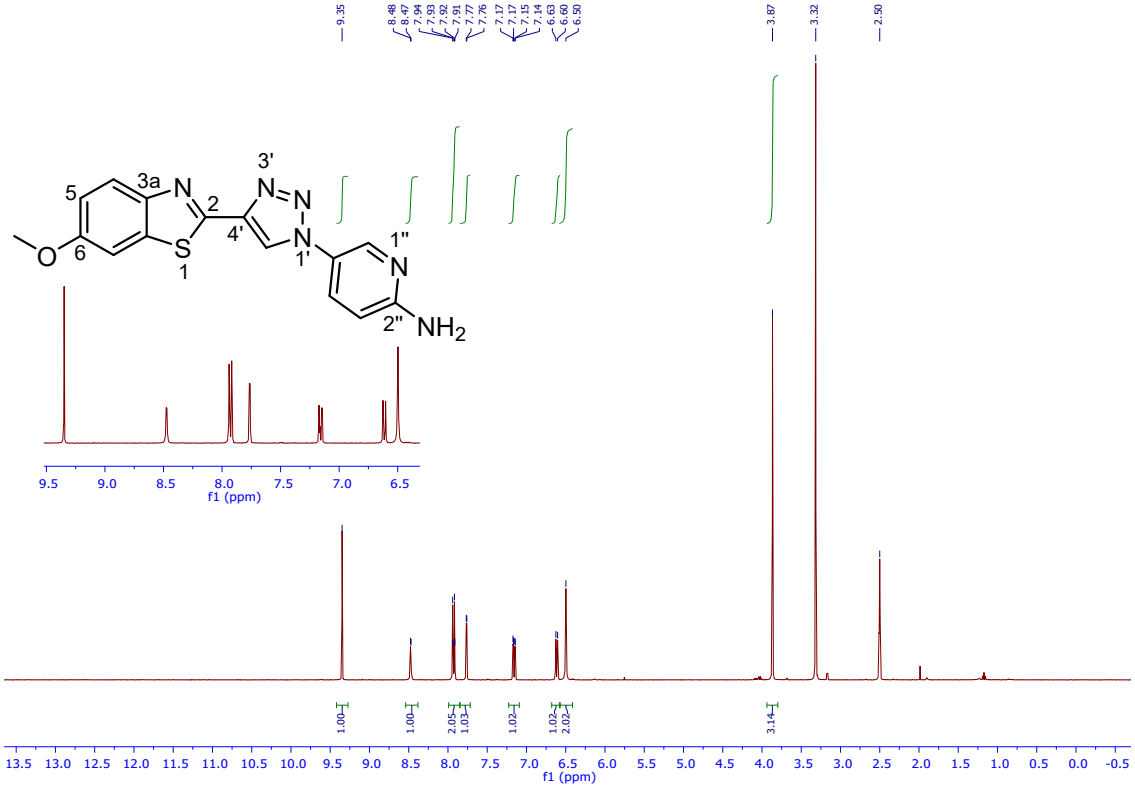


Figure S2. ^{13}C NMR for **30** (400 MHz, DMSO-d_6)

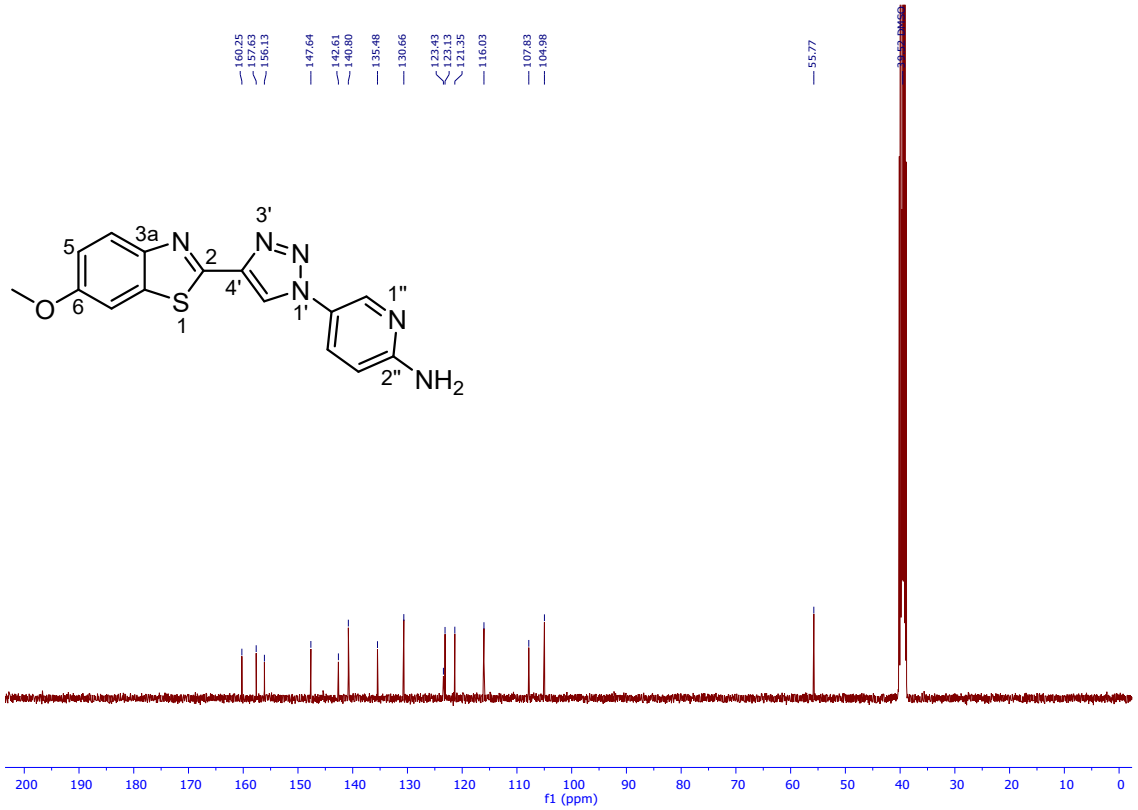


Figure S3. ^{1}H NMR for **31** (400 MHz, DMSO-d_6)

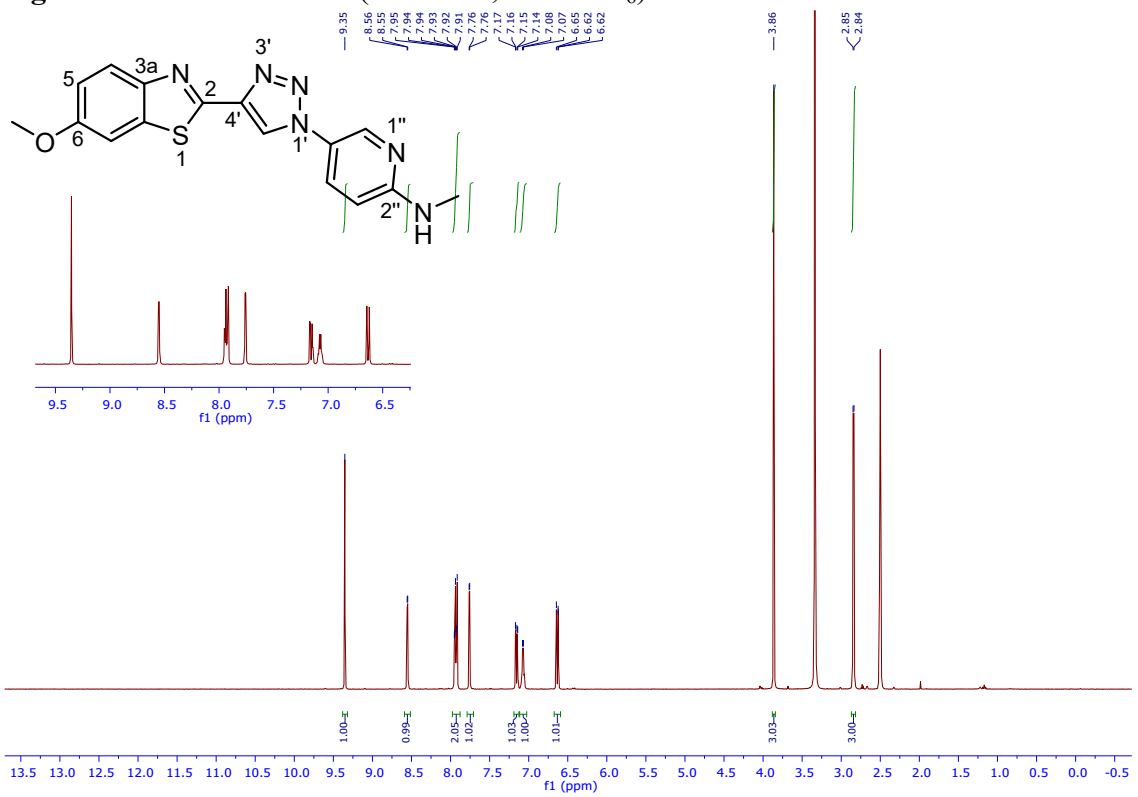


Figure S4. ^{13}C NMR for **31** (400 MHz, DMSO-d_6)

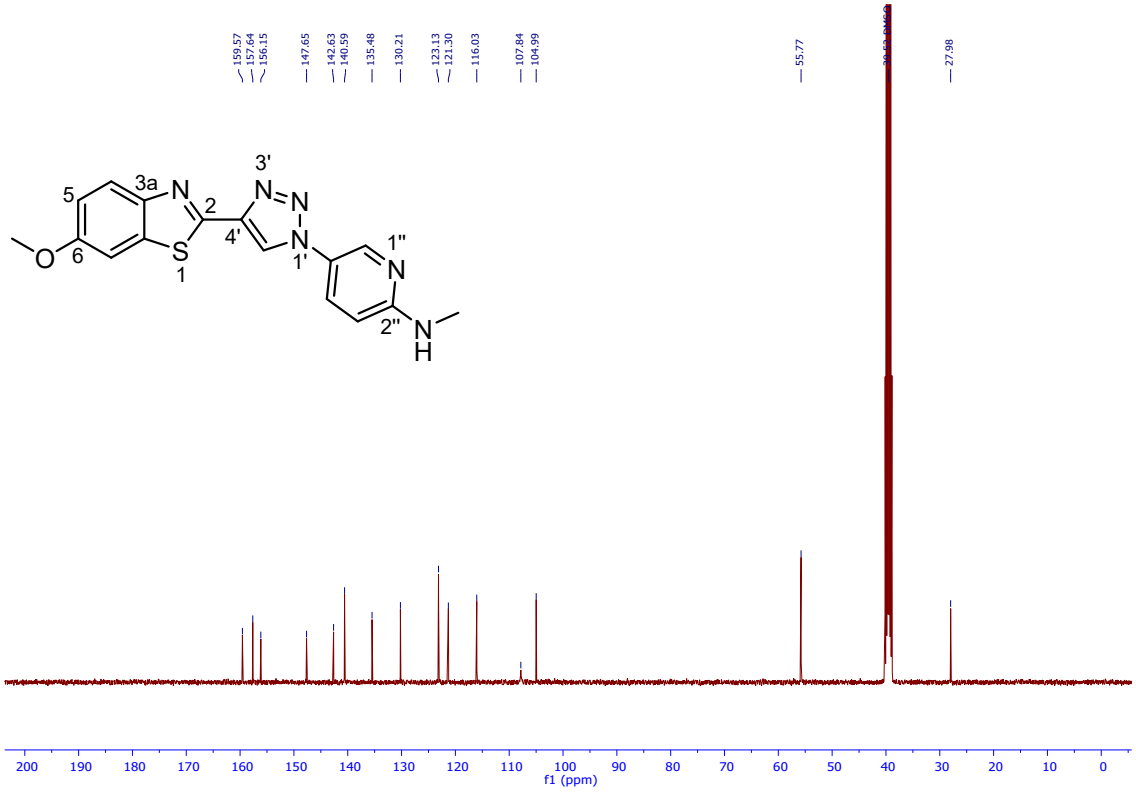


Figure S5. ^{1}H NMR for **32** (500 MHz, DMSO-d_6)

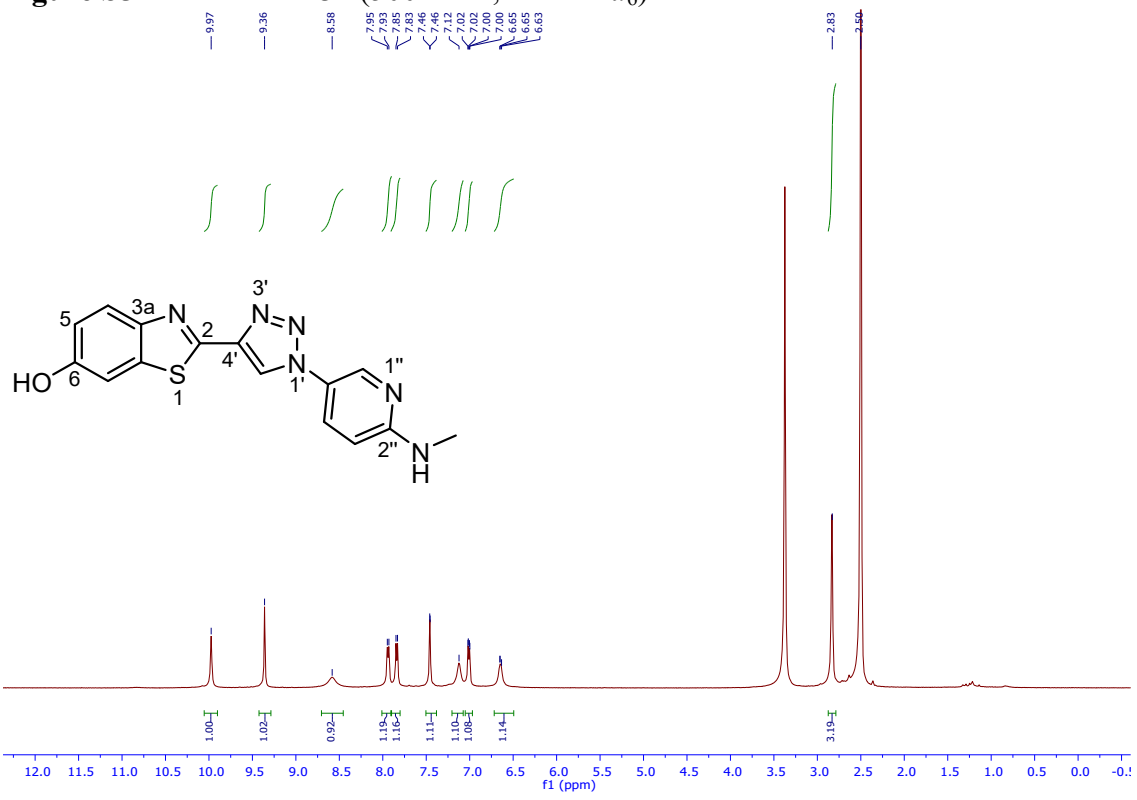


Figure S6. ^{13}C NMR for **32** (500 MHz, DMSO-d_6)

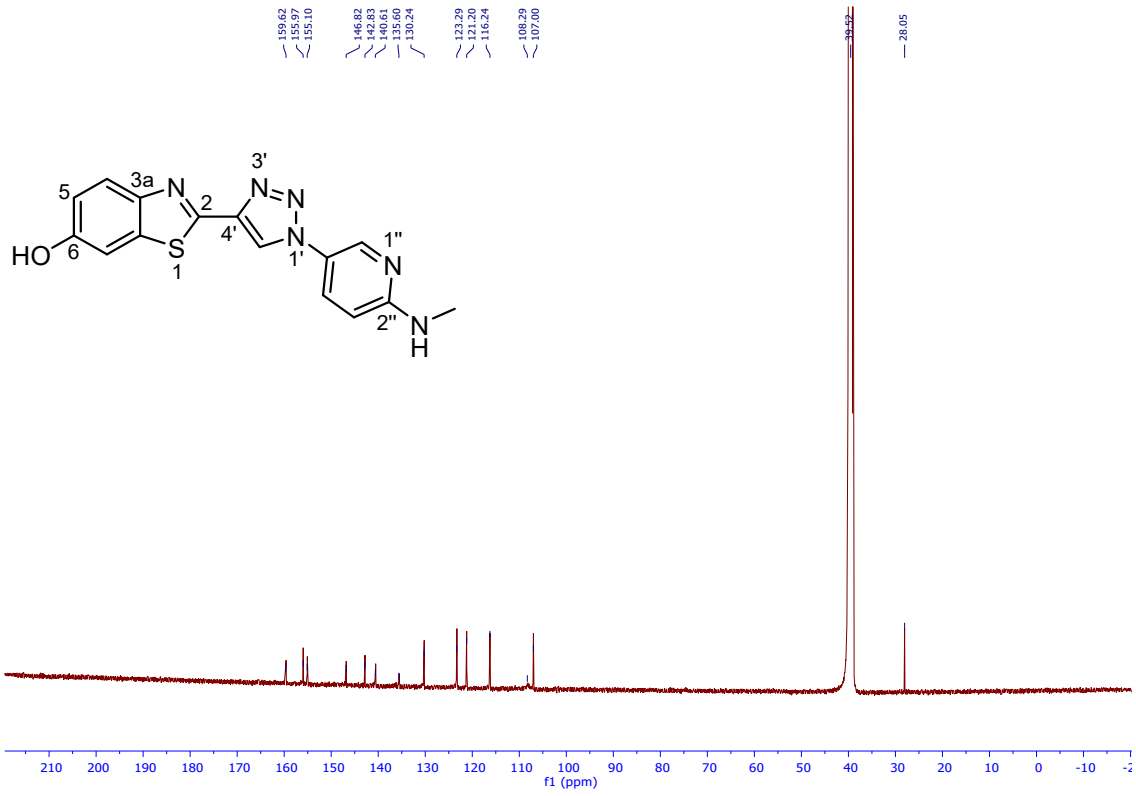


Figure S7. ^{1}H NMR for **64** (500 MHz, DMSO-d_6)

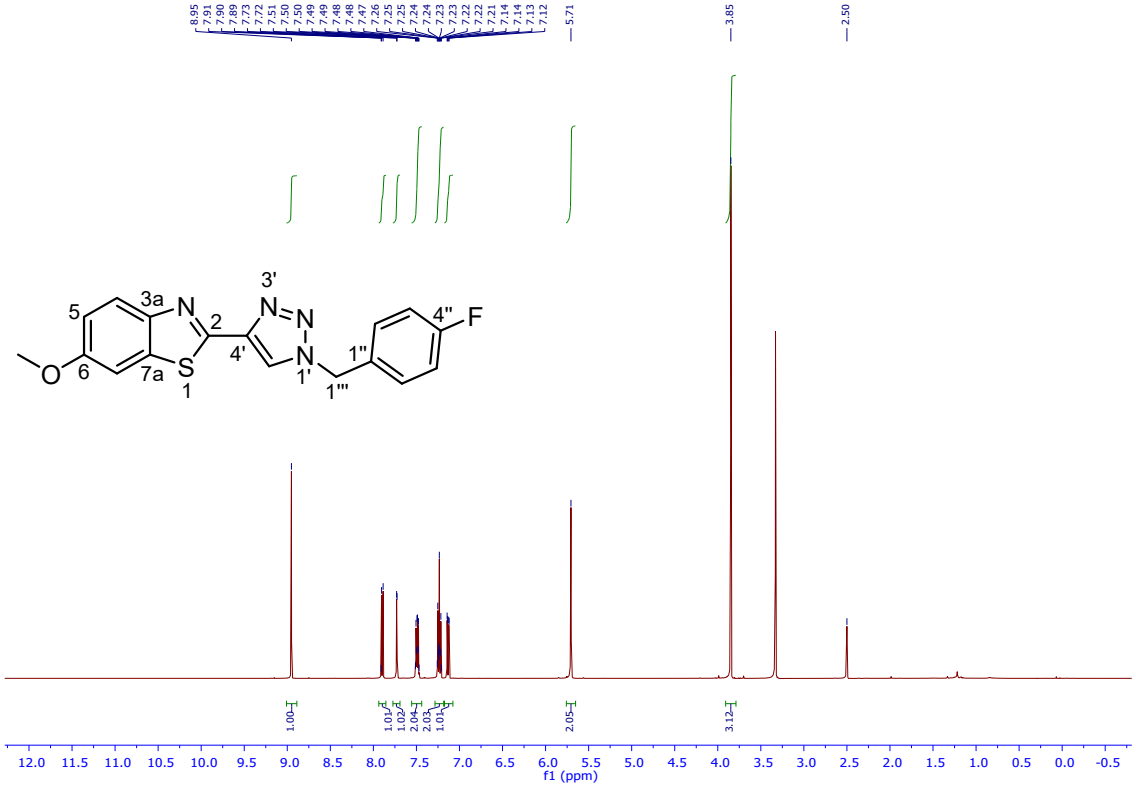


Figure S8. ^{13}C NMR for **64** (125 MHz, DMSO-d_6)

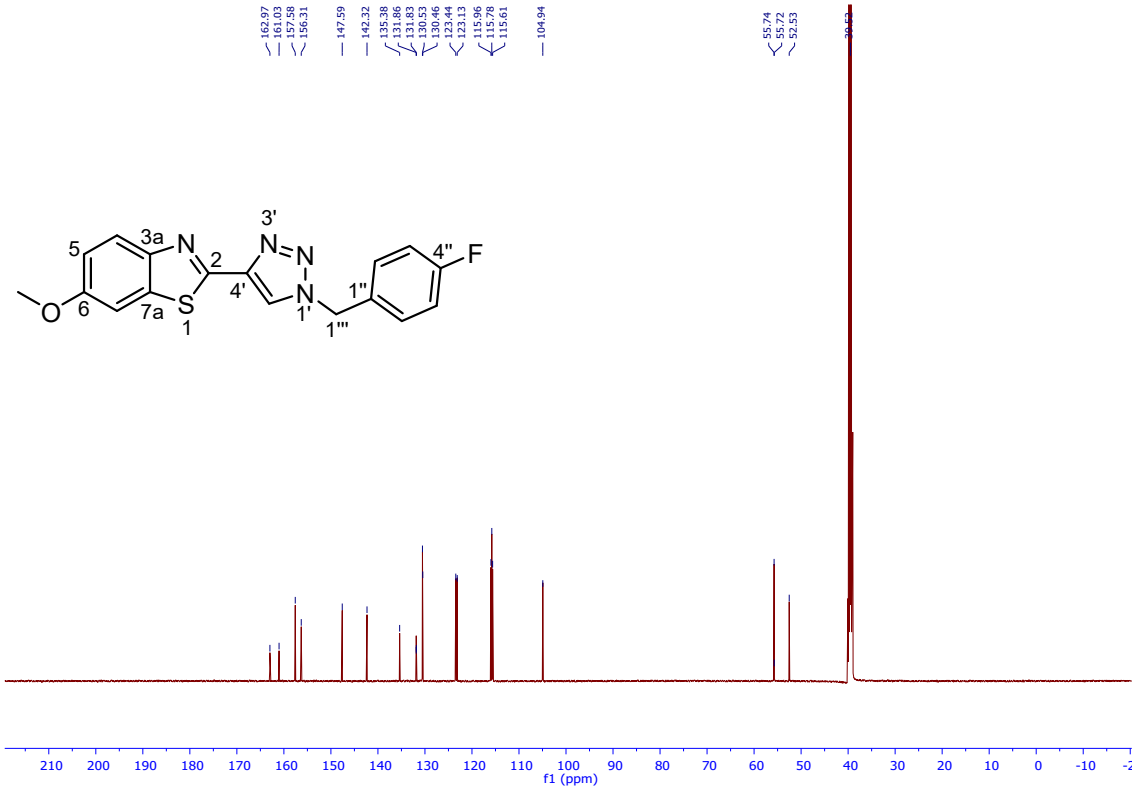


Figure S9. ^{1}H NMR for **65** (400 MHz, DMSO-d_6)

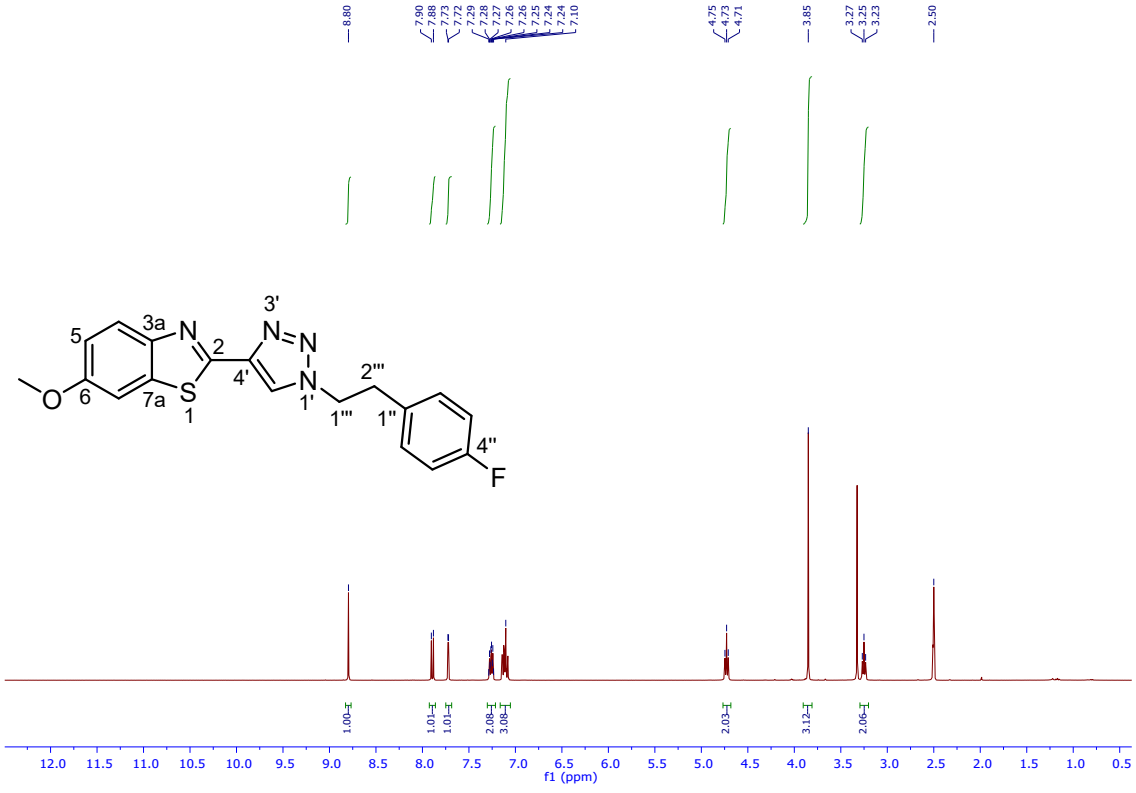


Figure S10. ^{13}C NMR for **65** (100 MHz, DMSO-d_6)

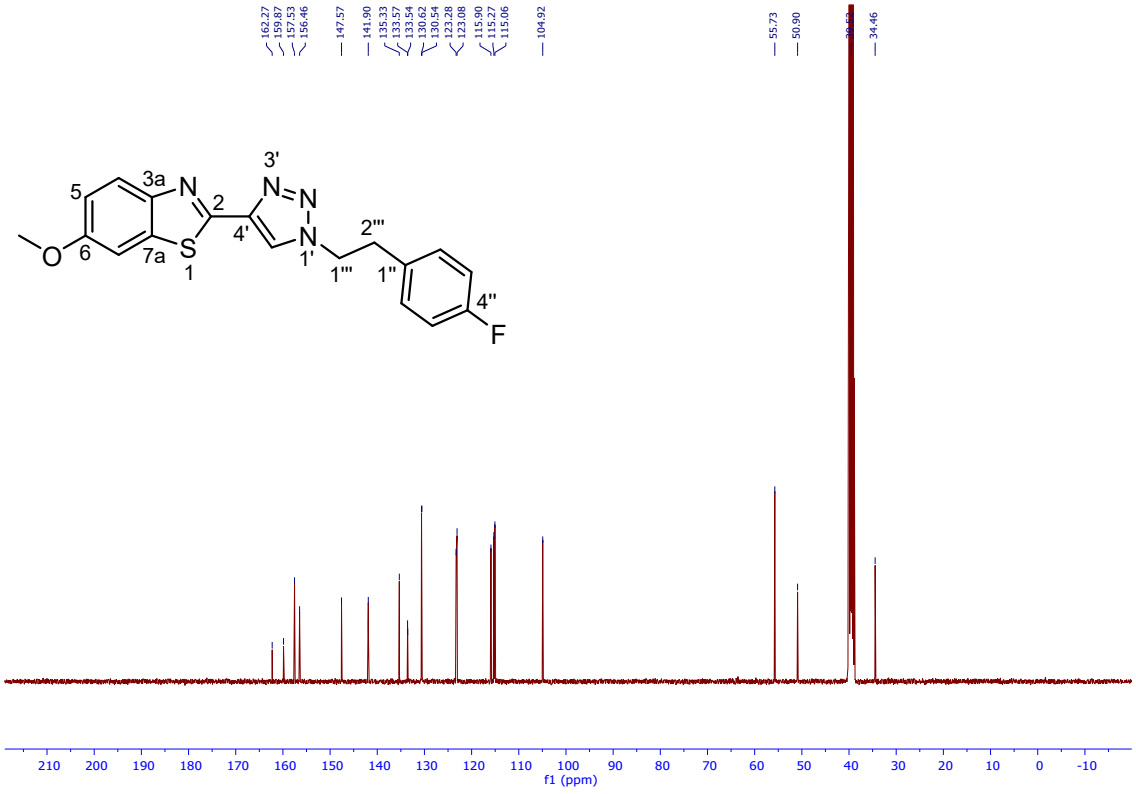


Figure S11. ^{1}H NMR for **66** (400 MHz, DMSO-d_6)

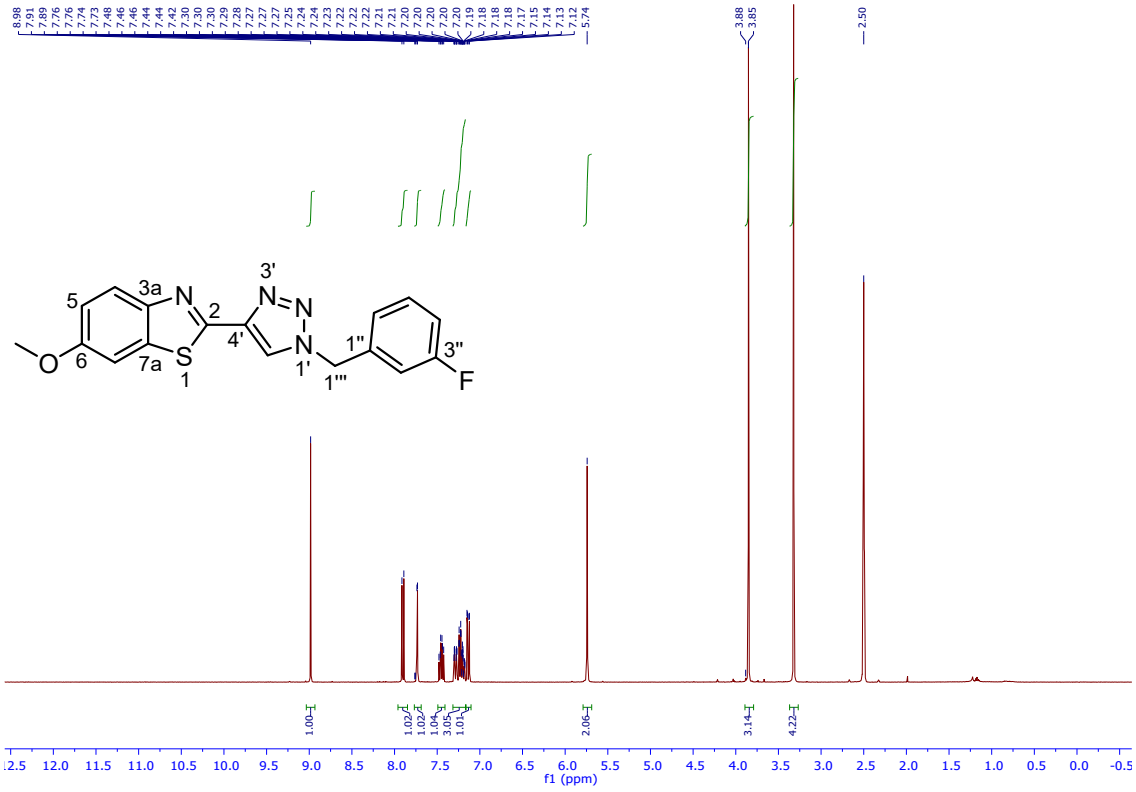


Figure S12. ^{13}C NMR for **66** (100 MHz, DMSO-d_6)

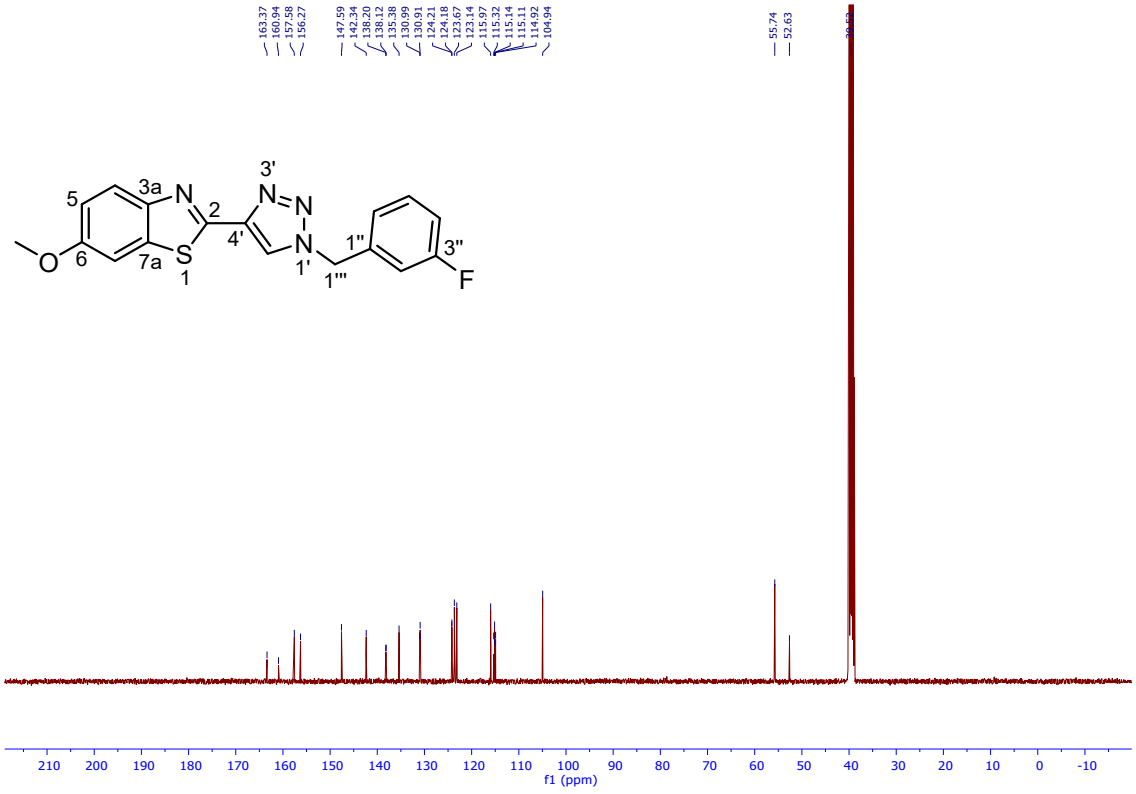


Figure S13. ^{1}H NMR for **67** (400 MHz, DMSO-d_6)

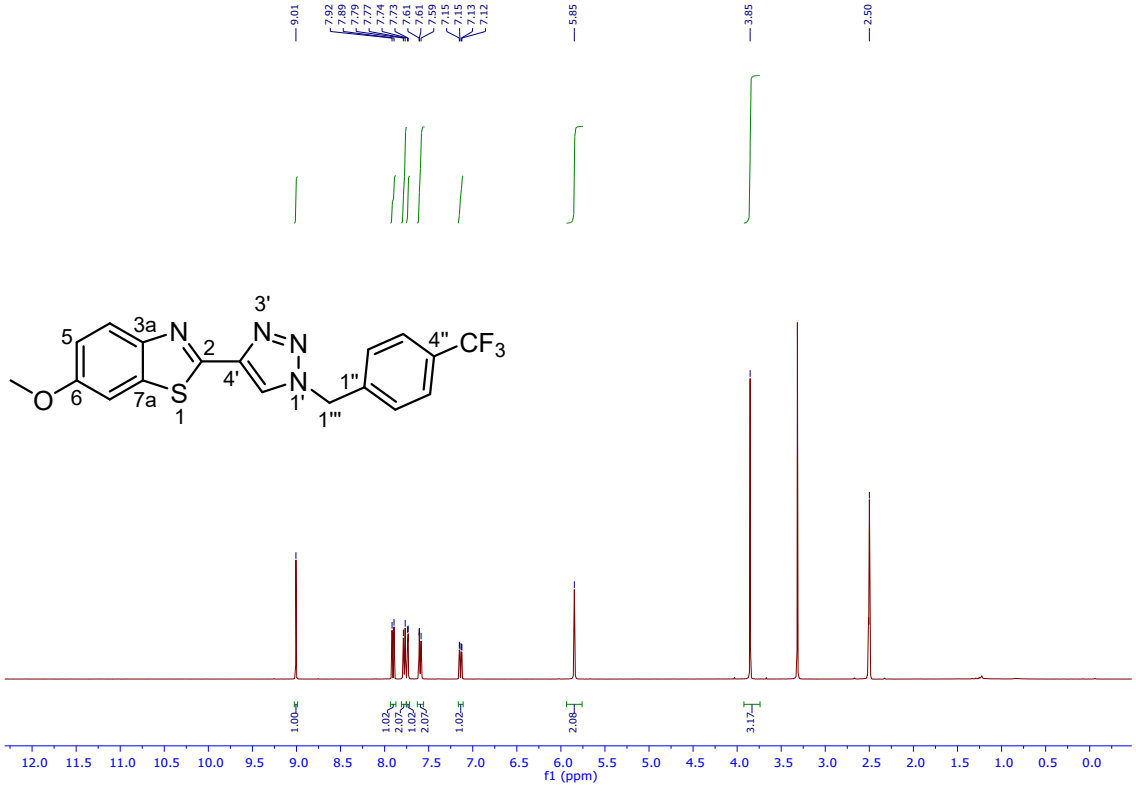


Figure S14. ^{13}C NMR for **67** (100 MHz, DMSO-d_6)

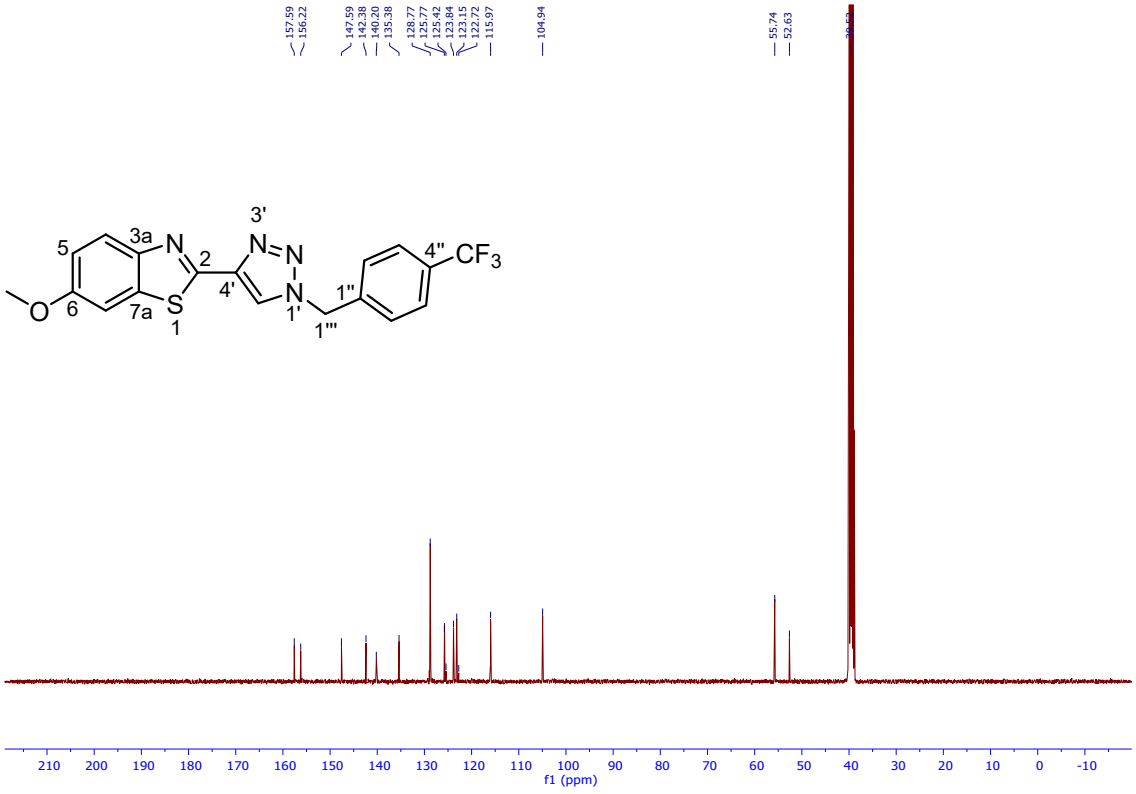


Figure S15. ^{1}H NMR for **68** (500 MHz, DMSO-d_6)

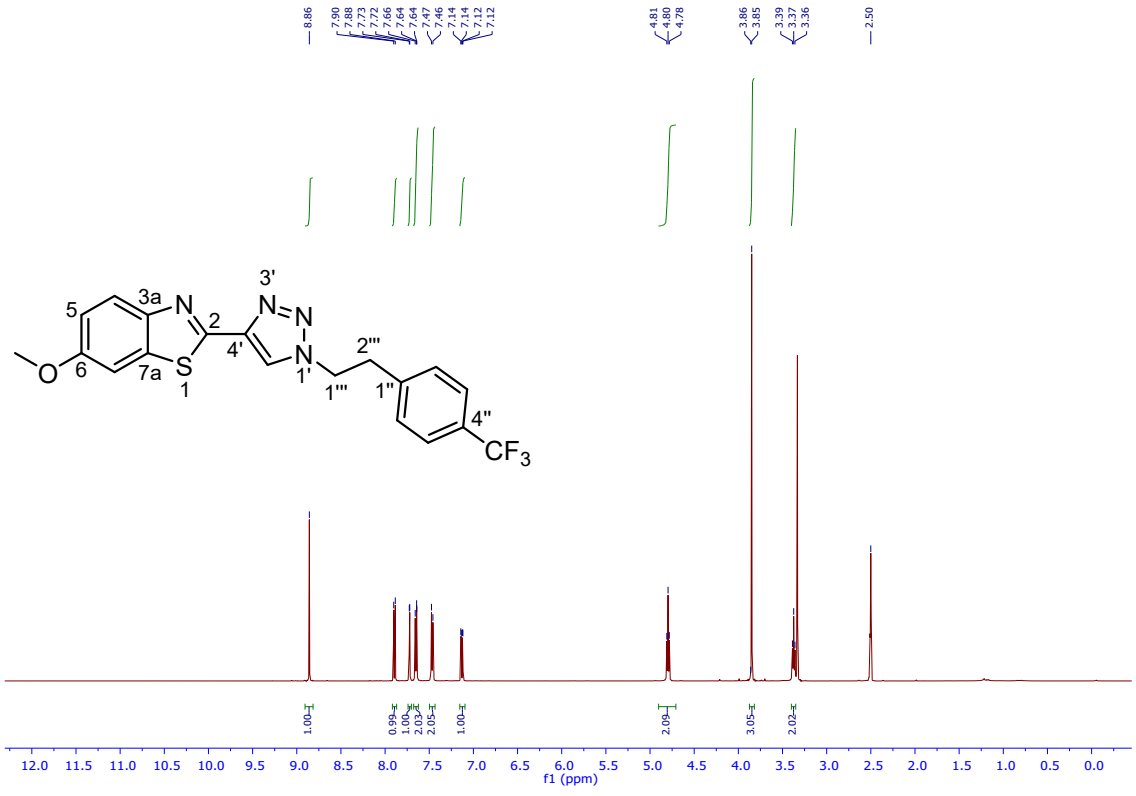


Figure S16. ^{13}C NMR for **68** (125 MHz, DMSO-d_6)

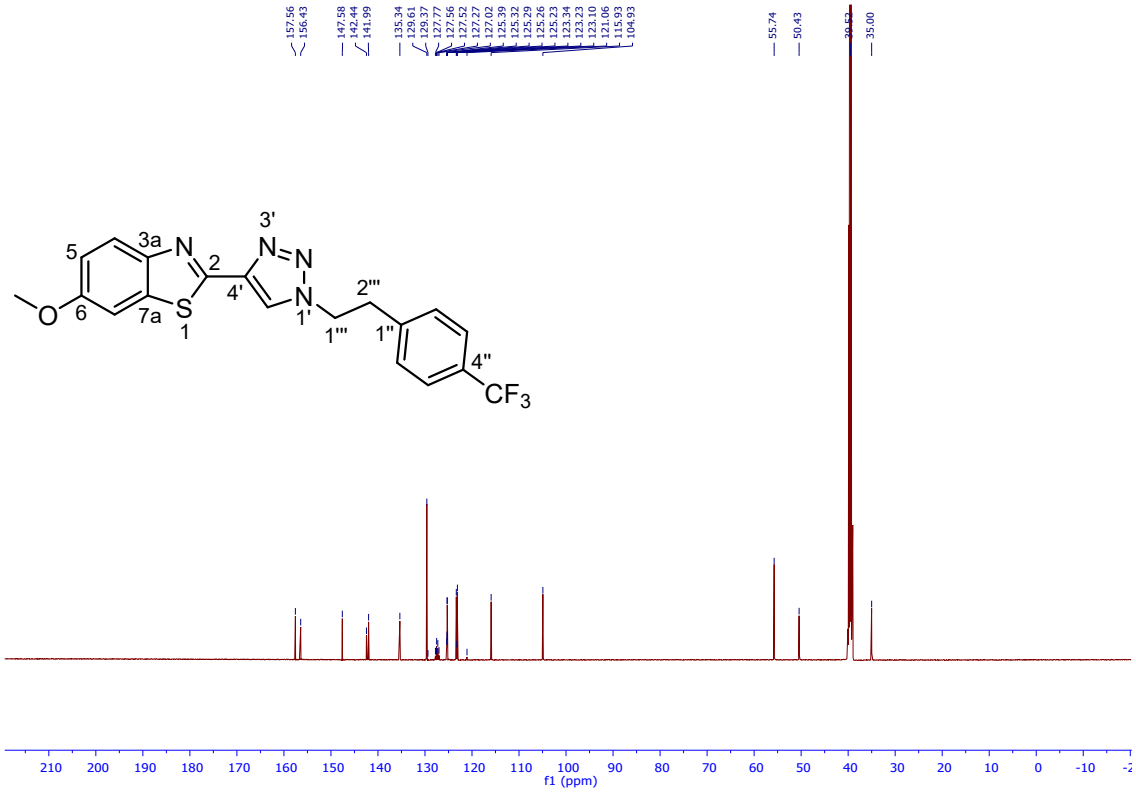


Figure S17. ^{1}H NMR for **69** (500 MHz, DMSO-d_6)

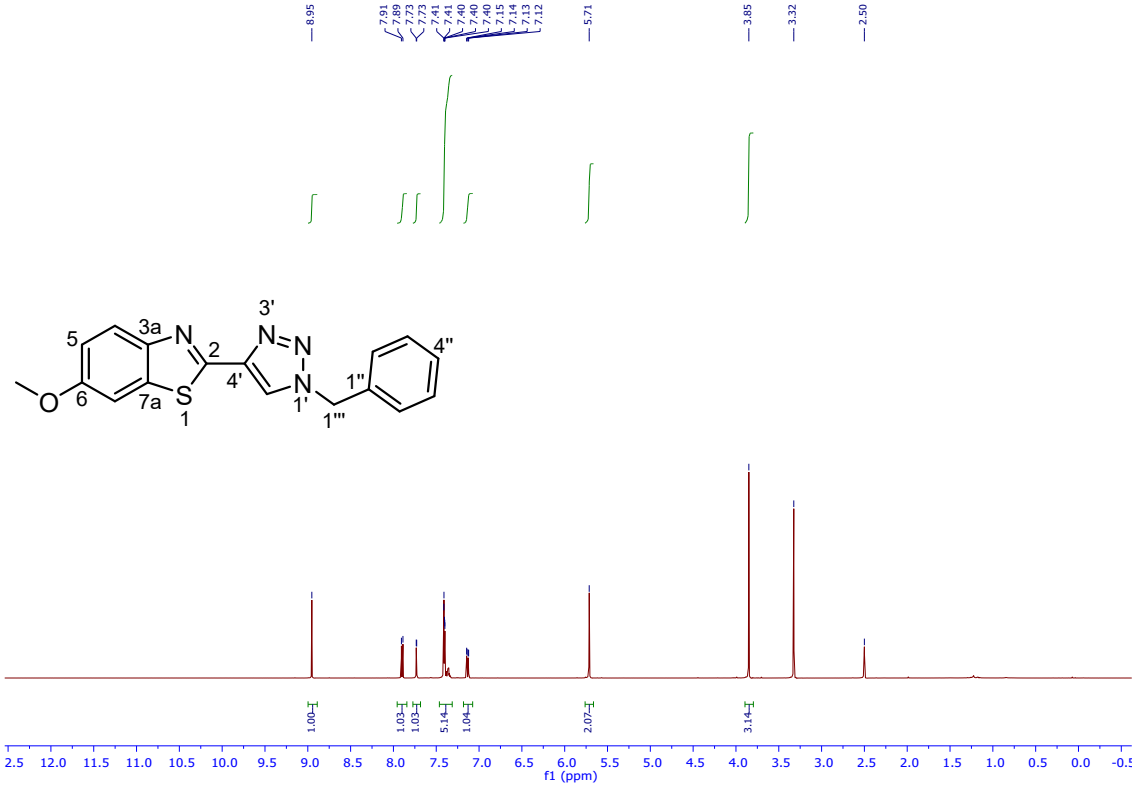


Figure S18. ^{13}C NMR for **69** (500 MHz, DMSO-d_6)

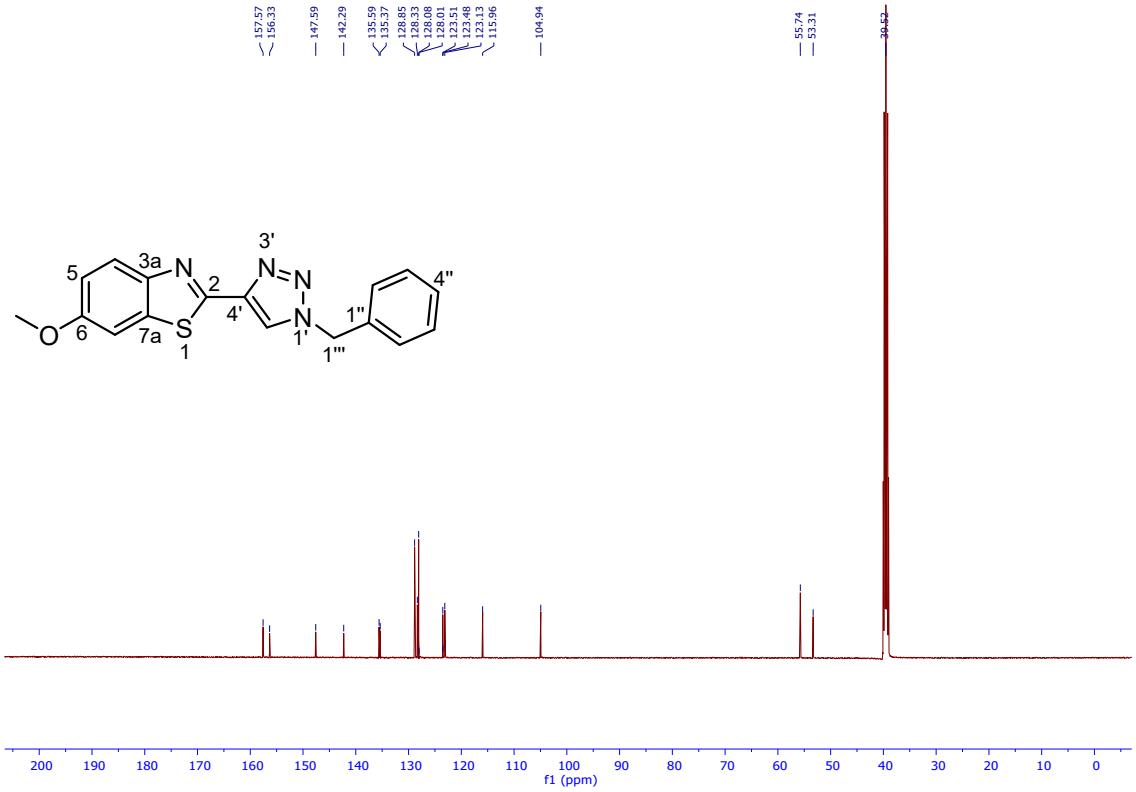


Figure S19. ^{1}H NMR for **70** (400 MHz, DMSO-d_6)

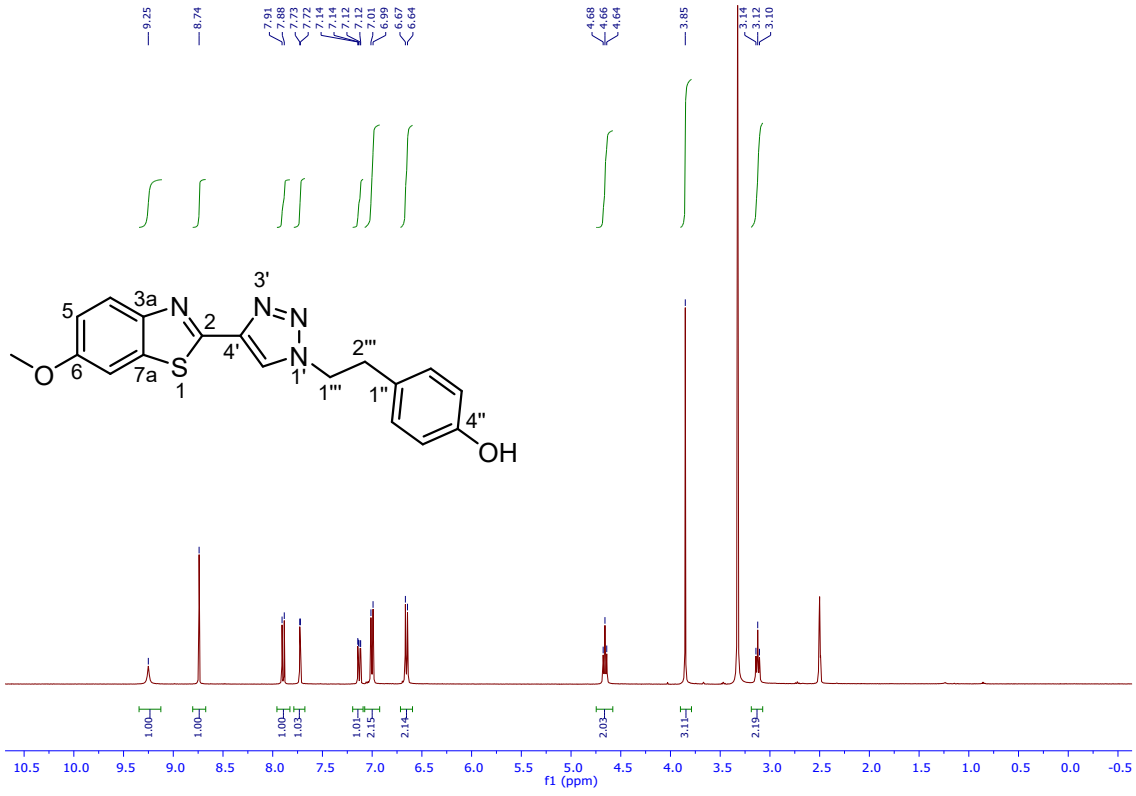


Figure S20. ^{13}C NMR for **70** (400 MHz, DMSO-d_6)

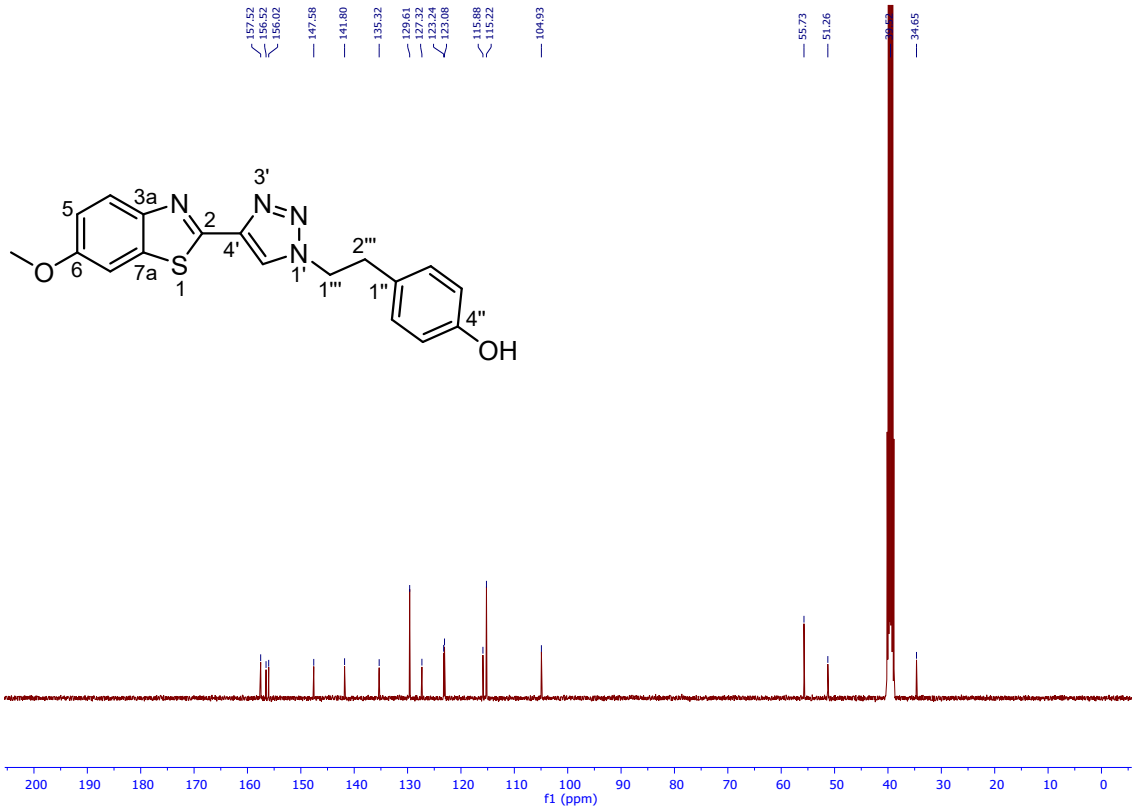


Figure S21. ^{1}H NMR for **71** (400 MHz, DMSO-d_6)

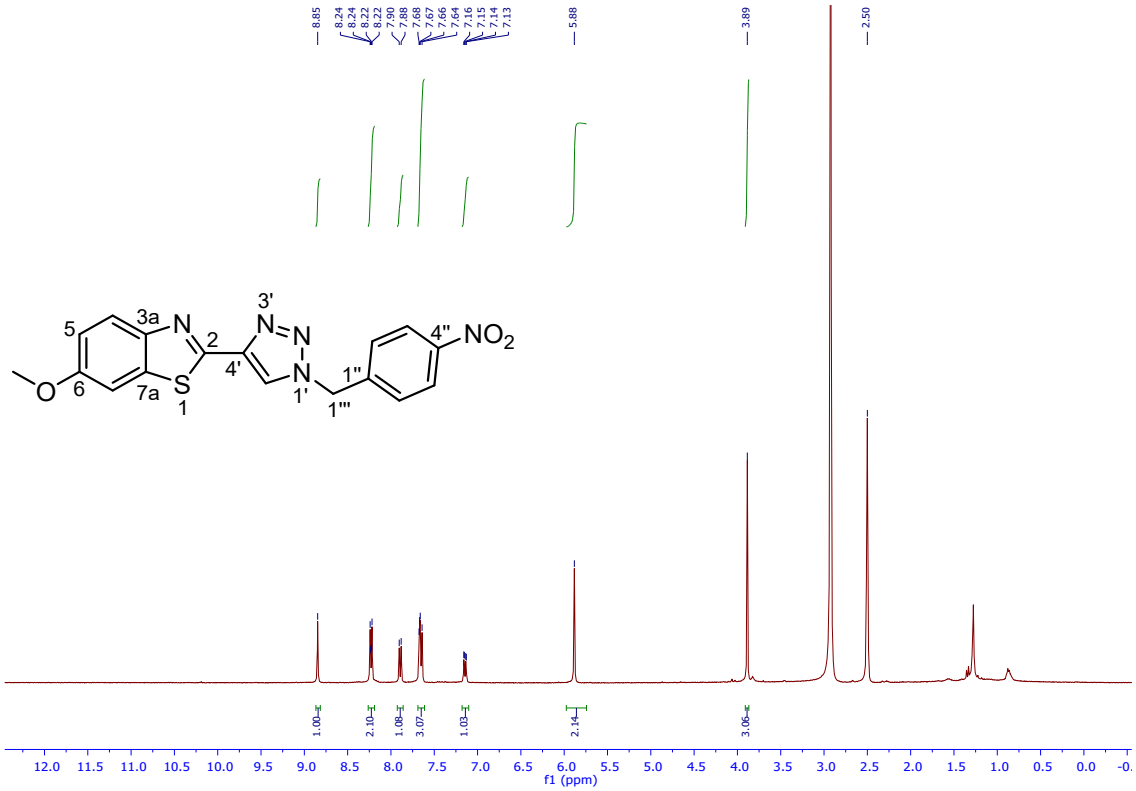


Figure S22. ^{13}C NMR for **71** (500 MHz, DMSO-d_6)

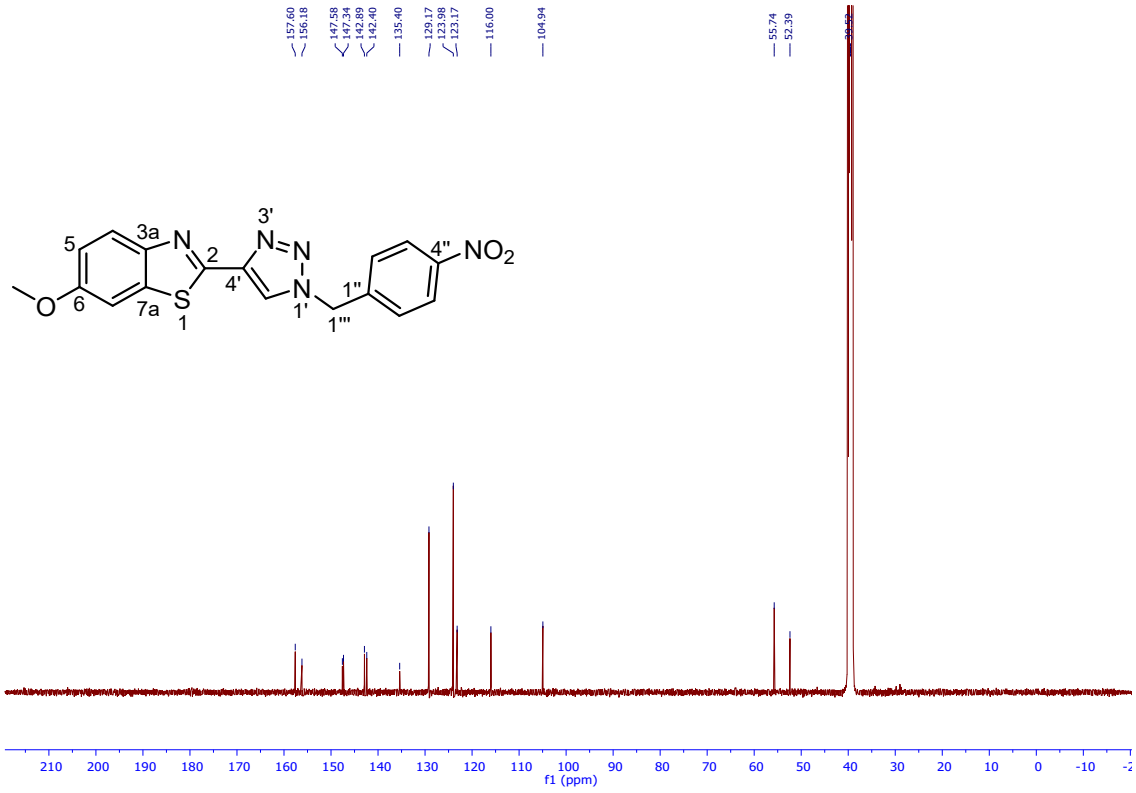


Figure S23. ^{1}H NMR for **72** (400 MHz, DMSO-d_6)

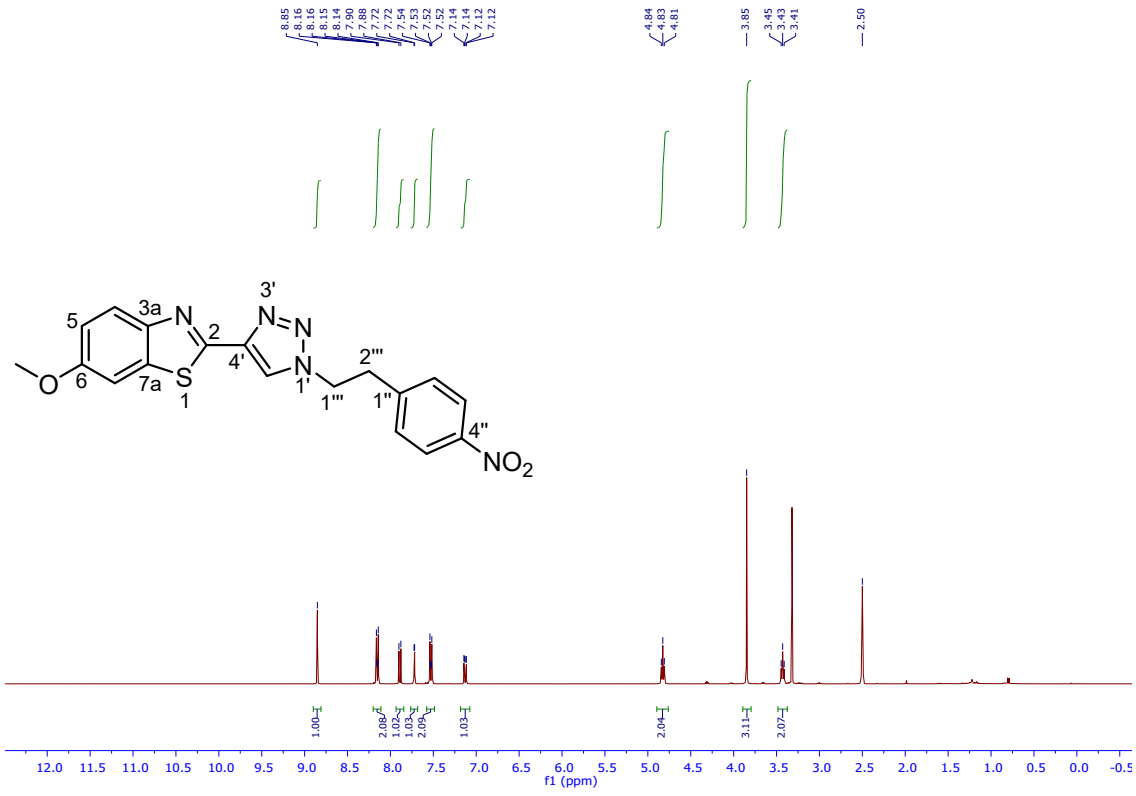


Figure S24. ^{13}C NMR for **72** (400 MHz, DMSO-d_6)

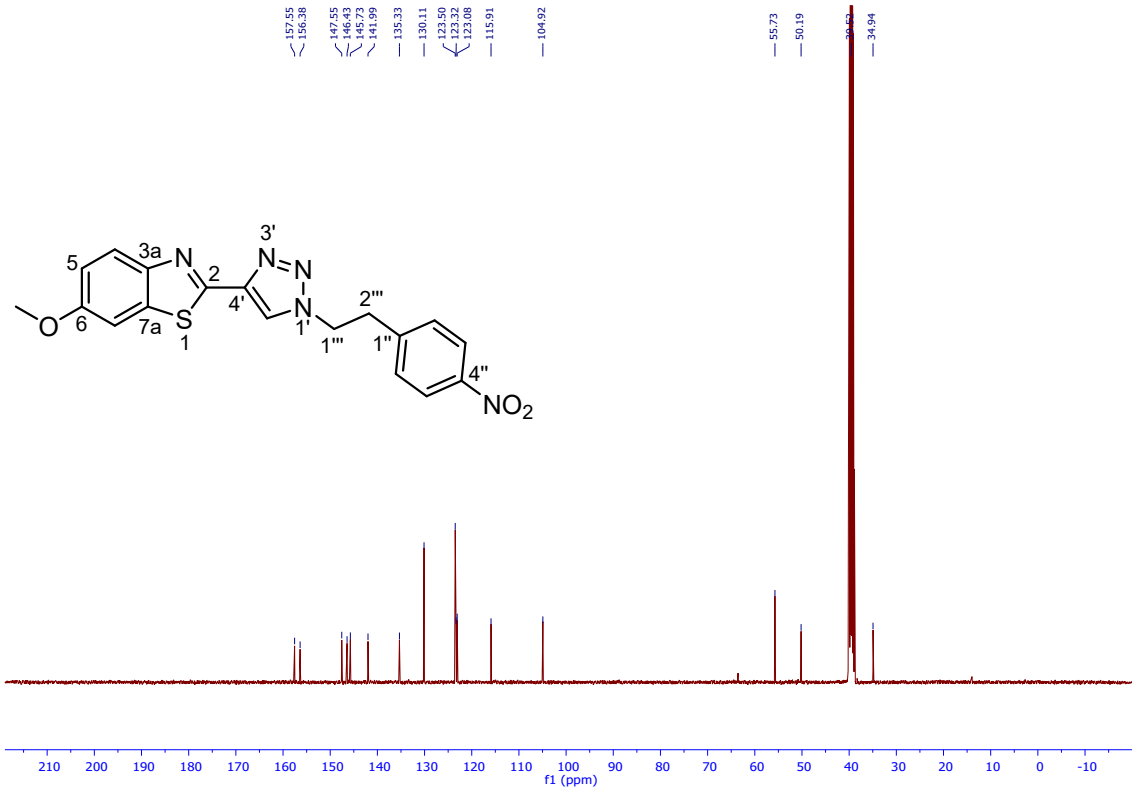


Figure S25. ^{1}H NMR for **73** (400 MHz, DMSO-d_6)

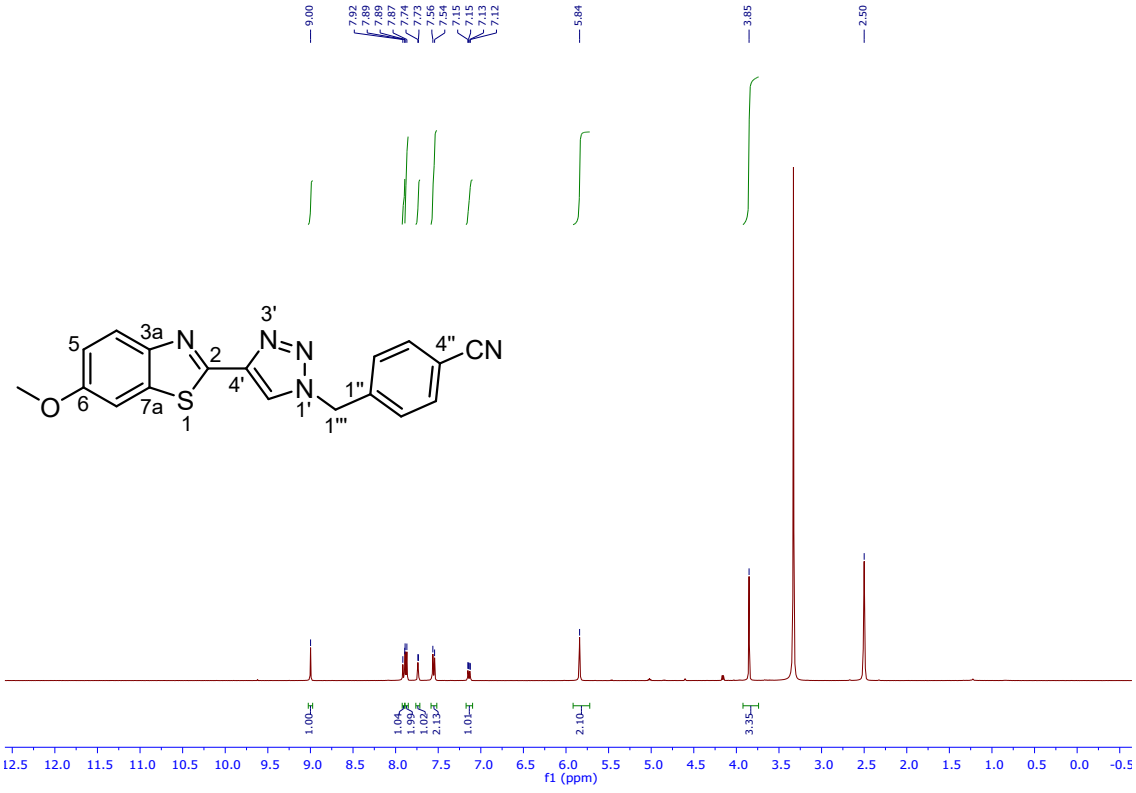


Figure S26. ^{13}C NMR for **73** (400 MHz, DMSO-d_6)

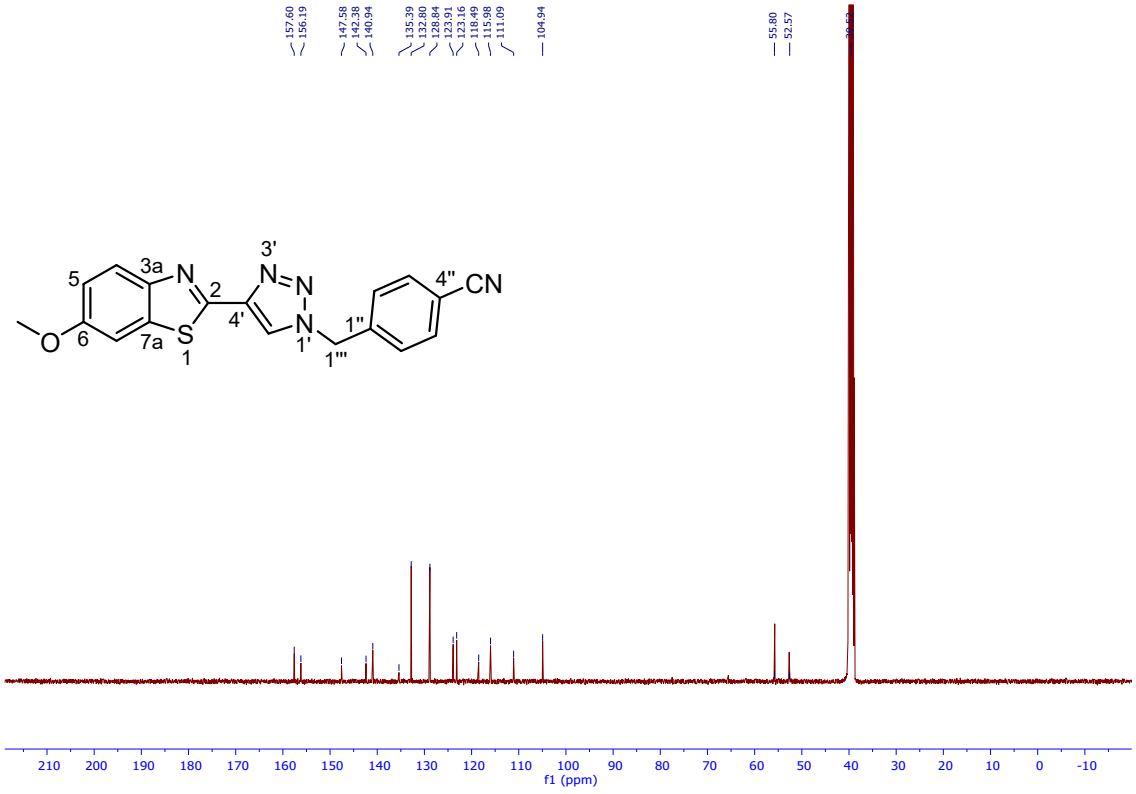


Figure S27. ^{1}H NMR for **74** (400 MHz, DMSO-d_6)

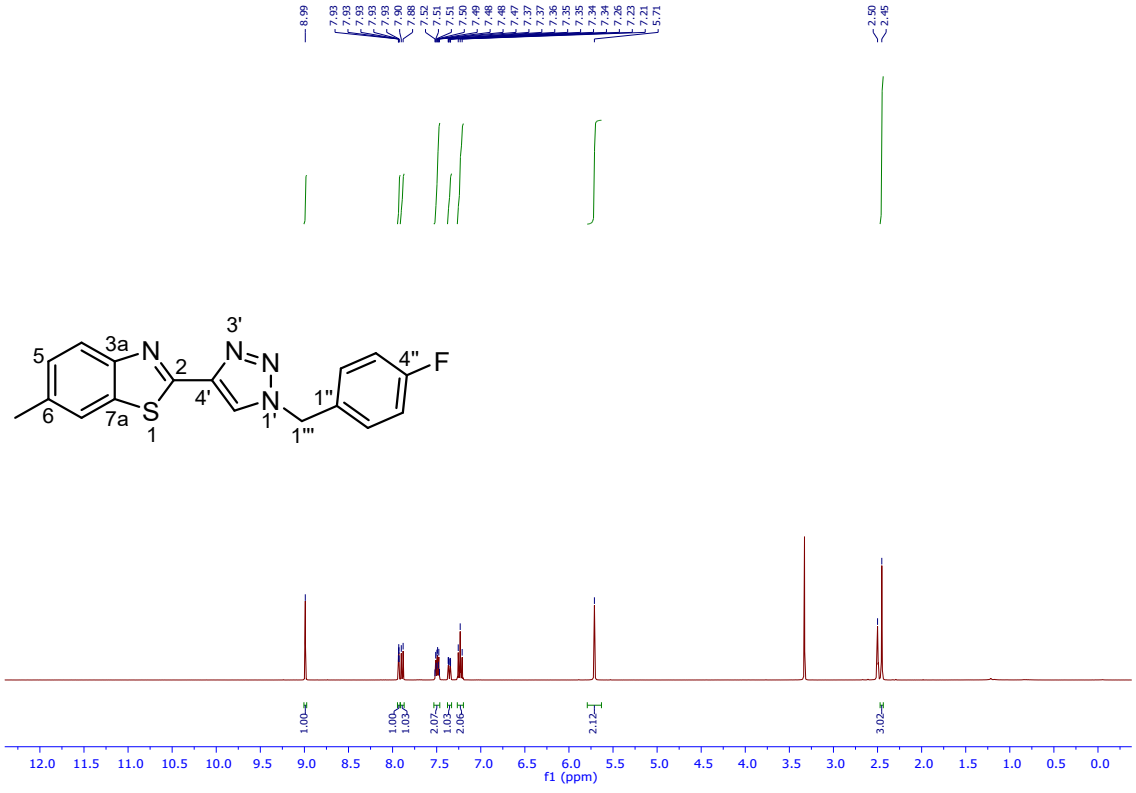


Figure S28. ^{13}C NMR for **74** (100 MHz, DMSO-d_6)

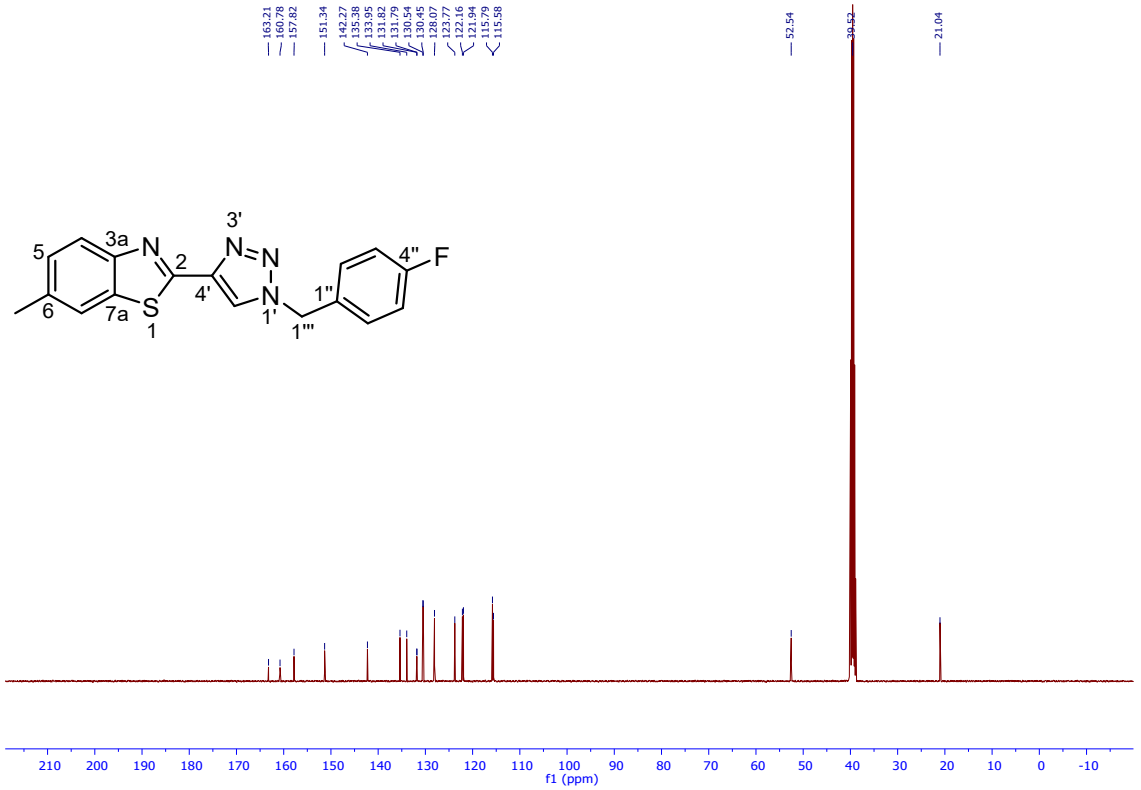


Figure S29. ^{1}H NMR for **75** (400 MHz, DMSO-d_6)

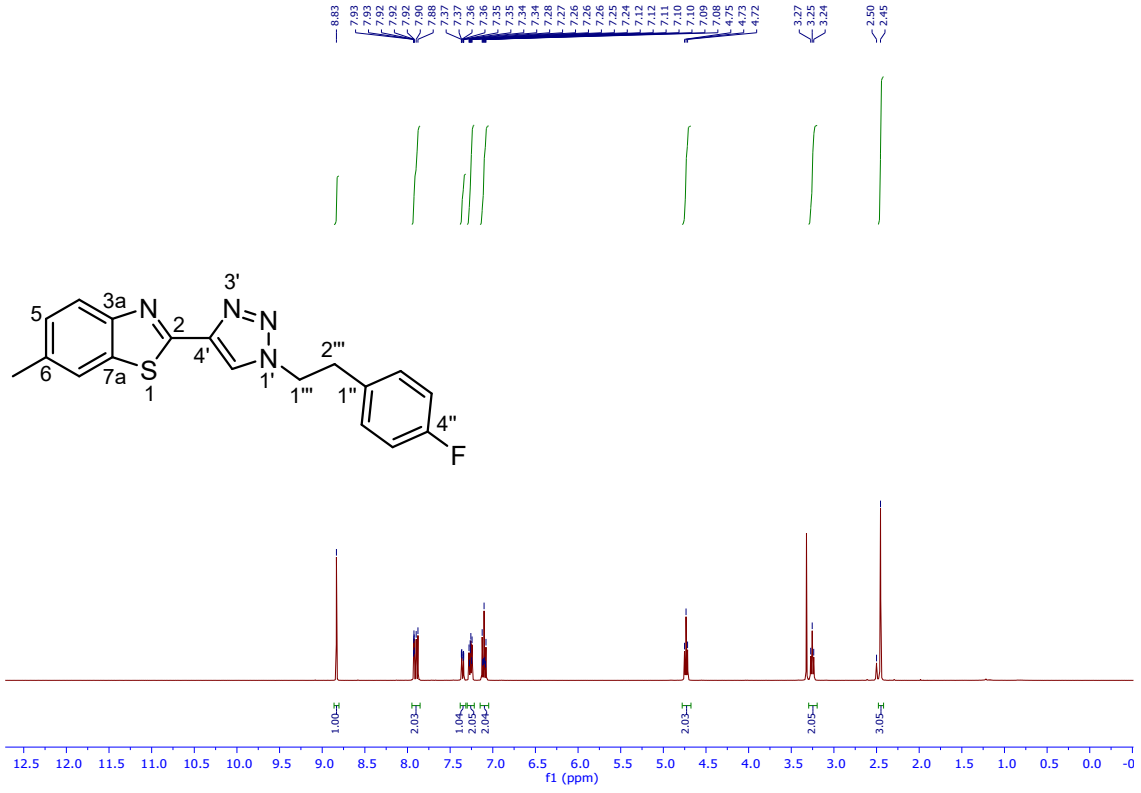


Figure S30. ^{13}C NMR for **75** (100 MHz, DMSO-d_6)

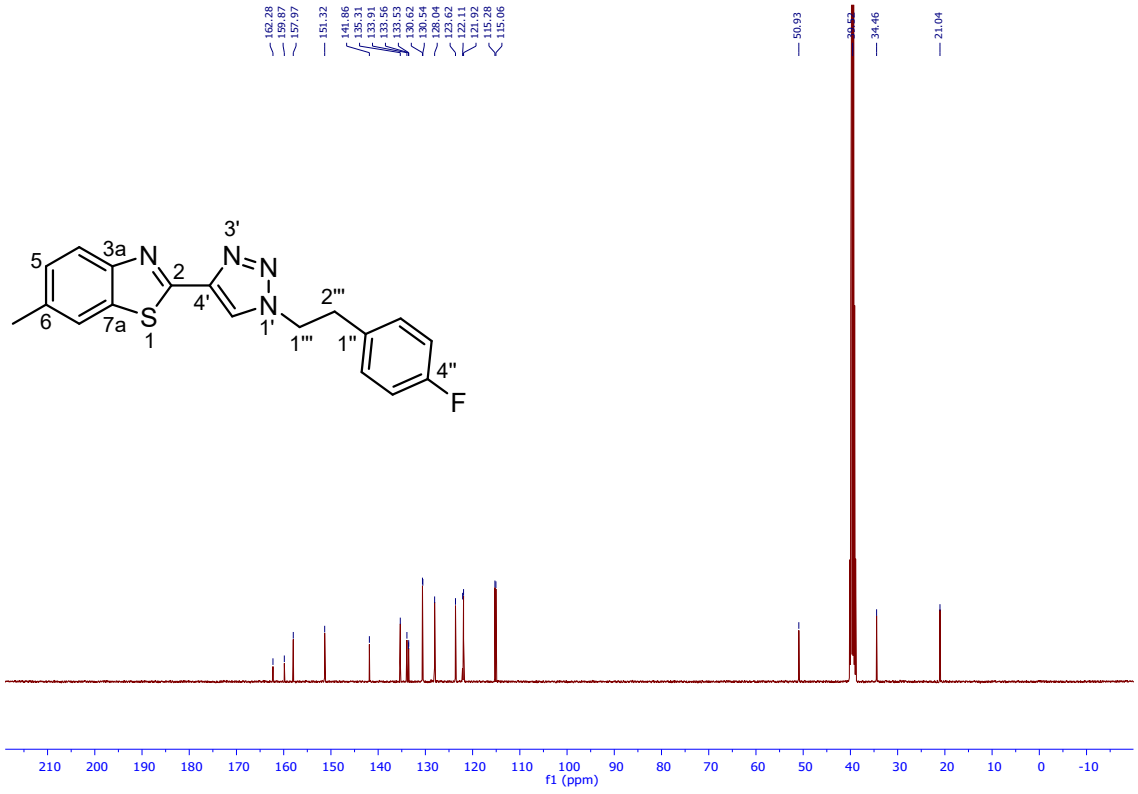


Figure S31. ^{1}H NMR for **76** (400 MHz, DMSO-d_6)

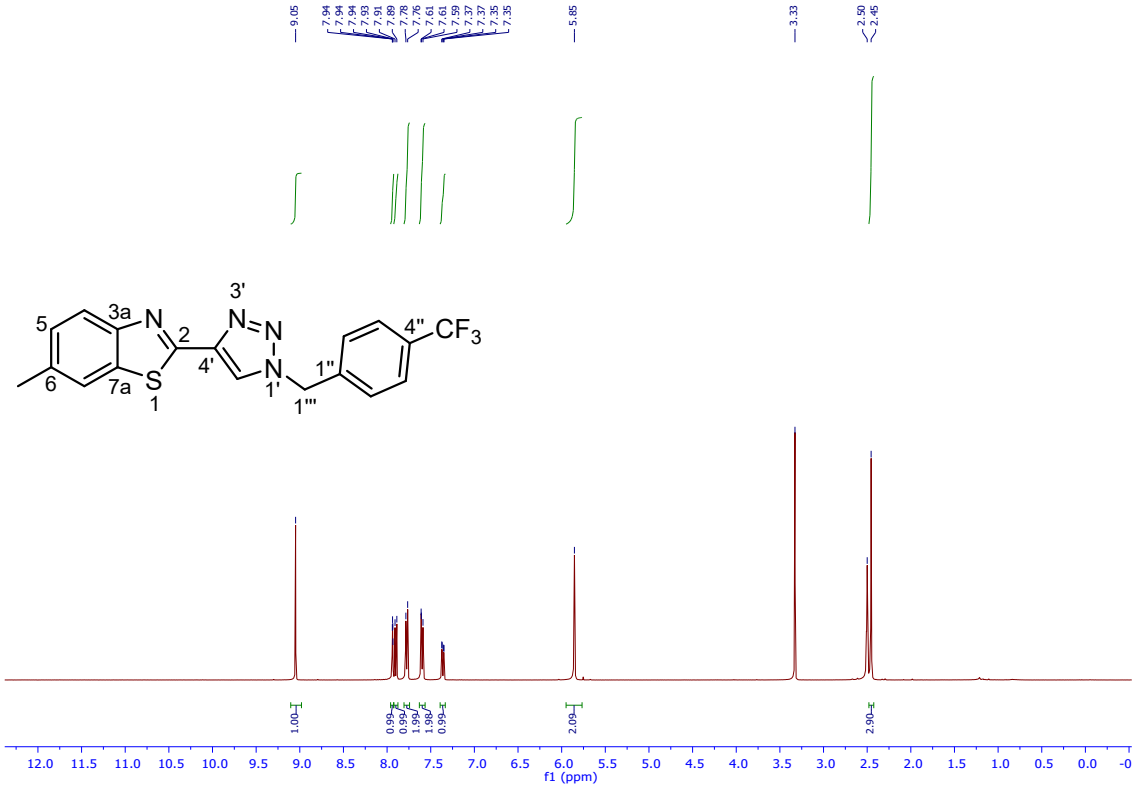


Figure S32. ^{13}C NMR for **76** (100 MHz, DMSO-d_6)

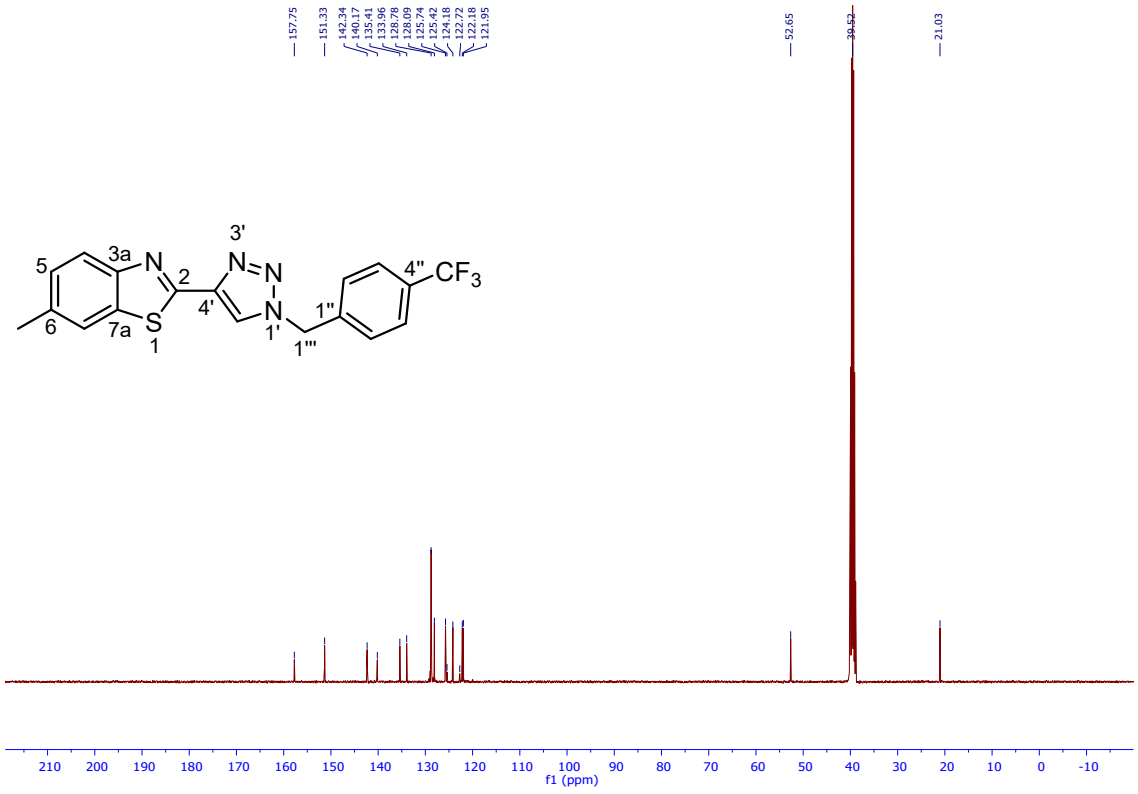


Figure S33. ^{1}H NMR for **77** (400 MHz, DMSO-d_6)

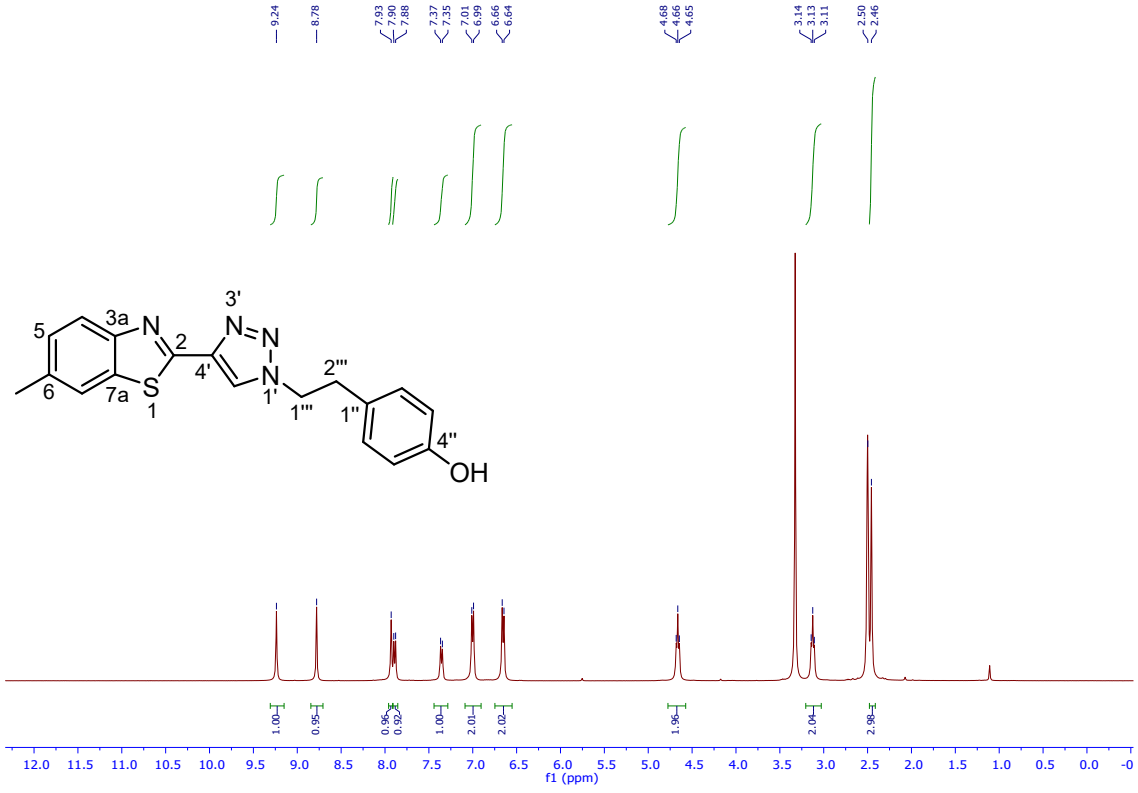


Figure S34. ^{13}C NMR for **77** (400 MHz, DMSO-d_6)

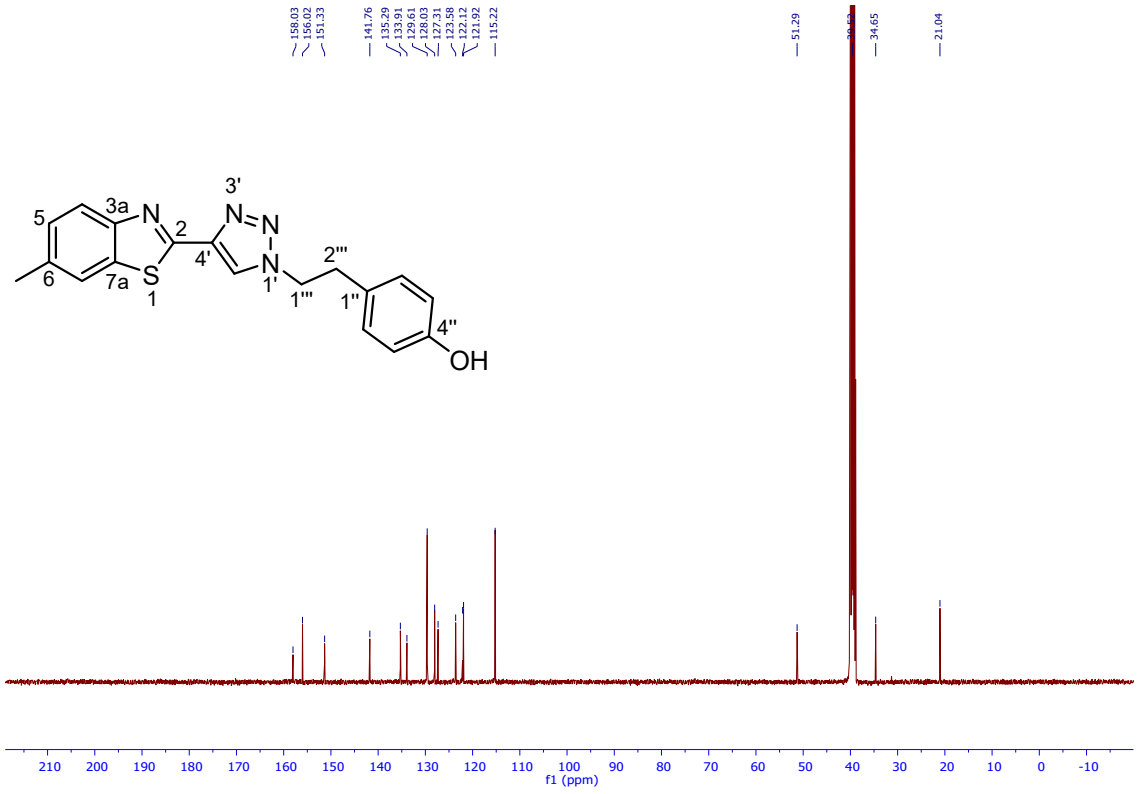


Figure S35. ^{1}H NMR for **78** (500 MHz, DMSO-d_6)

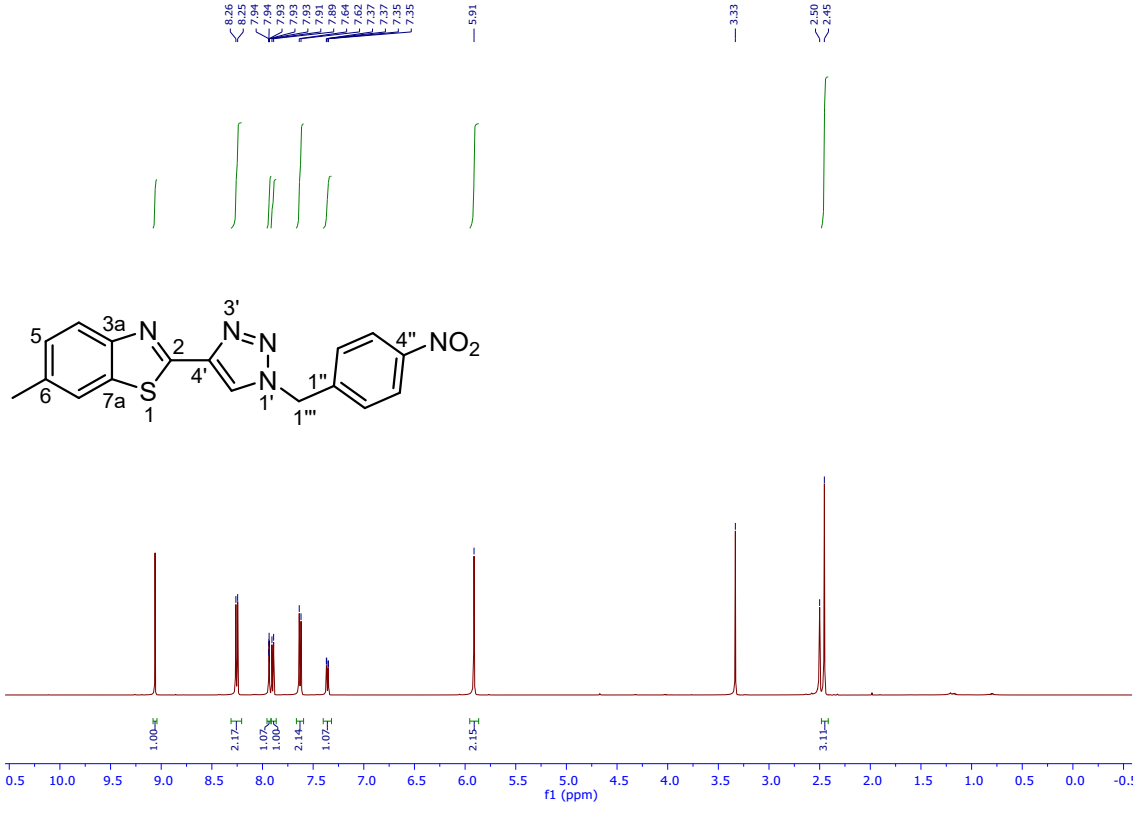


Figure S36. ^{13}C NMR for **78** (500 MHz, DMSO-d_6)

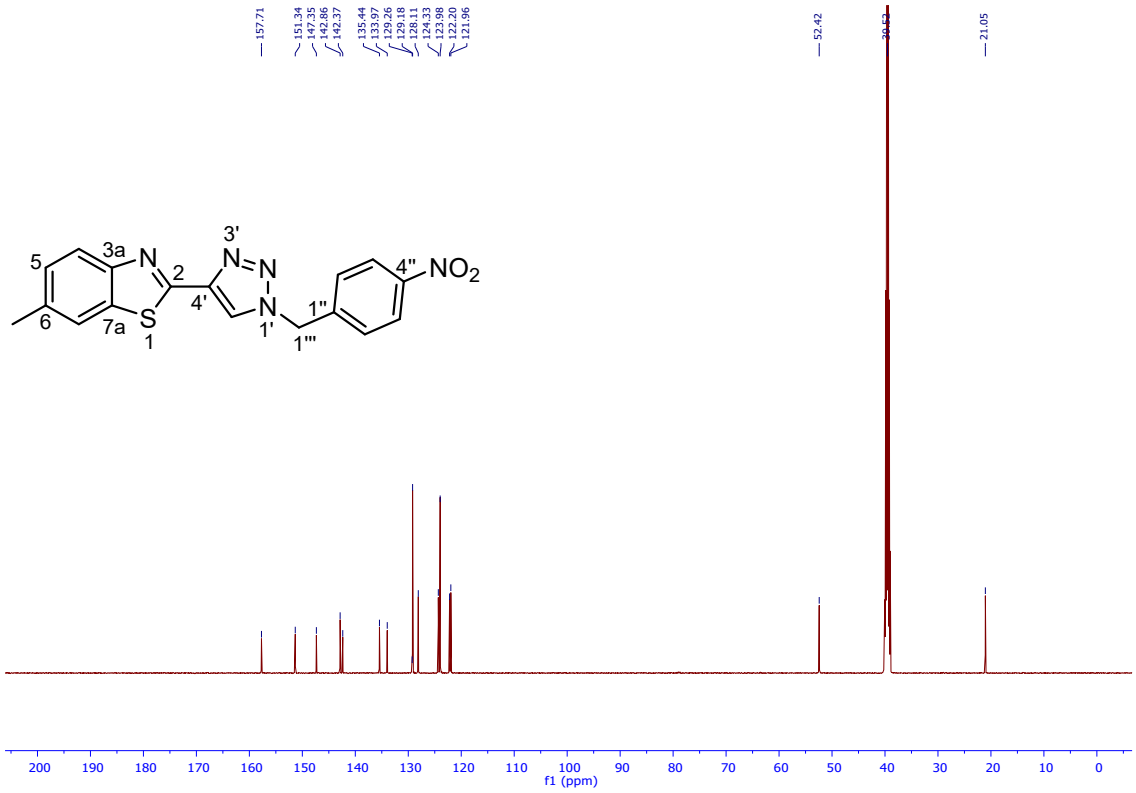


Figure S37. ^{1}H NMR for **89** (400 MHz, DMSO-d_6)

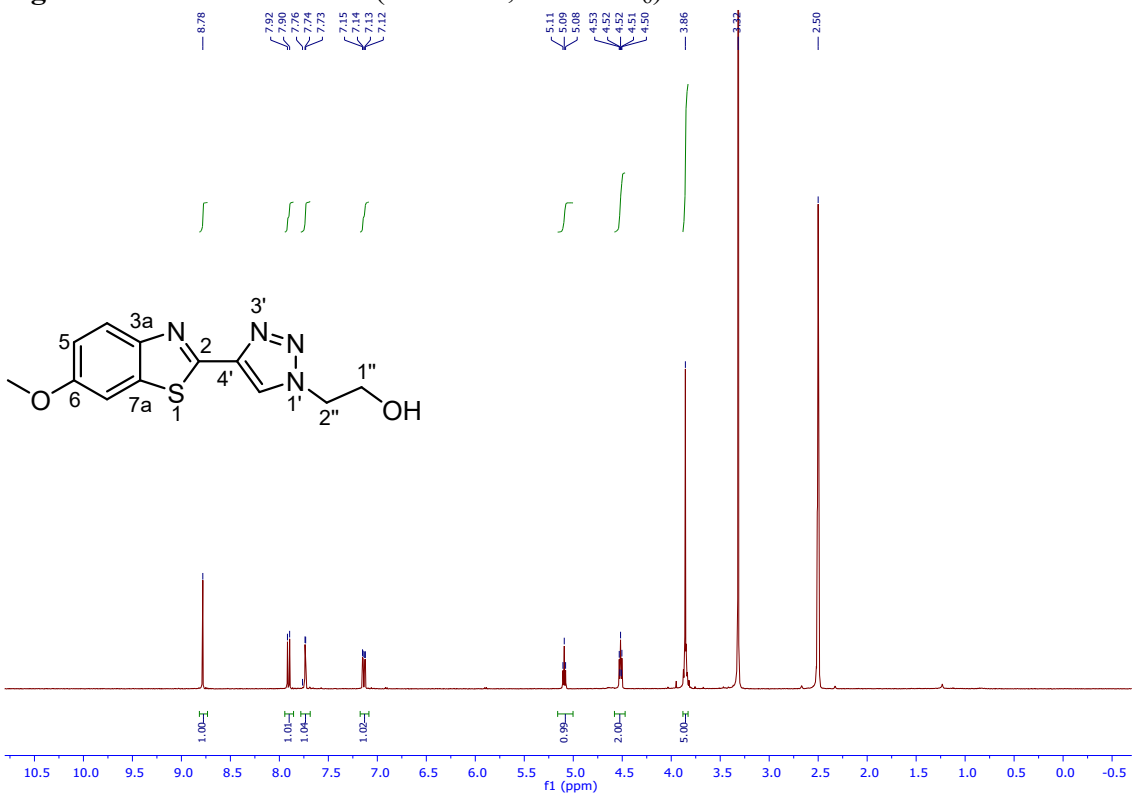


Figure S38. ^{13}C NMR for **89** (400 MHz, DMSO-d_6)

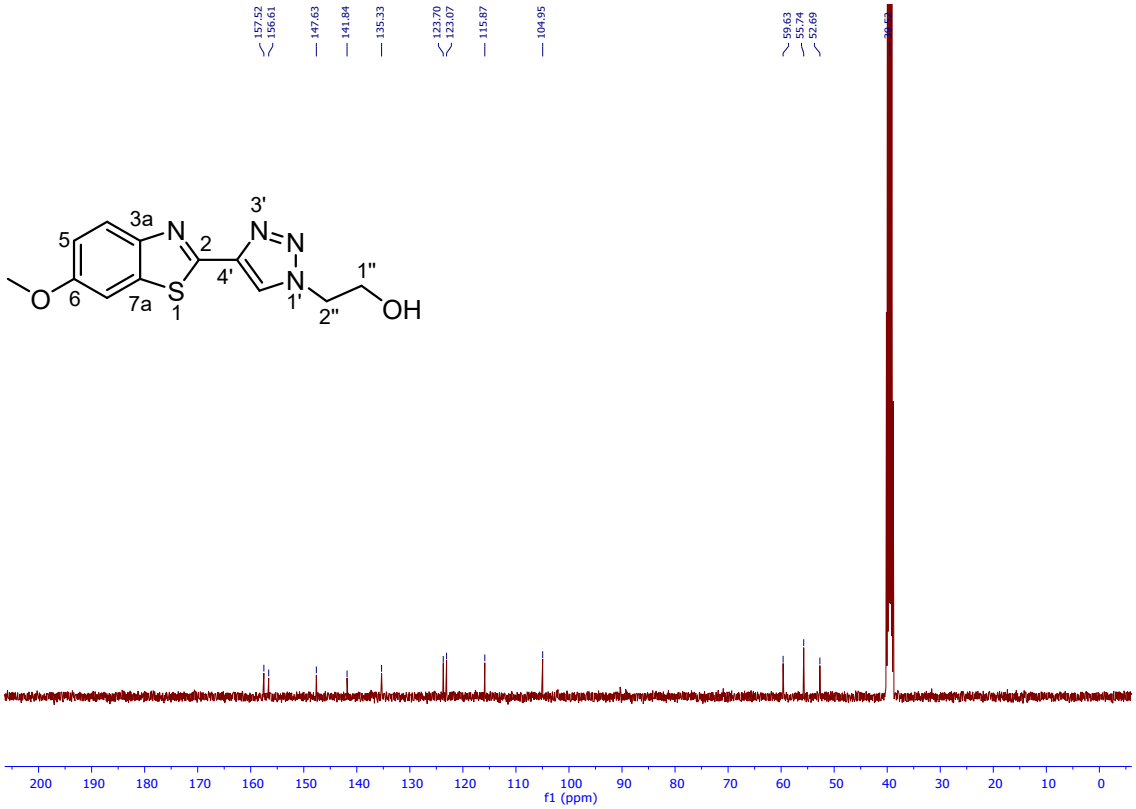


Figure S39. ^{1}H NMR for **90** (400 MHz, DMSO-d_6)

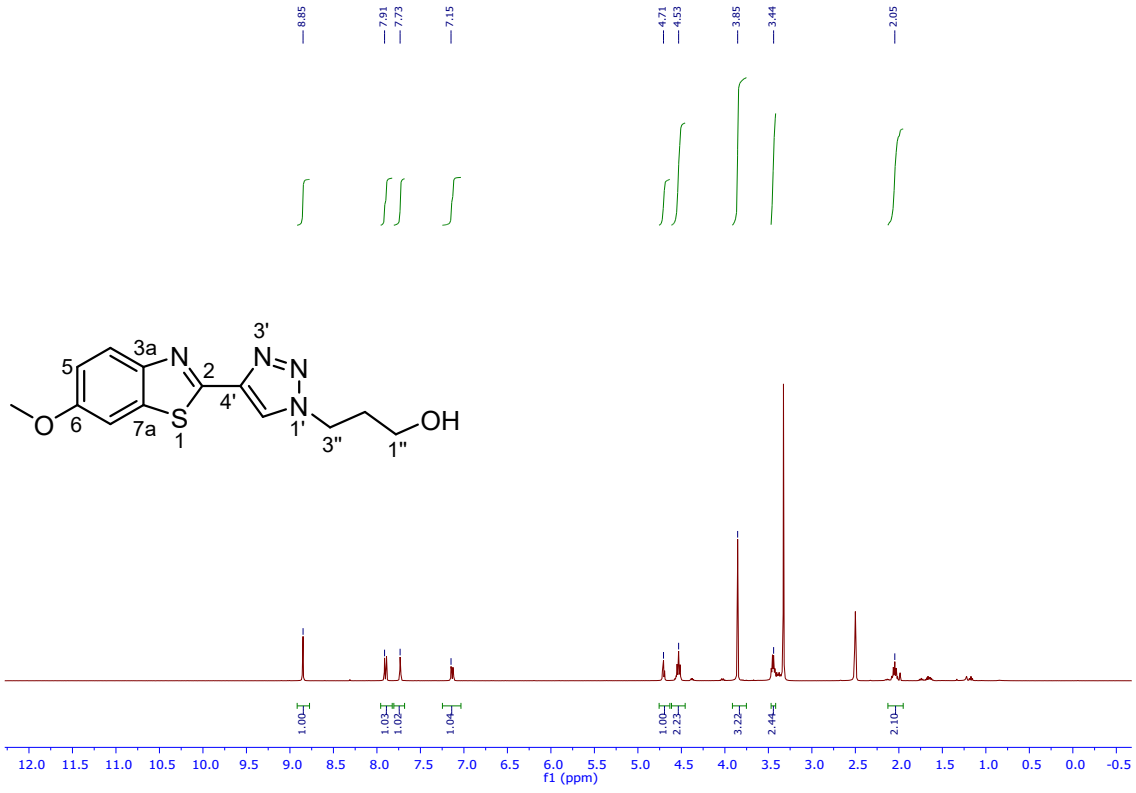


Figure S40. ^{13}C NMR for **90** (400 MHz, DMSO-d_6)

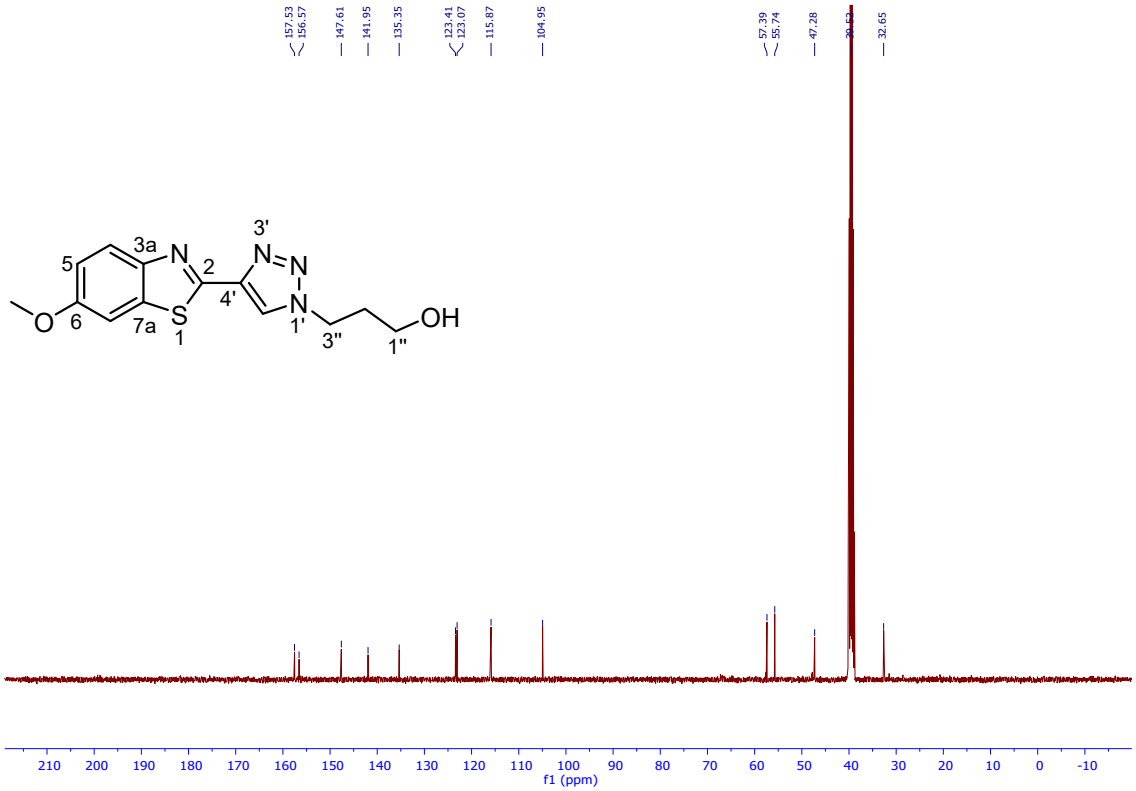


Figure S41. ^{1}H NMR for **91** (400 MHz, DMSO-d_6)

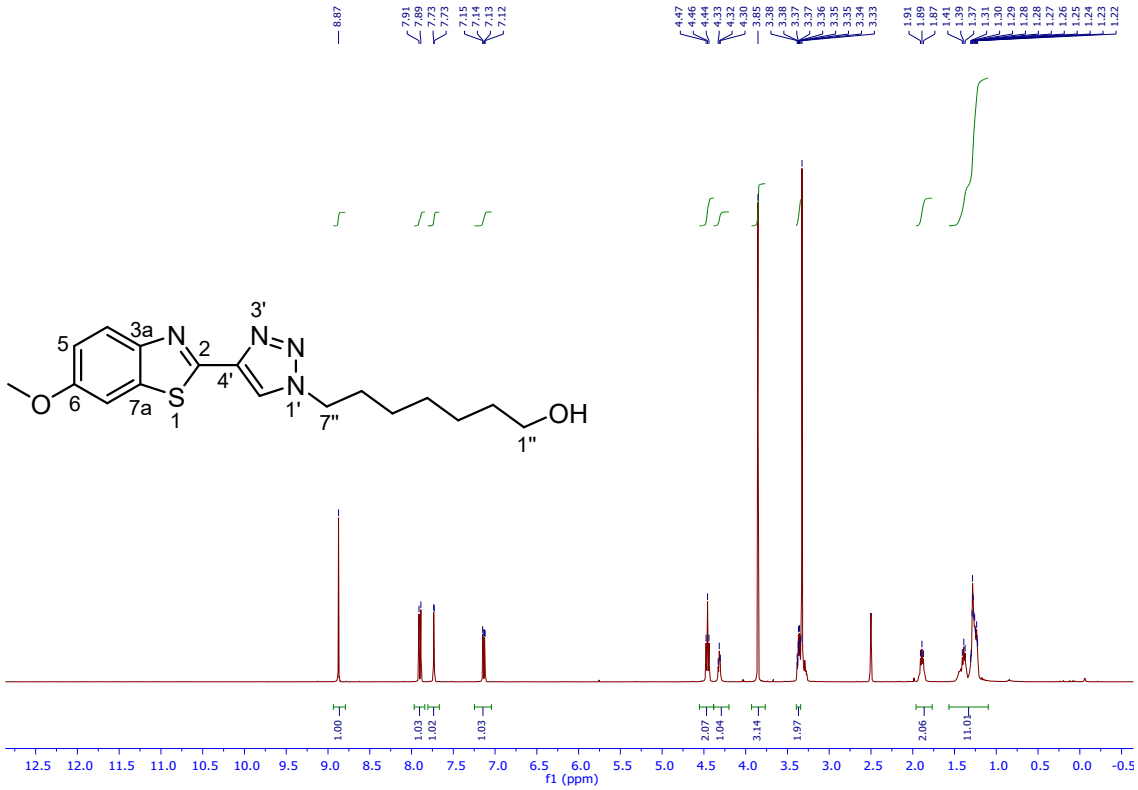


Figure S42. ^{13}C NMR for **91** (400 MHz, DMSO-d_6)

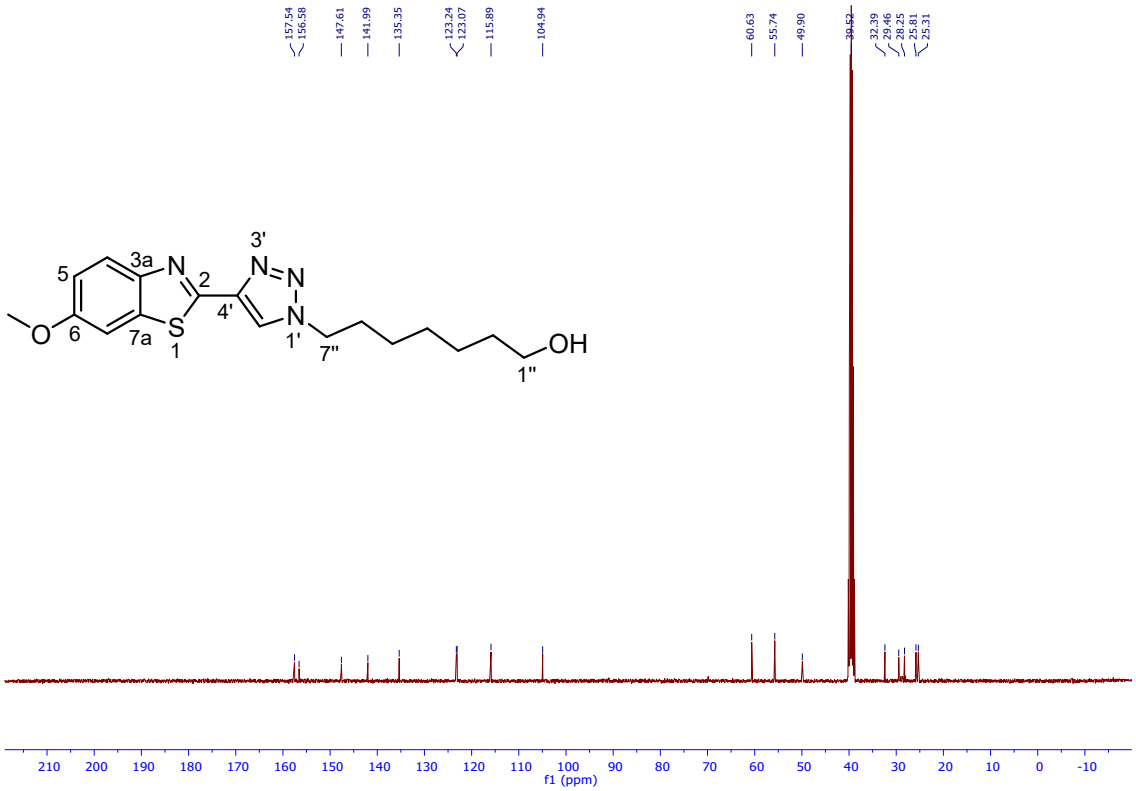


Figure S43. ^{1}H NMR for **92** (400 MHz, DMSO-d_6)

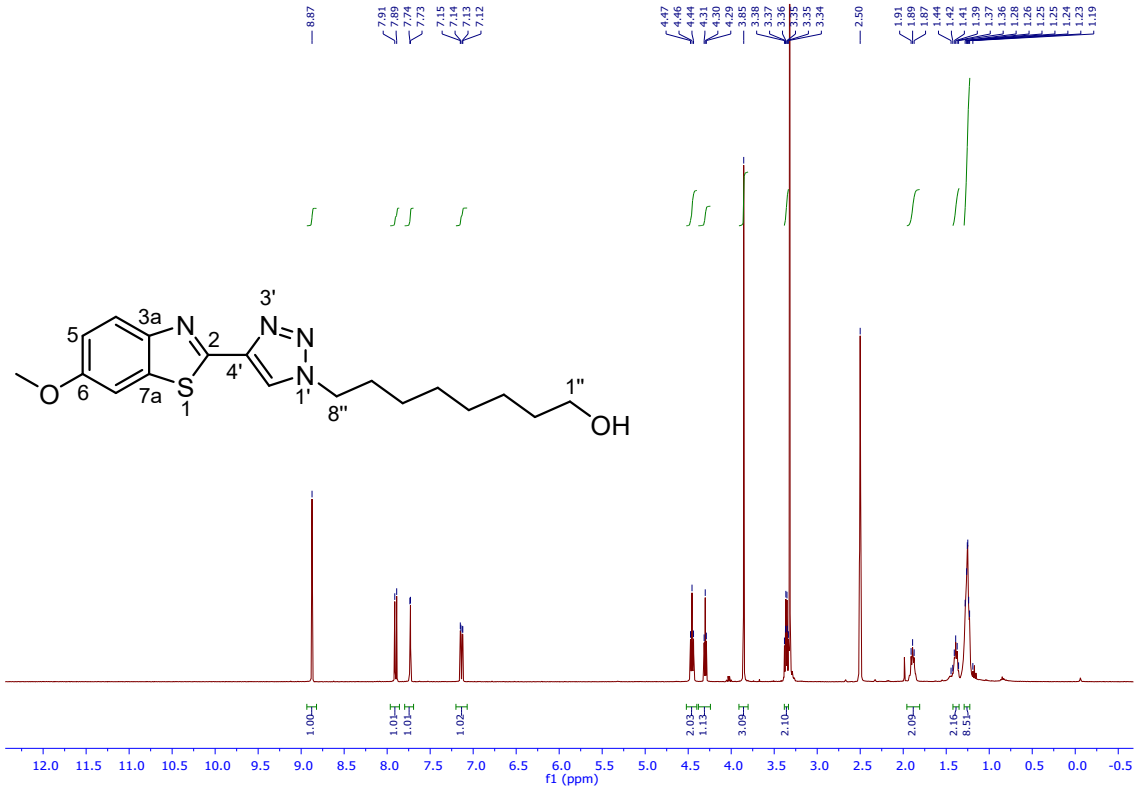


Figure S44. ^{13}C NMR for **92** (400 MHz, DMSO-d_6)

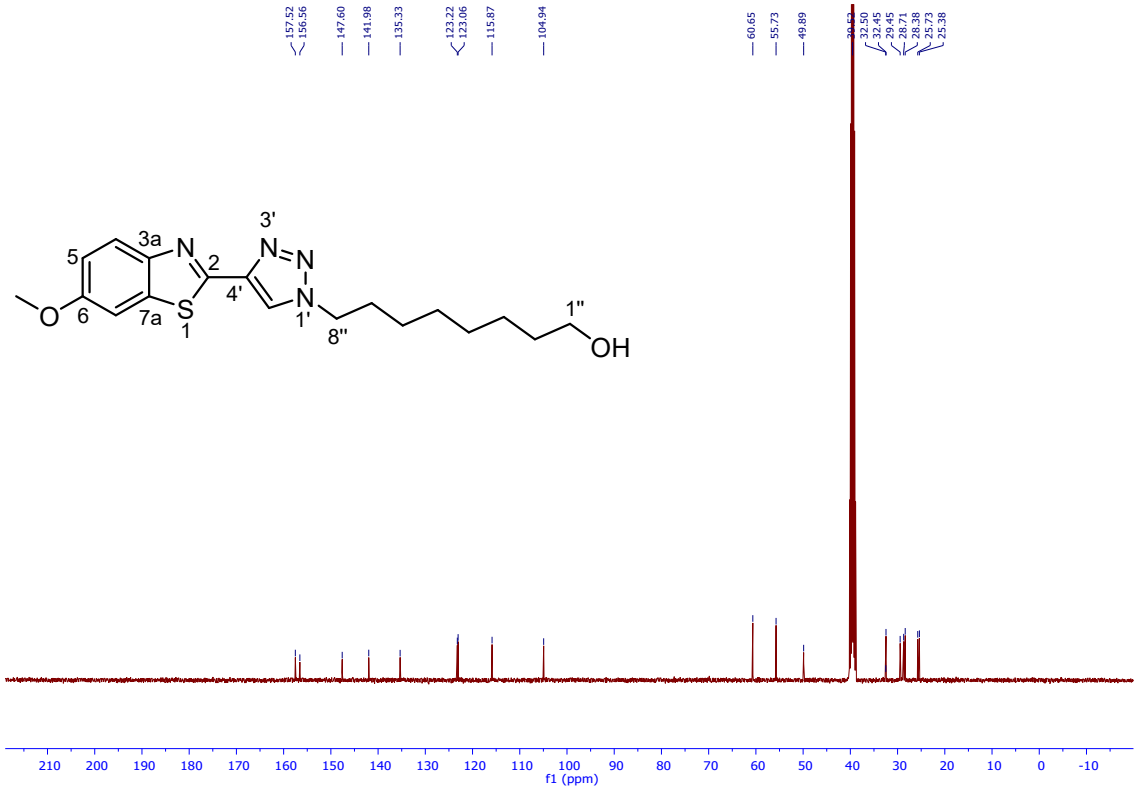


Figure S45. ^{1}H NMR for **93** (400 MHz, $CDCl_3$)

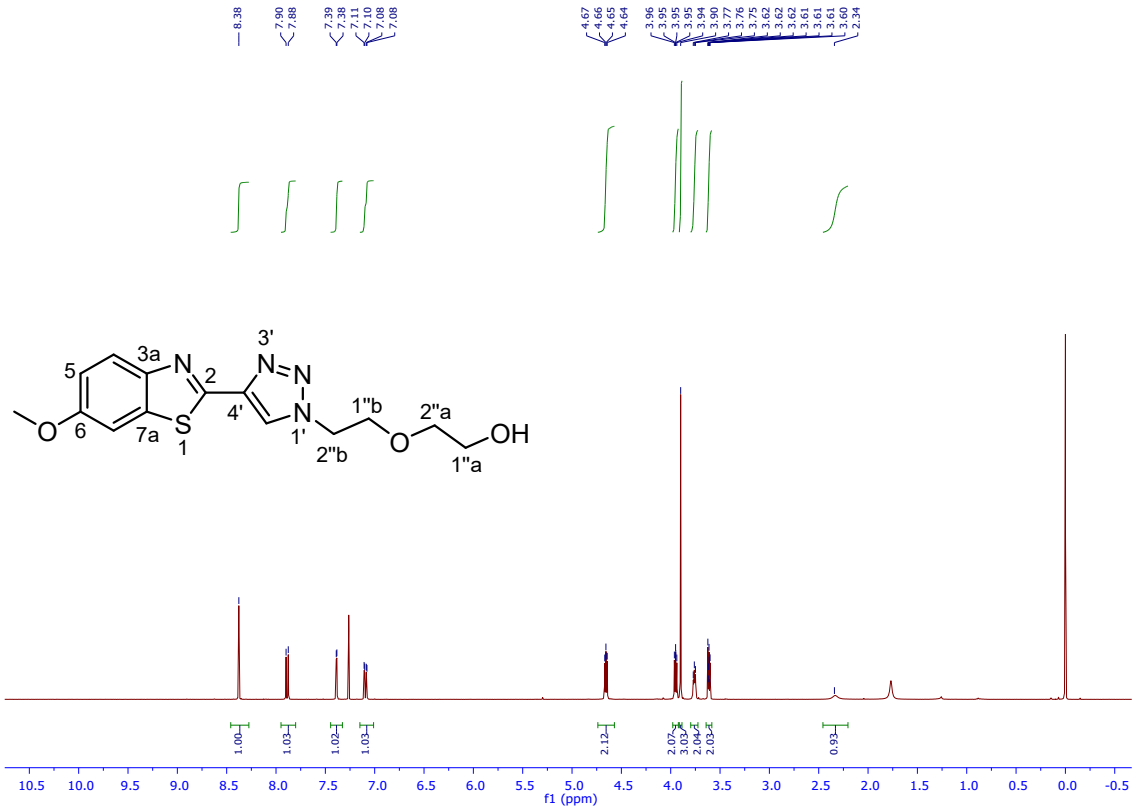


Figure S46. ^{13}C NMR for **93** (400 MHz, $CDCl_3$)

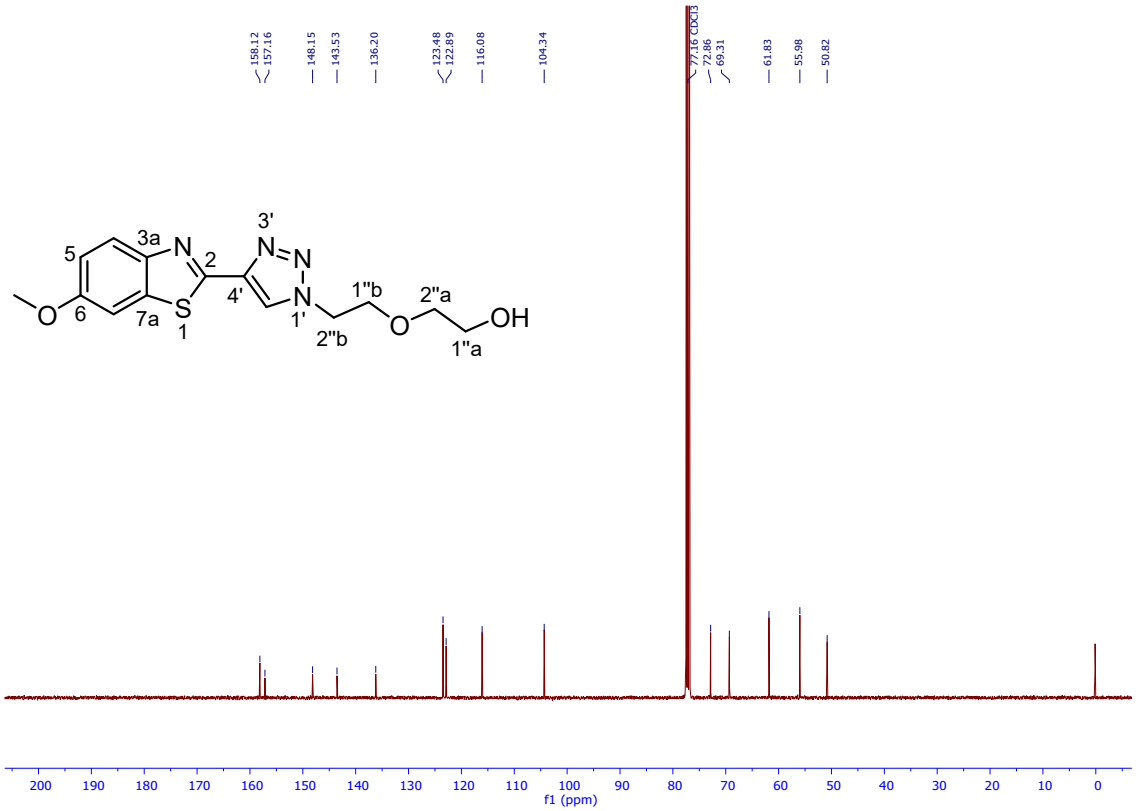


Figure S47. ^{1}H NMR for **109** (400 MHz, DMSO-d_6)

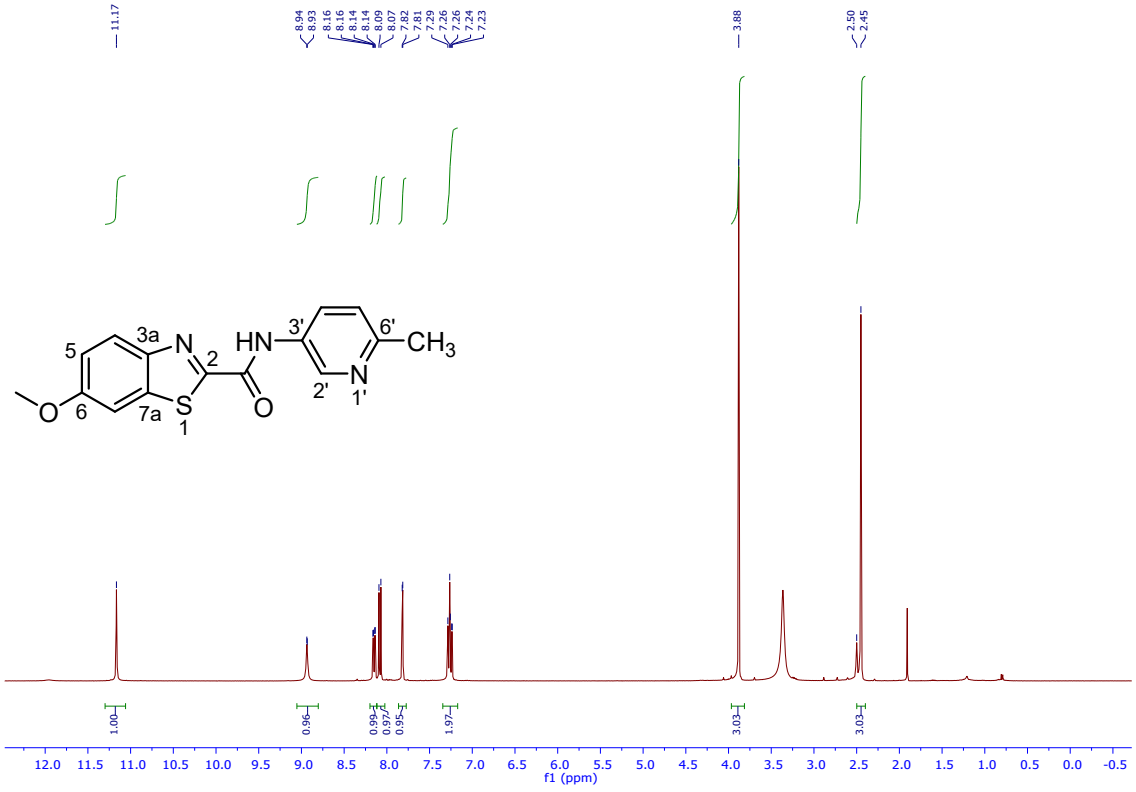


Figure S48. ^{13}C NMR for **109** (400 MHz, DMSO-d_6)

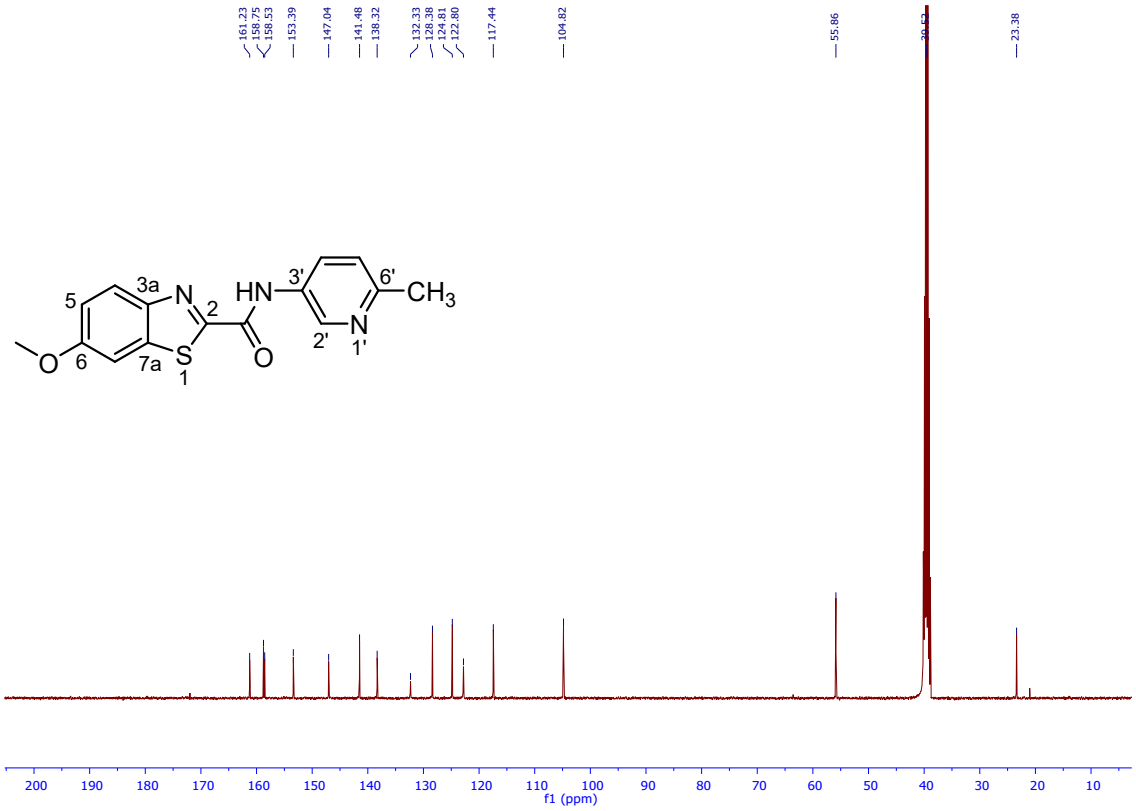


Figure S49. ^{1}H NMR for **110** (500 MHz, DMSO-d_6)

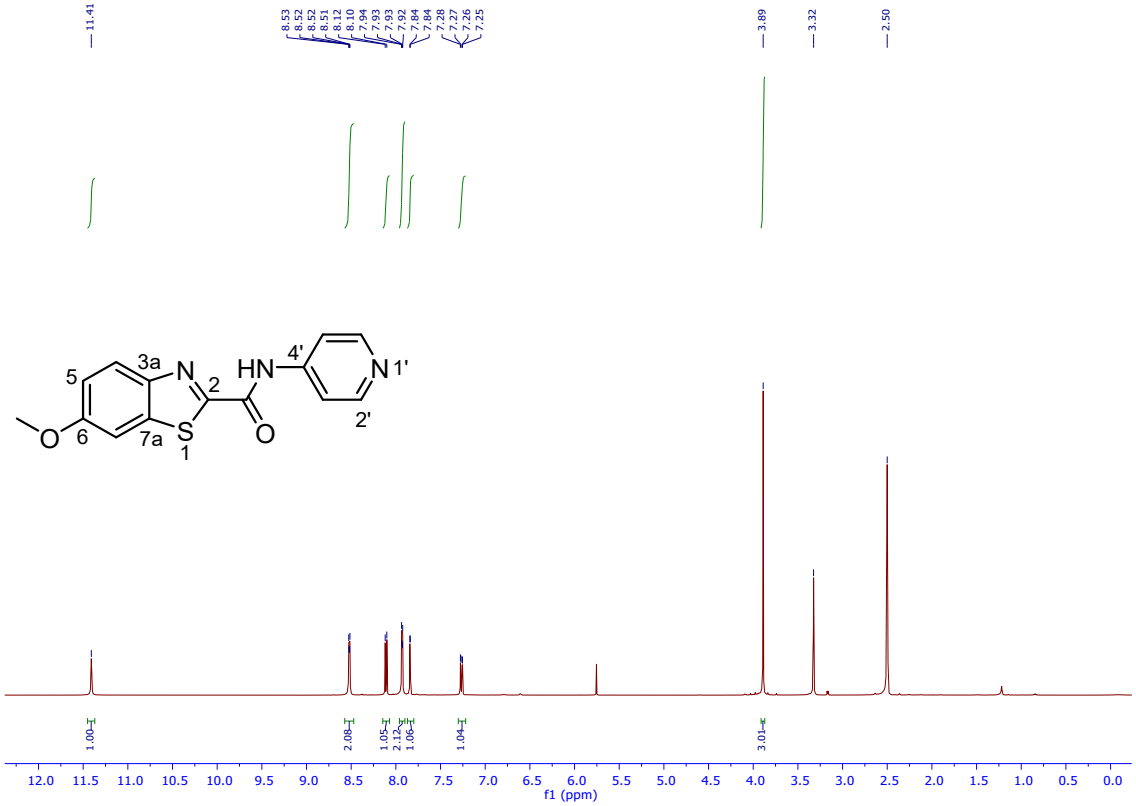


Figure S50. ^{13}C NMR for **110** (500 MHz, DMSO-d_6)

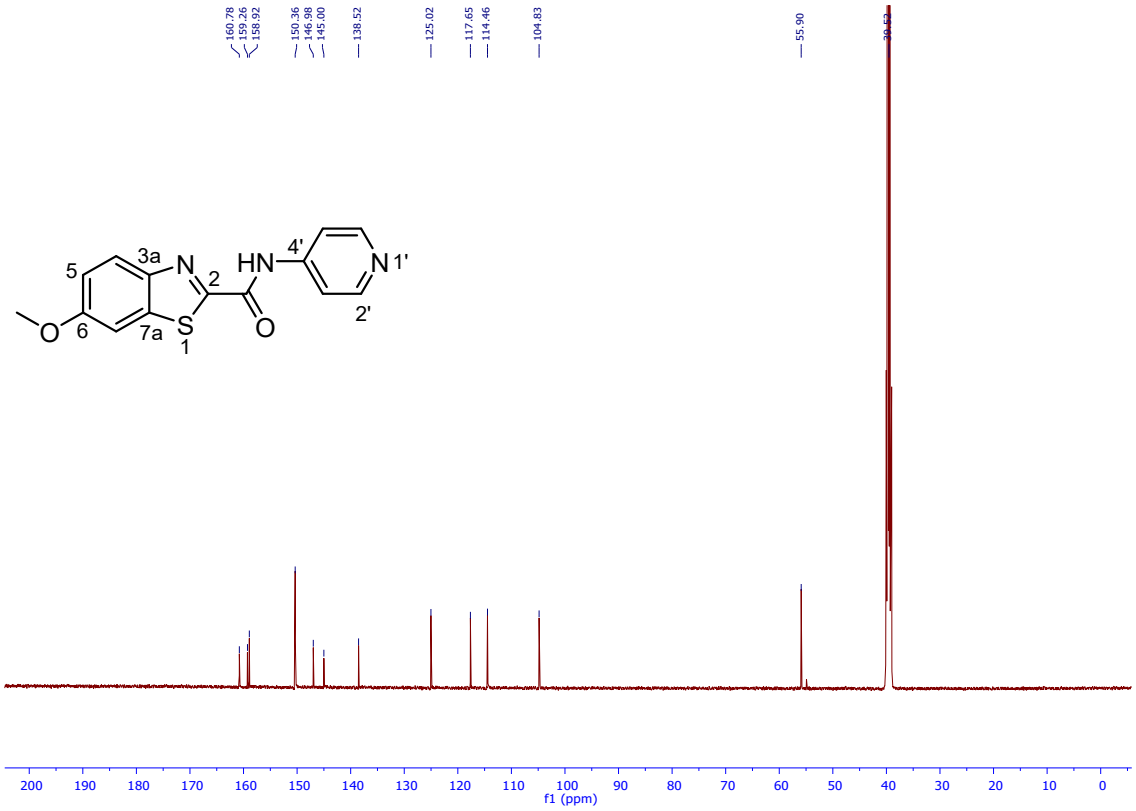


Figure S51. ^{1}H NMR for **111** (500 MHz, $CDCl_3$)

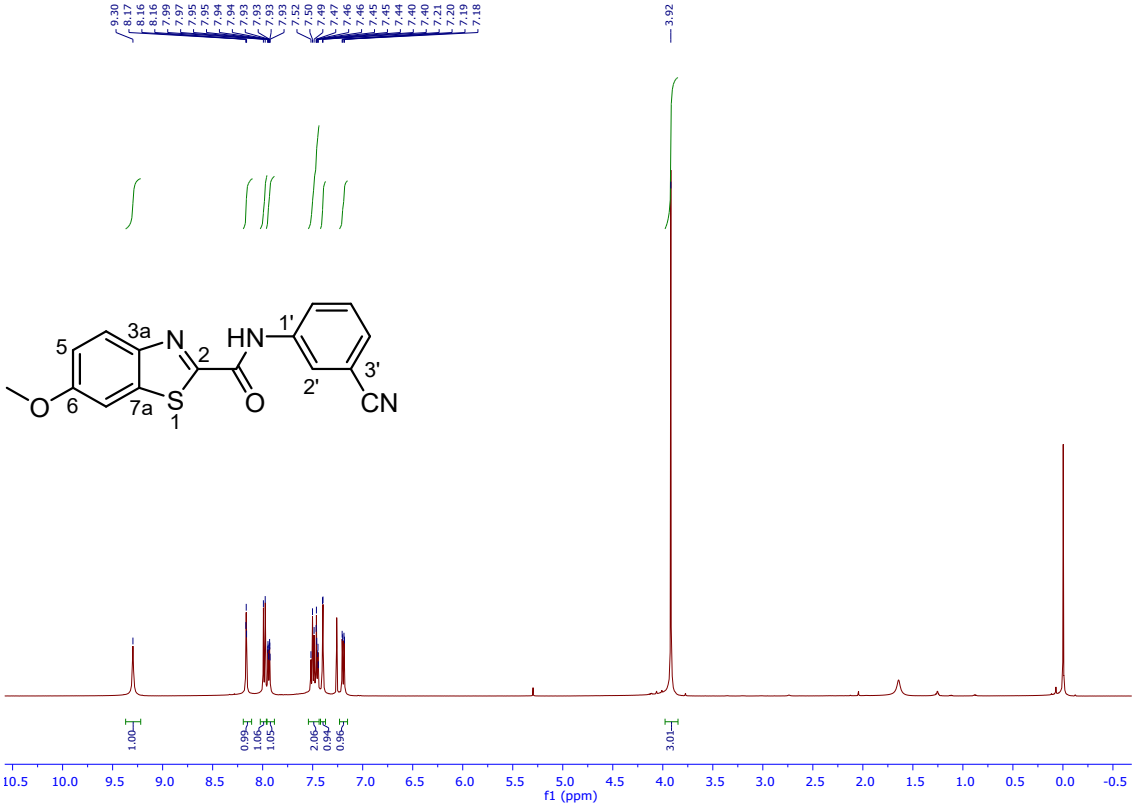


Figure S52. ^{13}C NMR for **111** (500 MHz, $CDCl_3$)

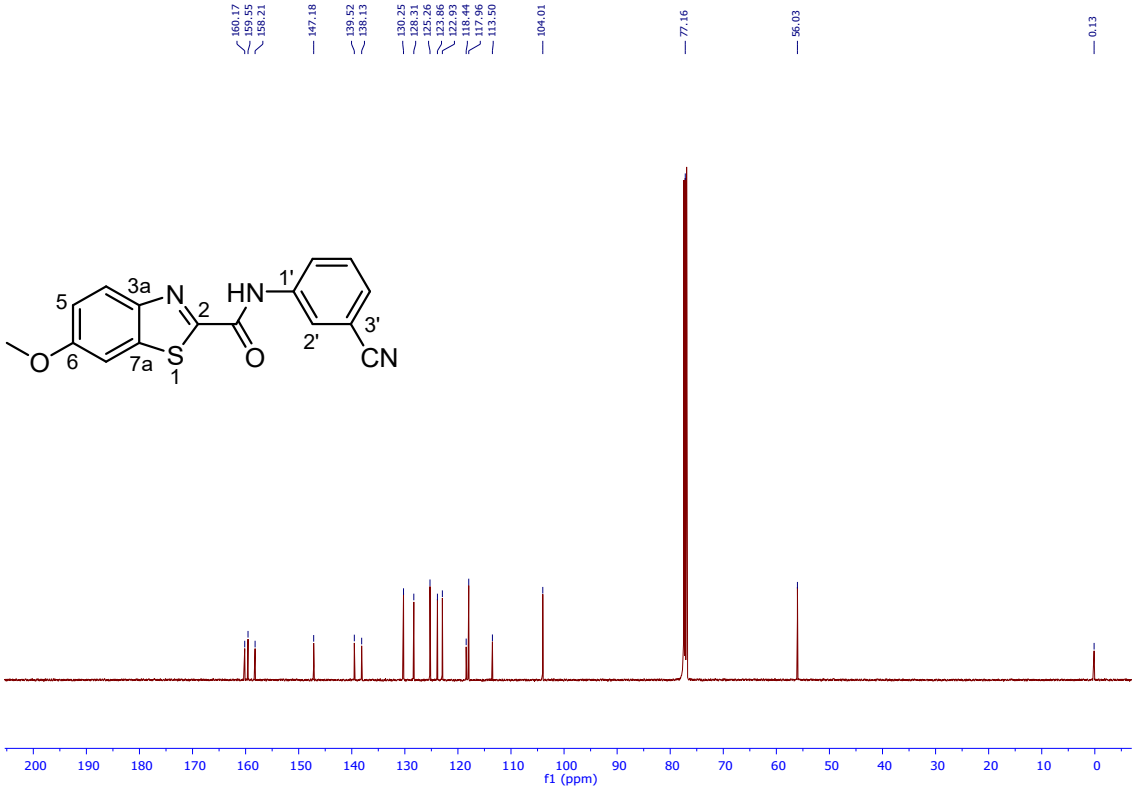


Figure S53. ^{1}H NMR for **112** (500 MHz, DMSO-d_6)

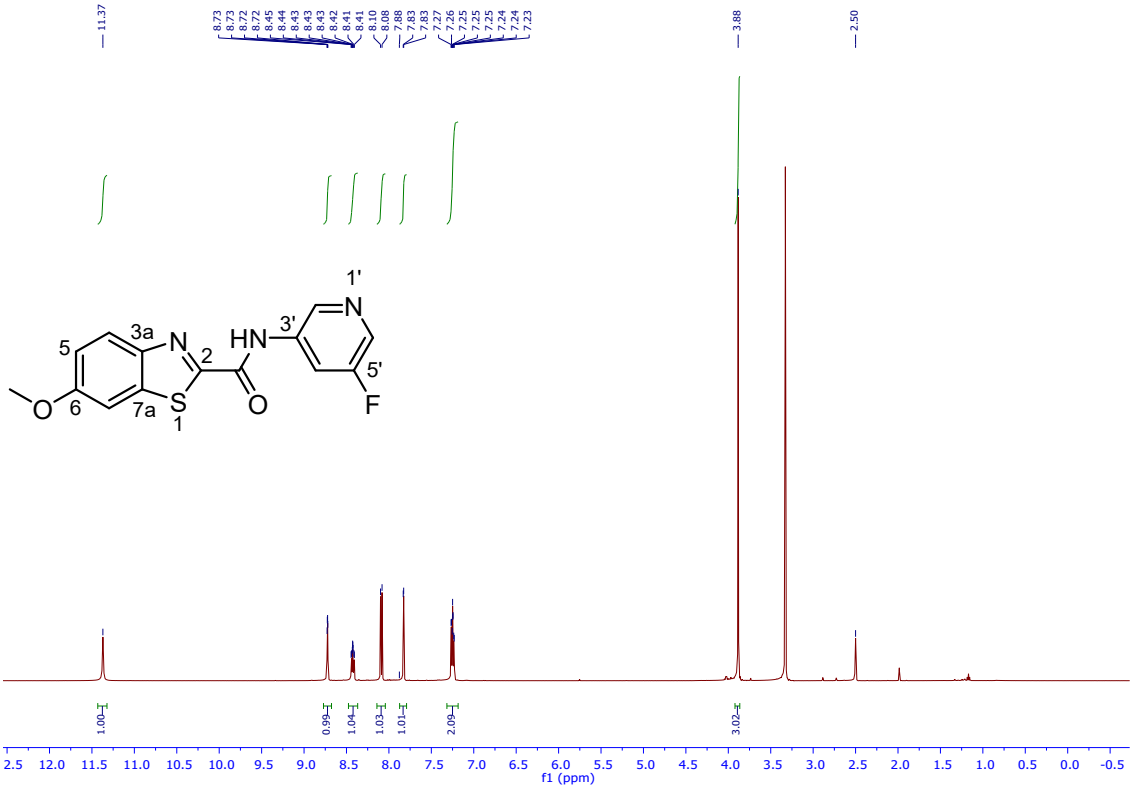


Figure S54. ^{13}C NMR for **112** (125 MHz, DMSO-d_6)

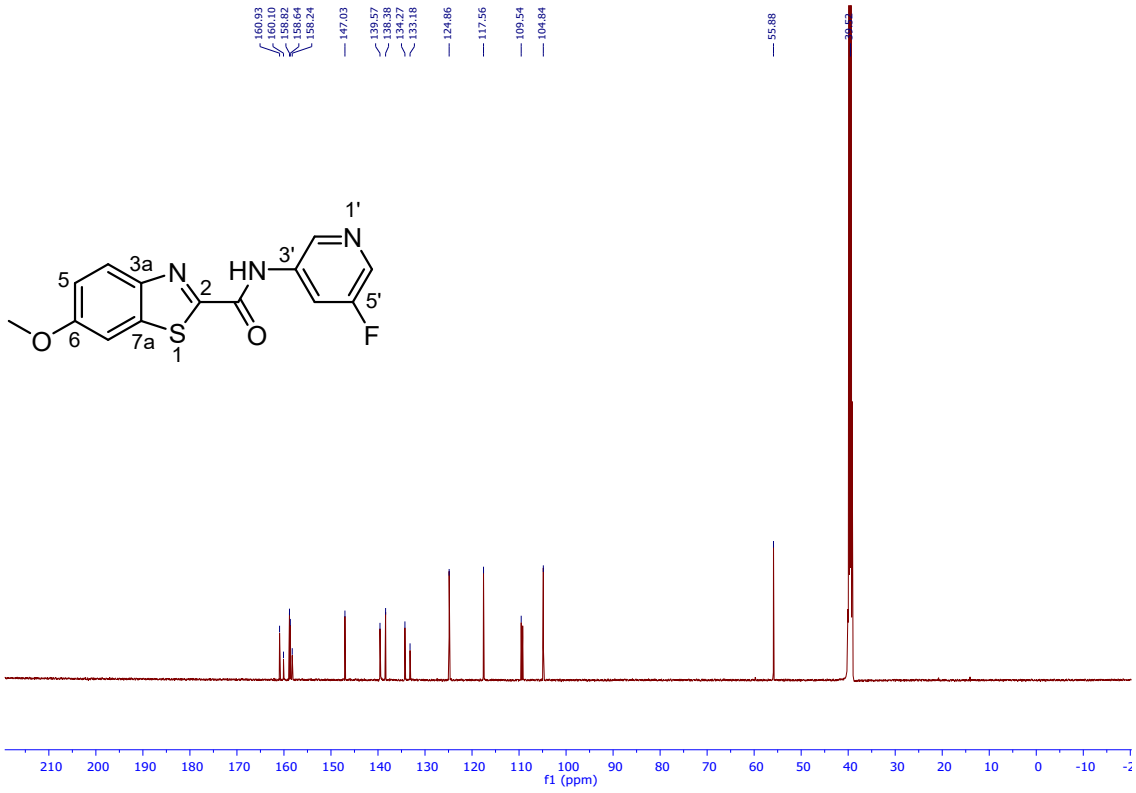


Figure S55. ^{1}H NMR for **113** (500 MHz, DMSO-d_6)

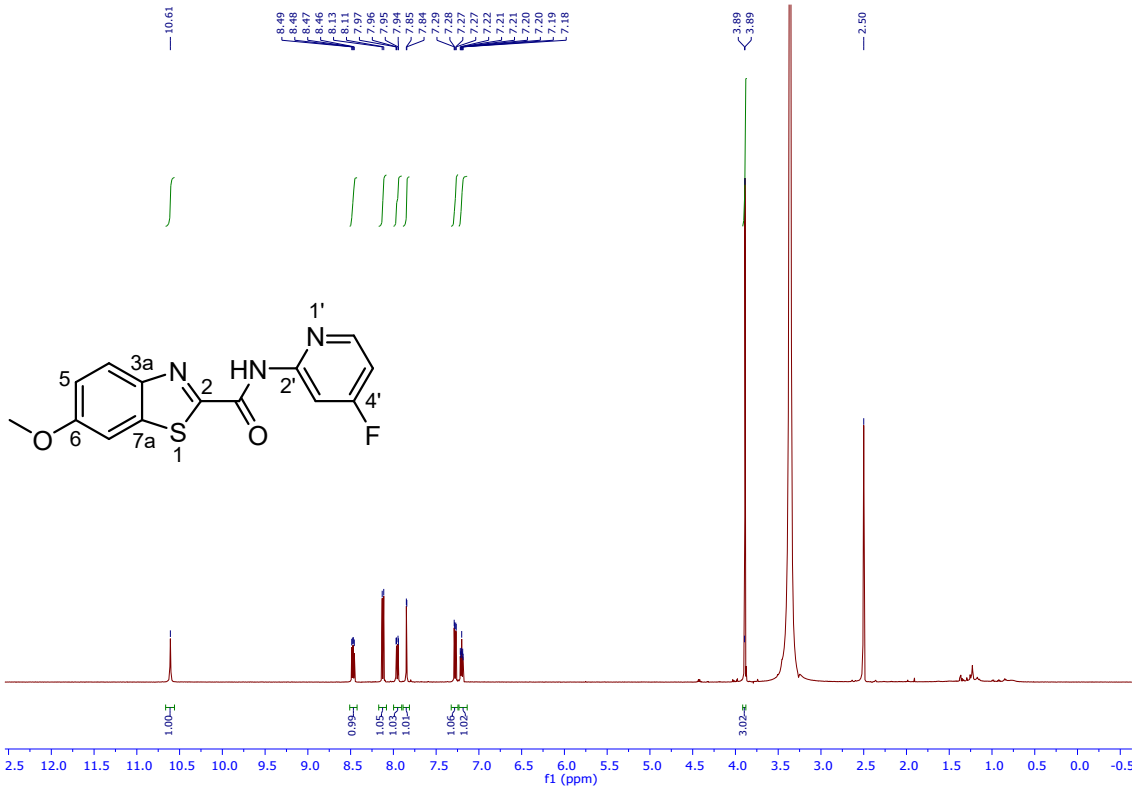


Figure S56. ^{13}C NMR for **113** (125 MHz, DMSO-d_6)

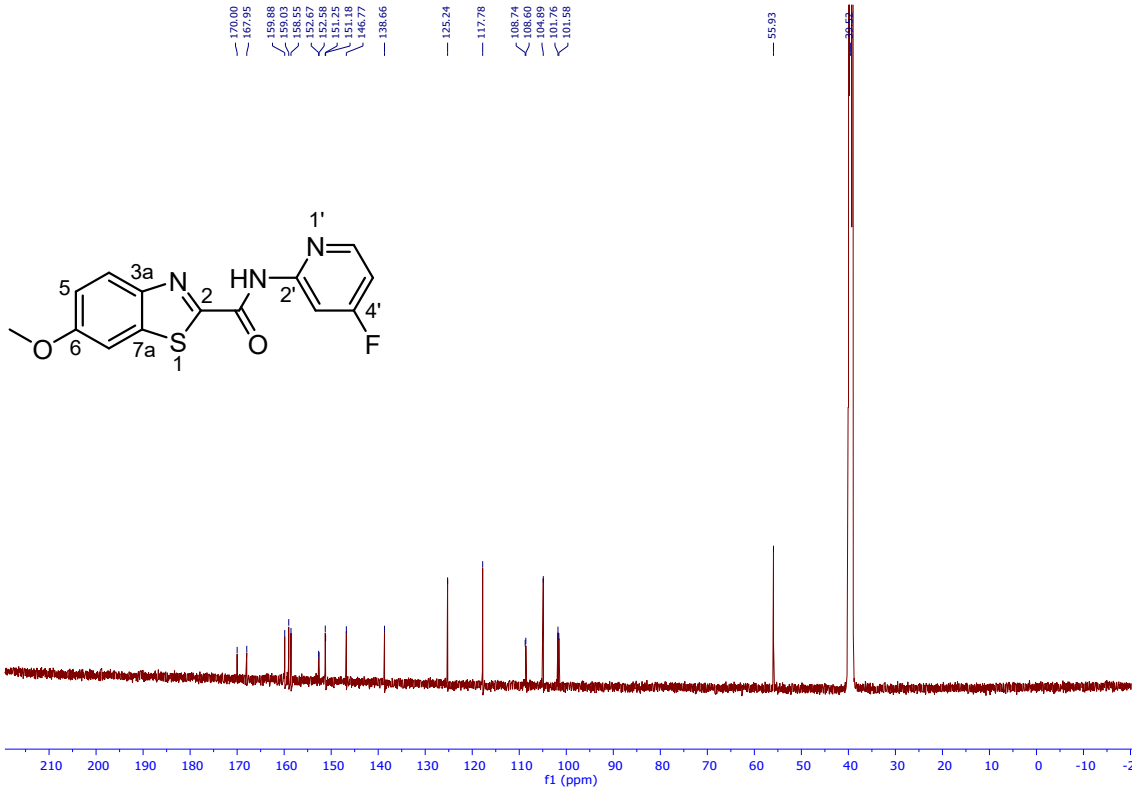


Figure S57. ^{1}H NMR for **114** (500 MHz, DMSO-d_6)

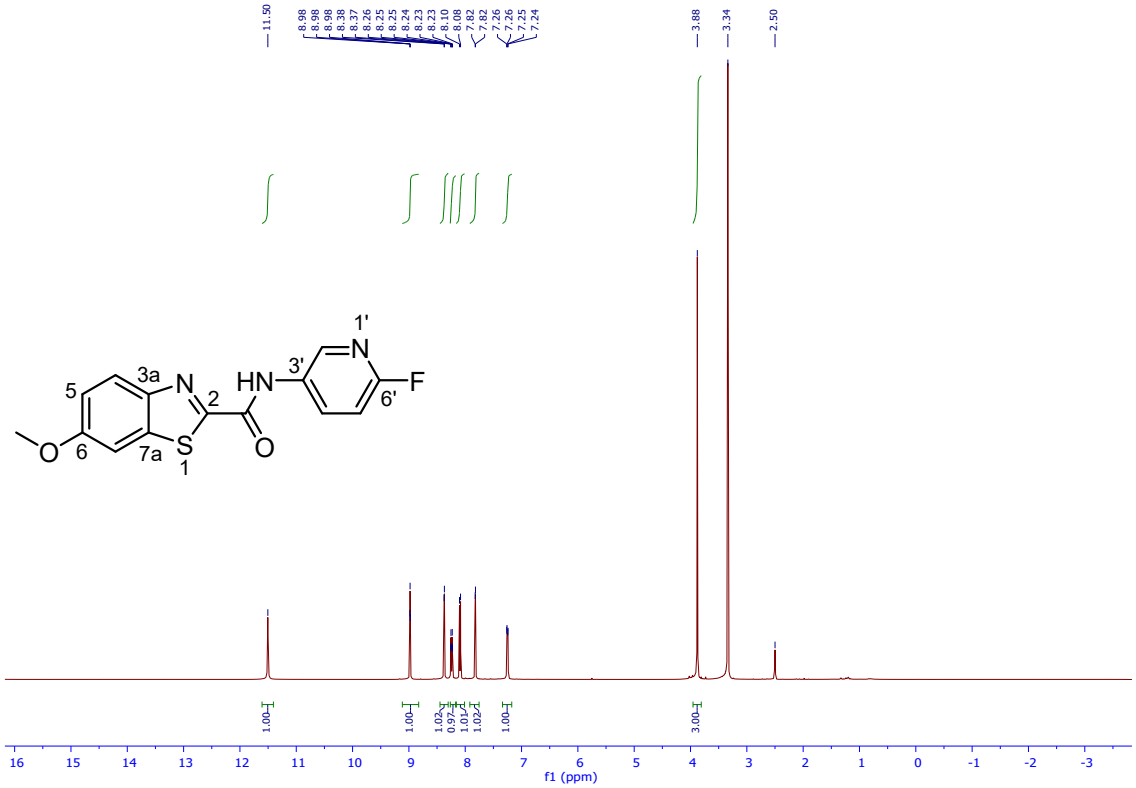


Figure S58. ^{13}C NMR for **114** (125 MHz, DMSO-d_6)

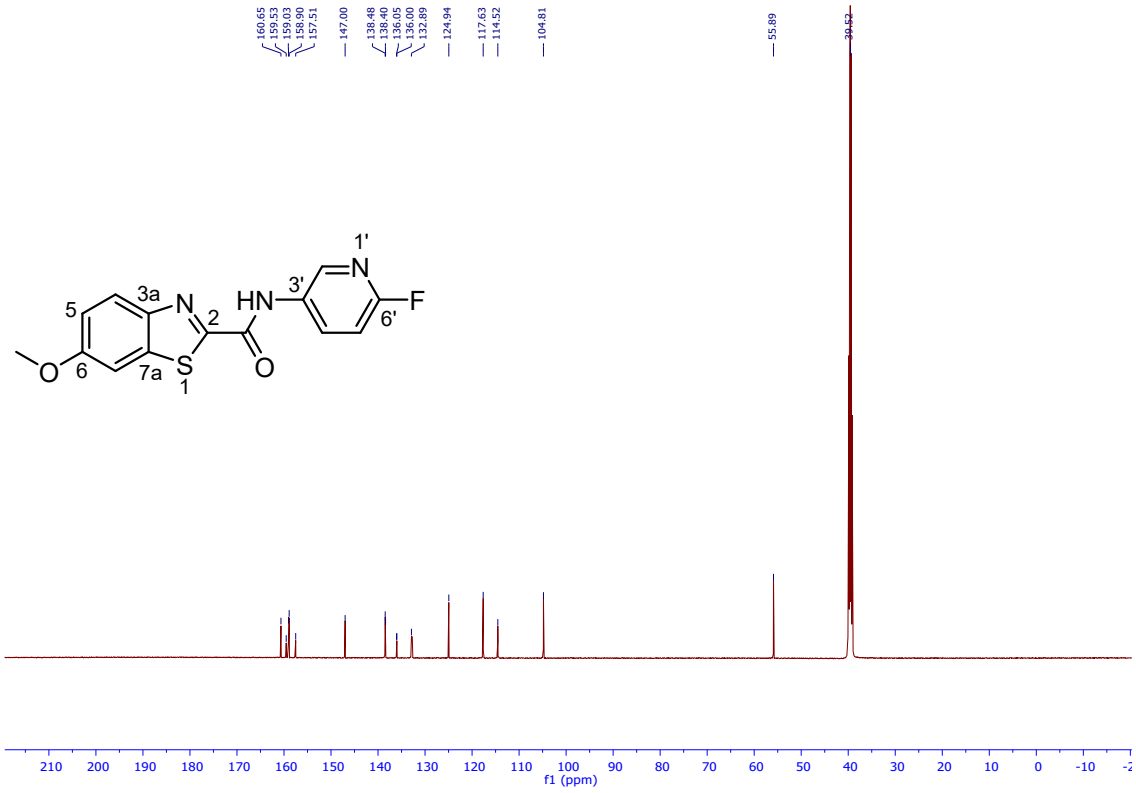


Figure S59. ^{1}H NMR for **115** (400 MHz, $CDCl_3$)

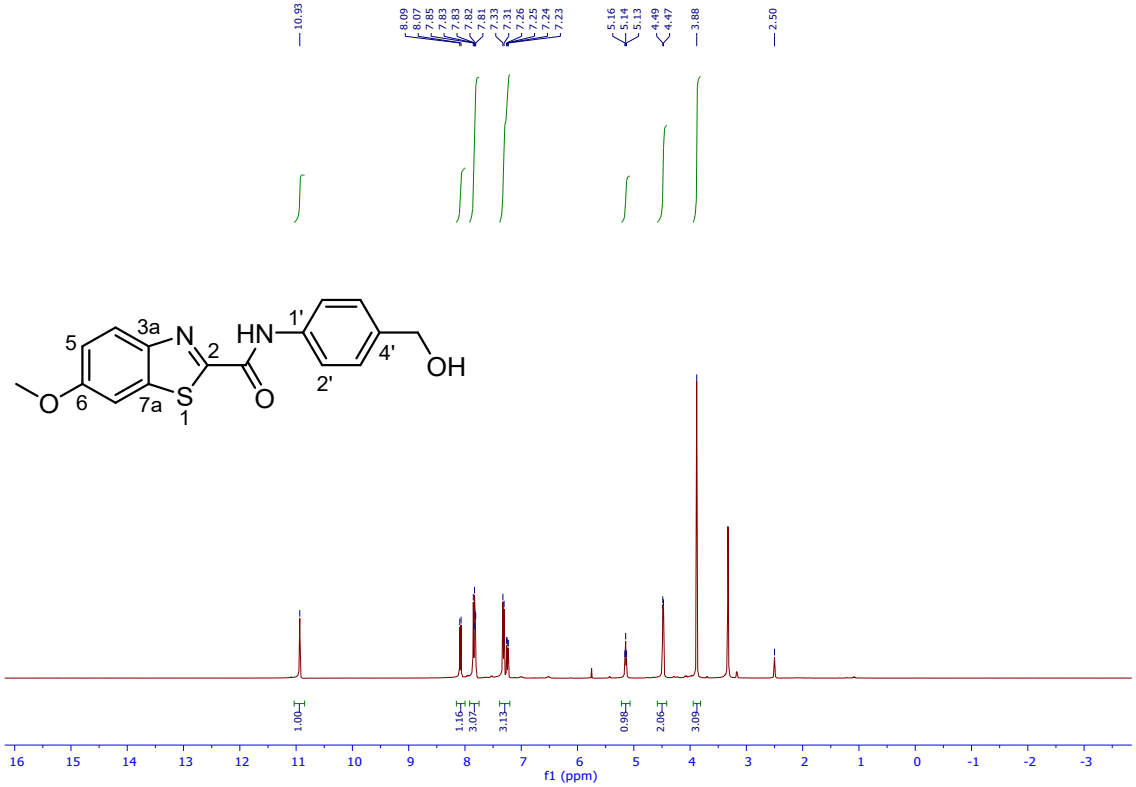


Figure S60. ^{13}C NMR for **115** (400 MHz, $CDCl_3$)

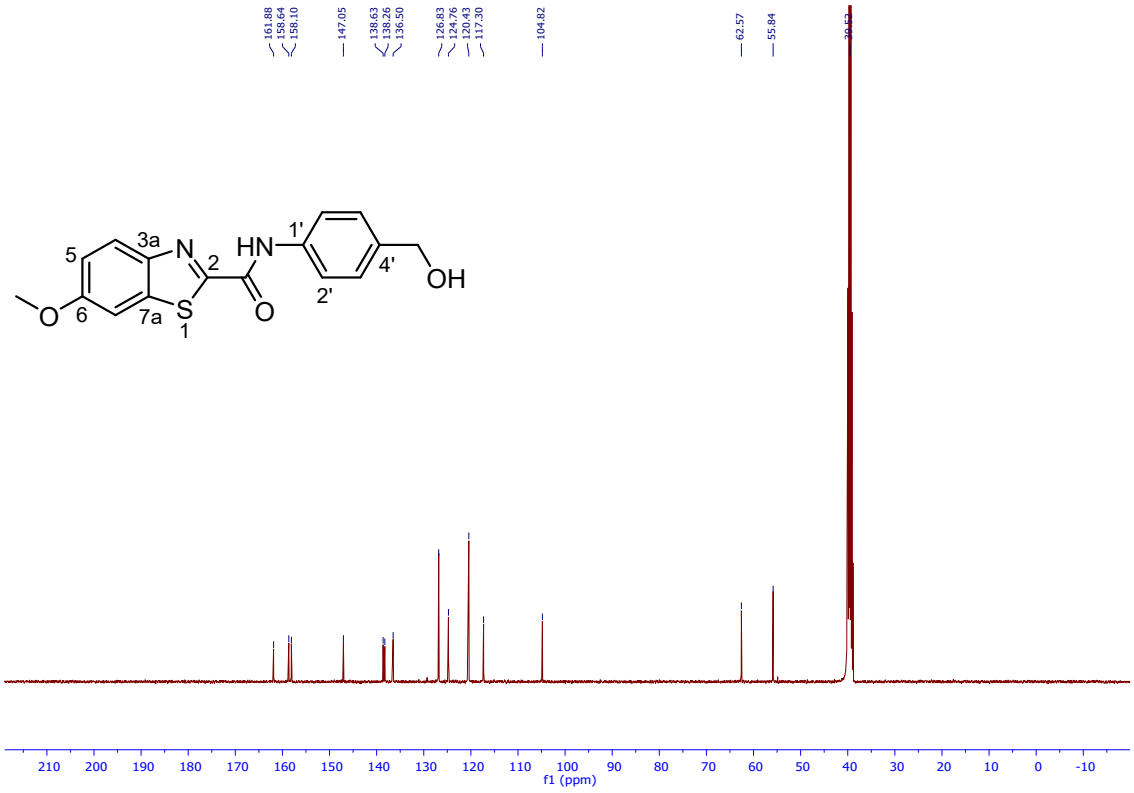


Figure S61. ^{1}H NMR for **116** (400 MHz, $CDCl_3$)

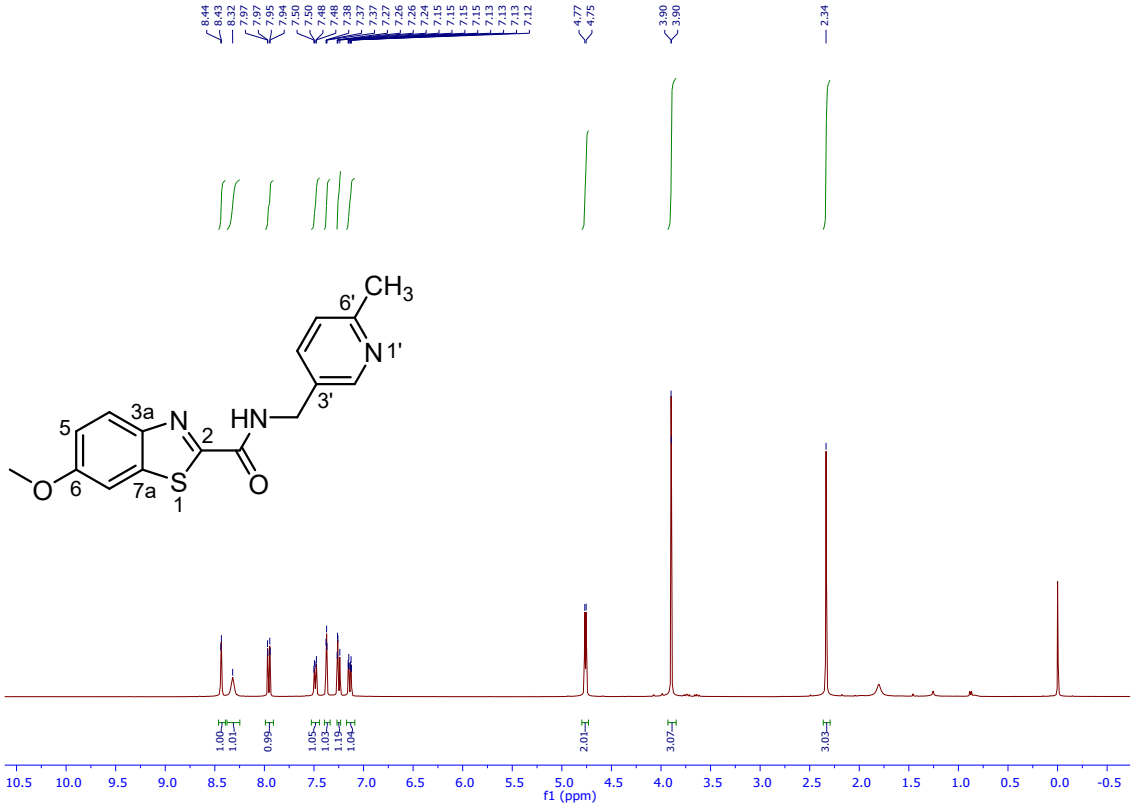


Figure S62. ^{13}C NMR for **116** (400 MHz, $CDCl_3$)

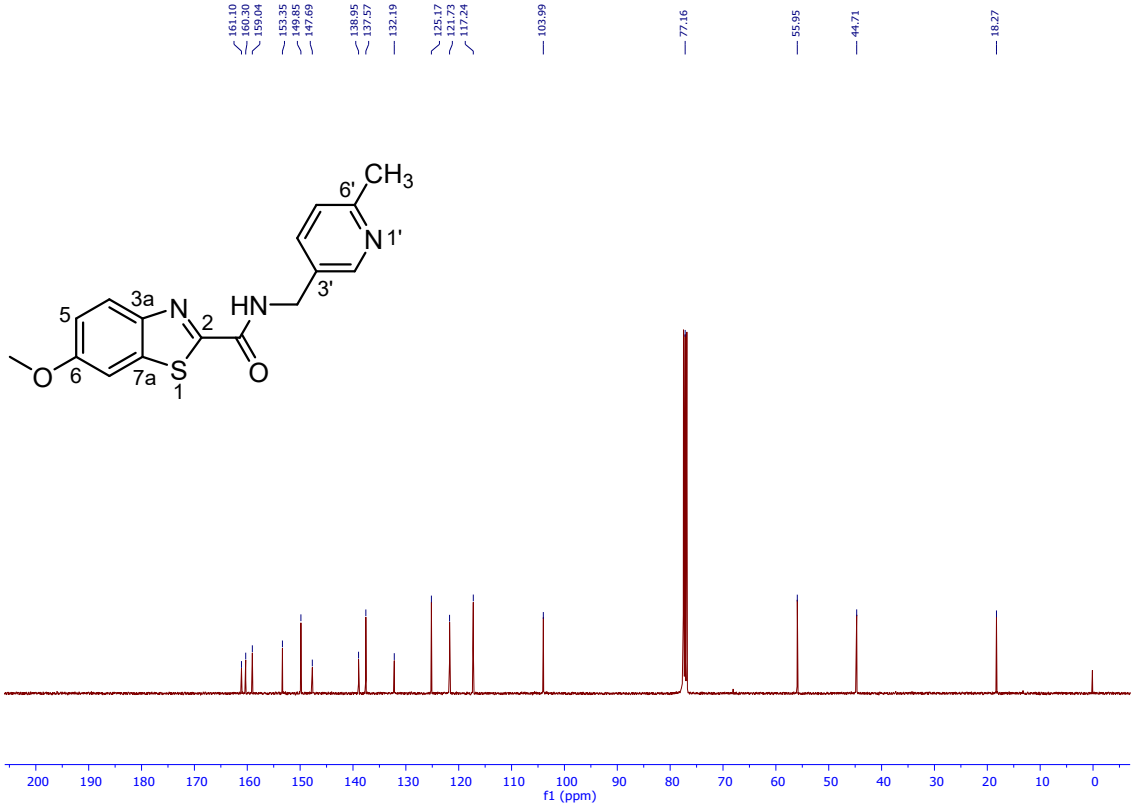


Figure S63. ^{1}H NMR for **117** (400 MHz, $CDCl_3$)

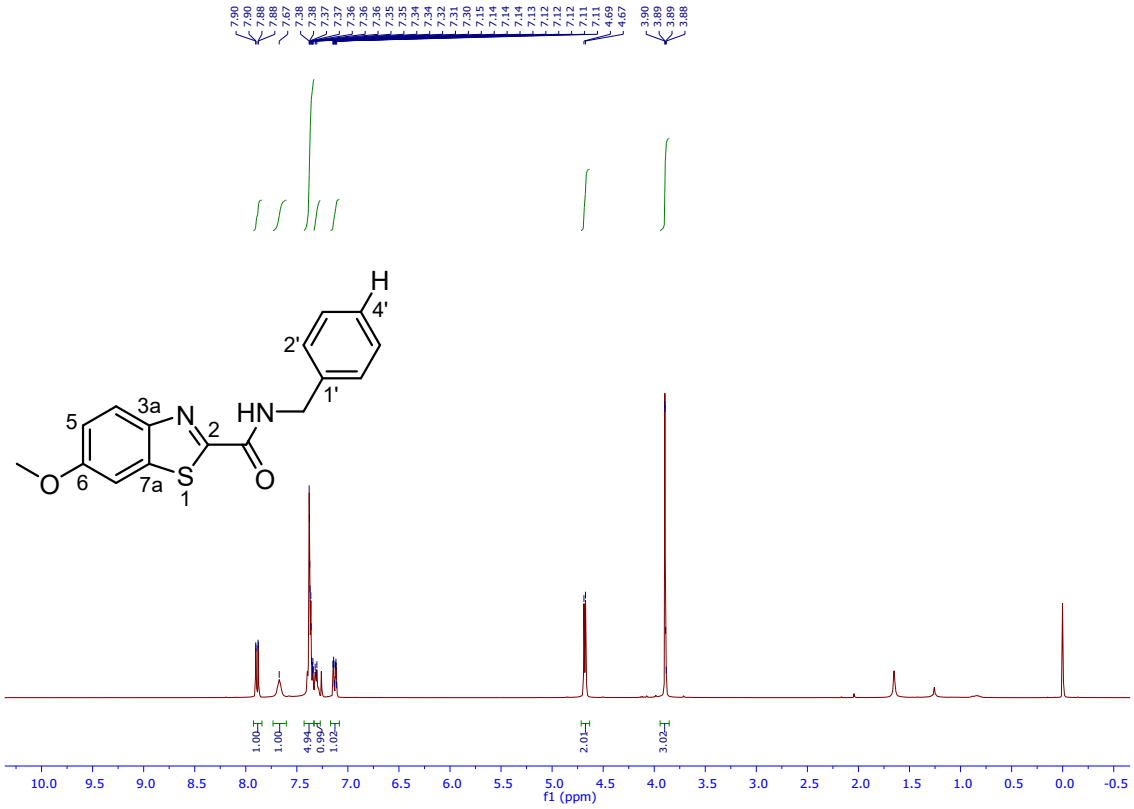


Figure S64. ^{13}C NMR for **117** (400 MHz, $CDCl_3$)

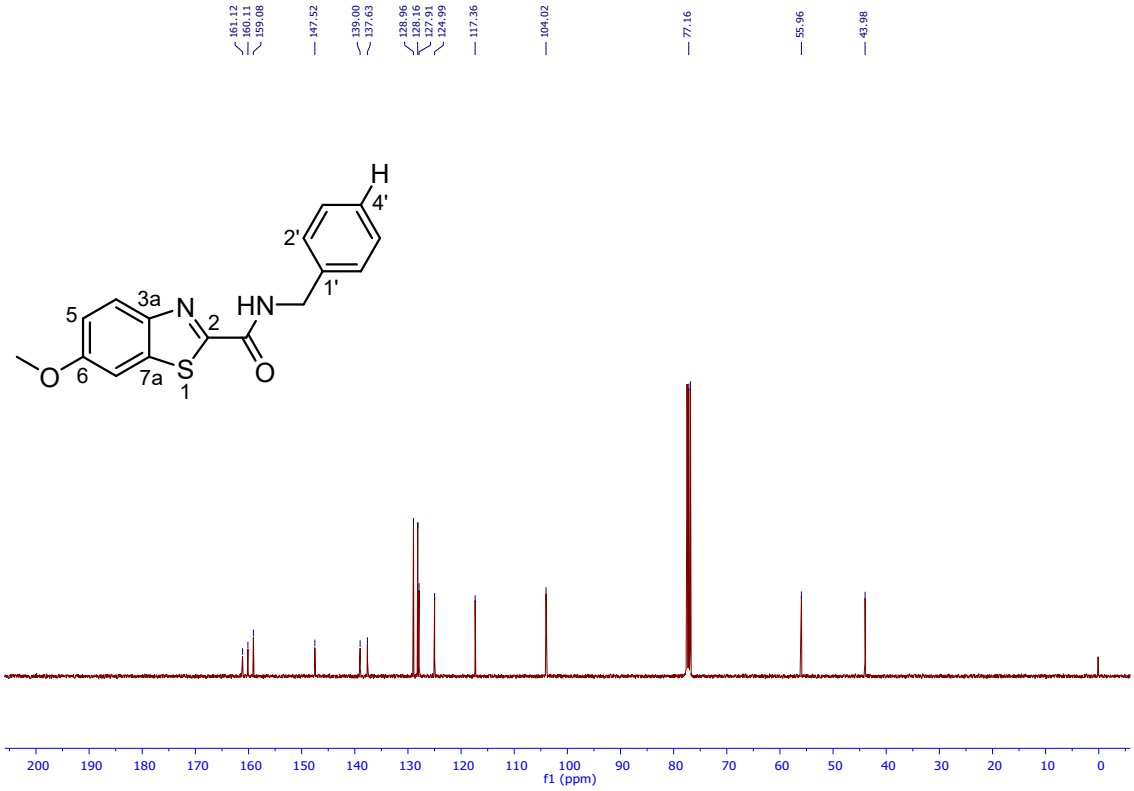


Figure S65. ^{1}H NMR for **118** (400 MHz, $CDCl_3$)

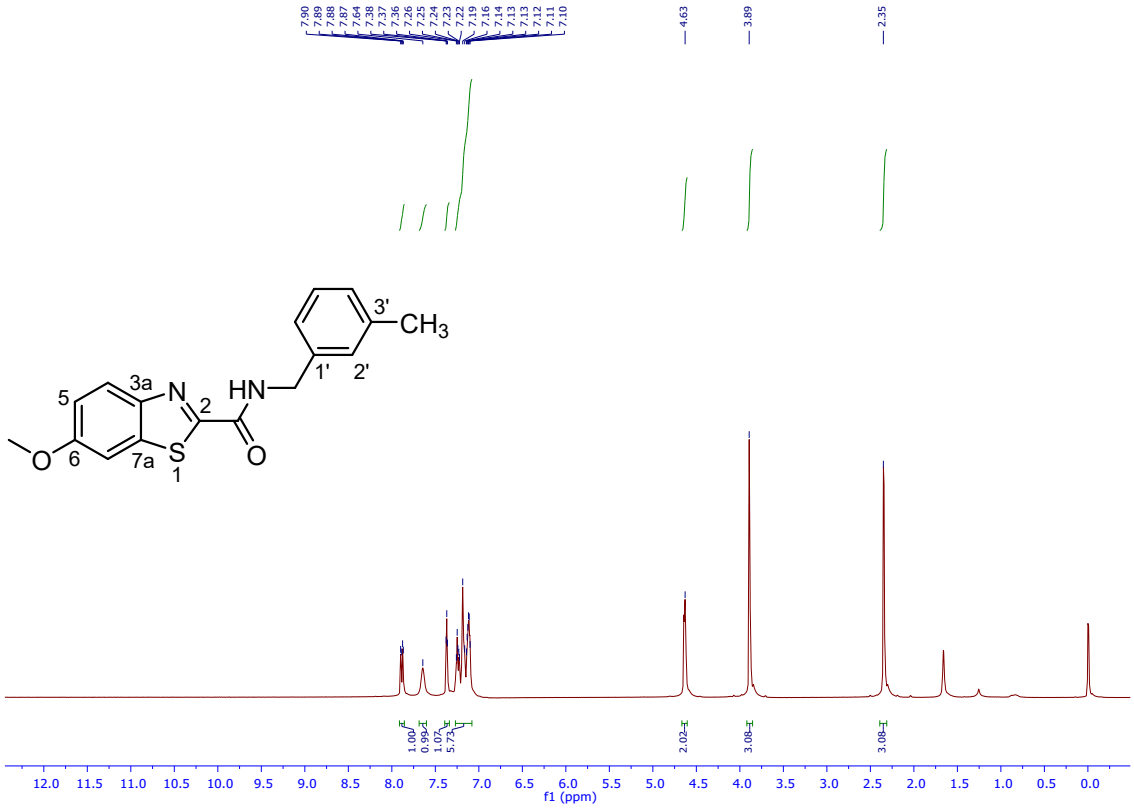


Figure S66. ^{13}C NMR for **118** (400 MHz, $CDCl_3$)

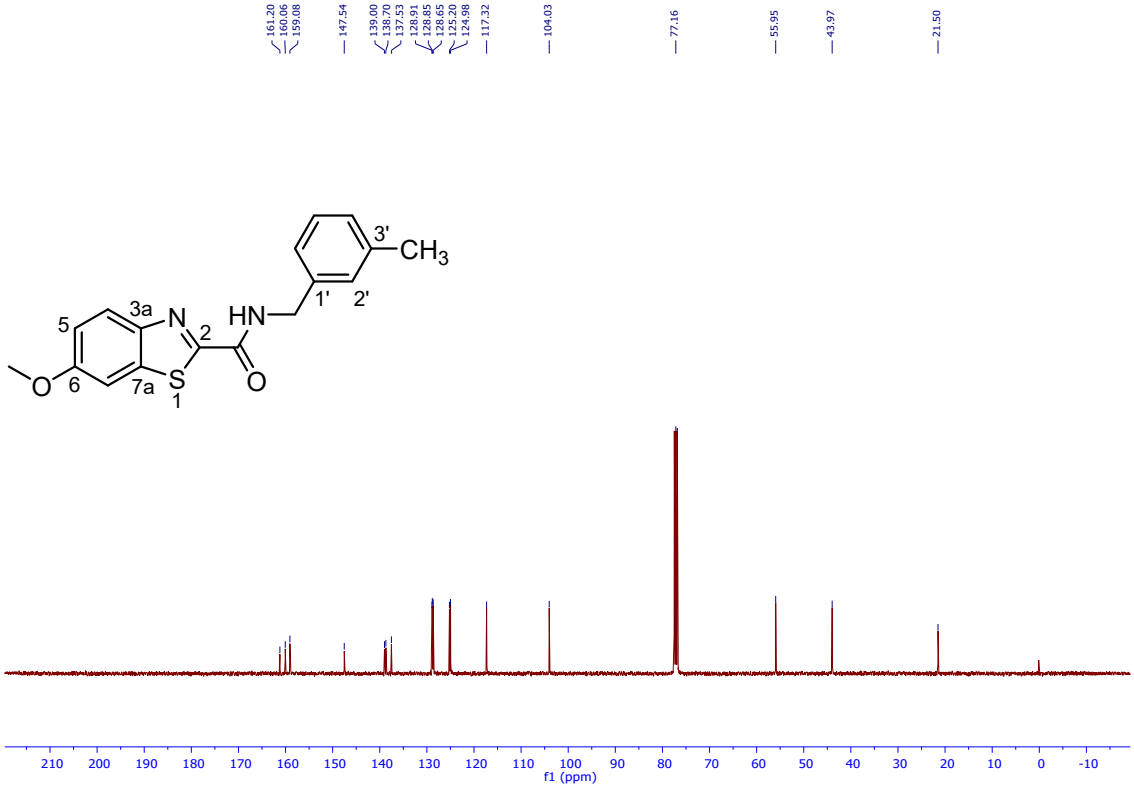


Figure S67. ^{1}H NMR for **119** (400 MHz, $CDCl_3$)

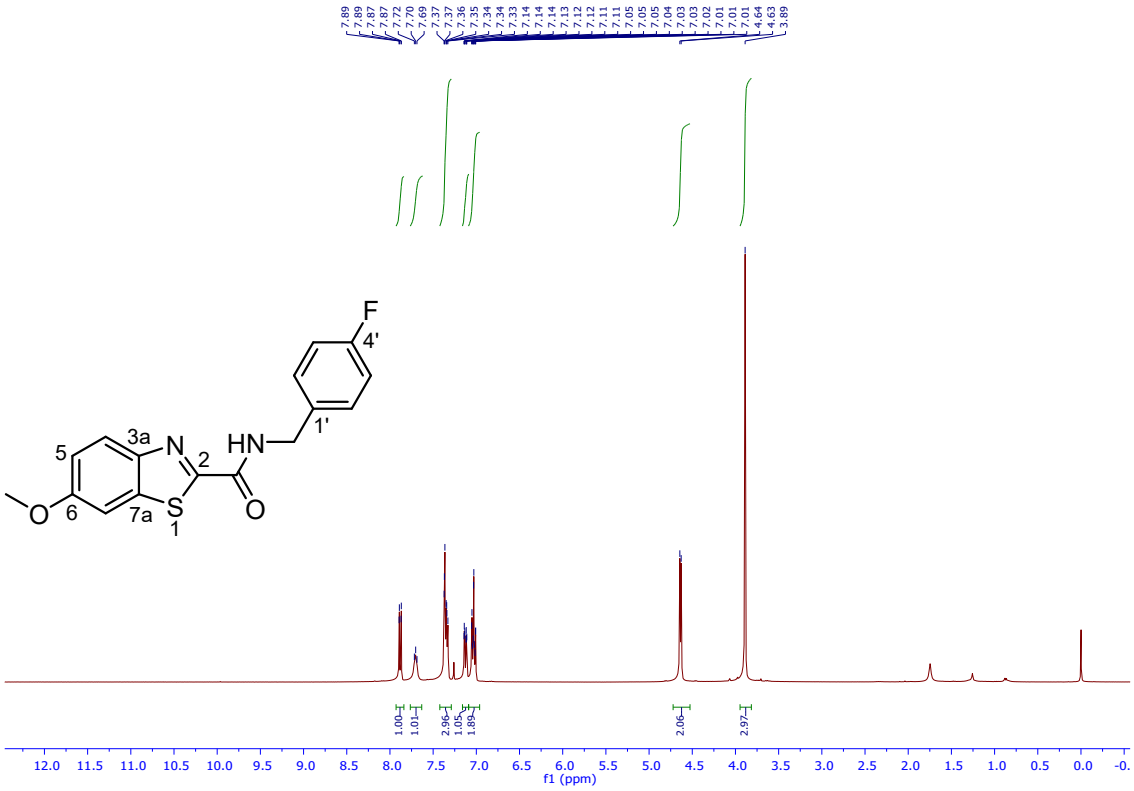


Figure S68. ^{13}C NMR for **119** (100 MHz, $CDCl_3$)

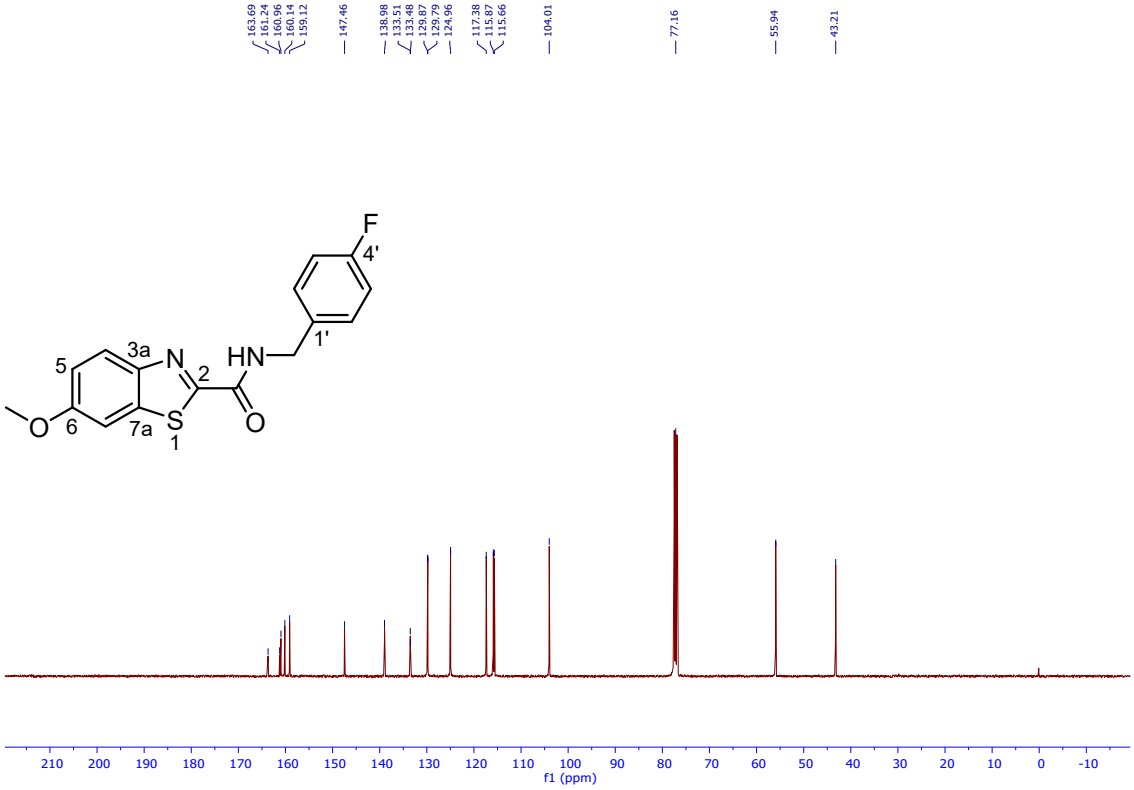


Figure S69. ^{1}H NMR for **120** (400 MHz, DMSO-d_6)

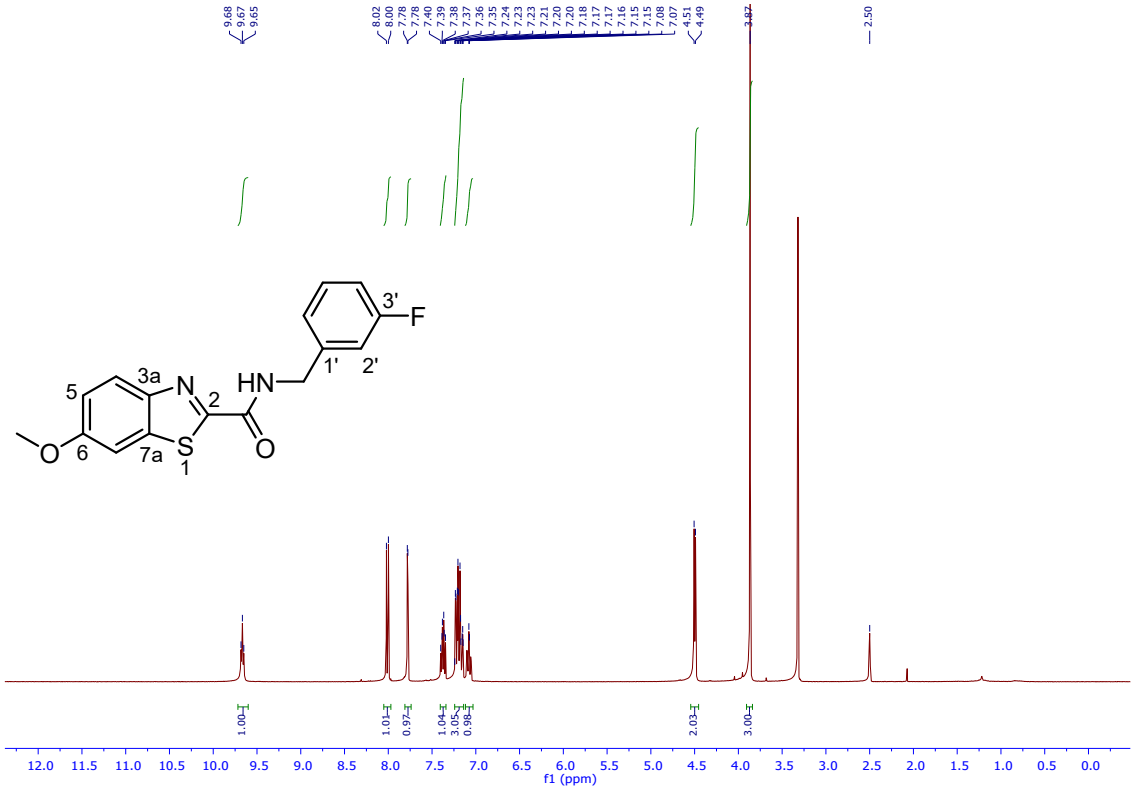


Figure S70. ^{13}C NMR for **120** (100 MHz, DMSO-d_6)

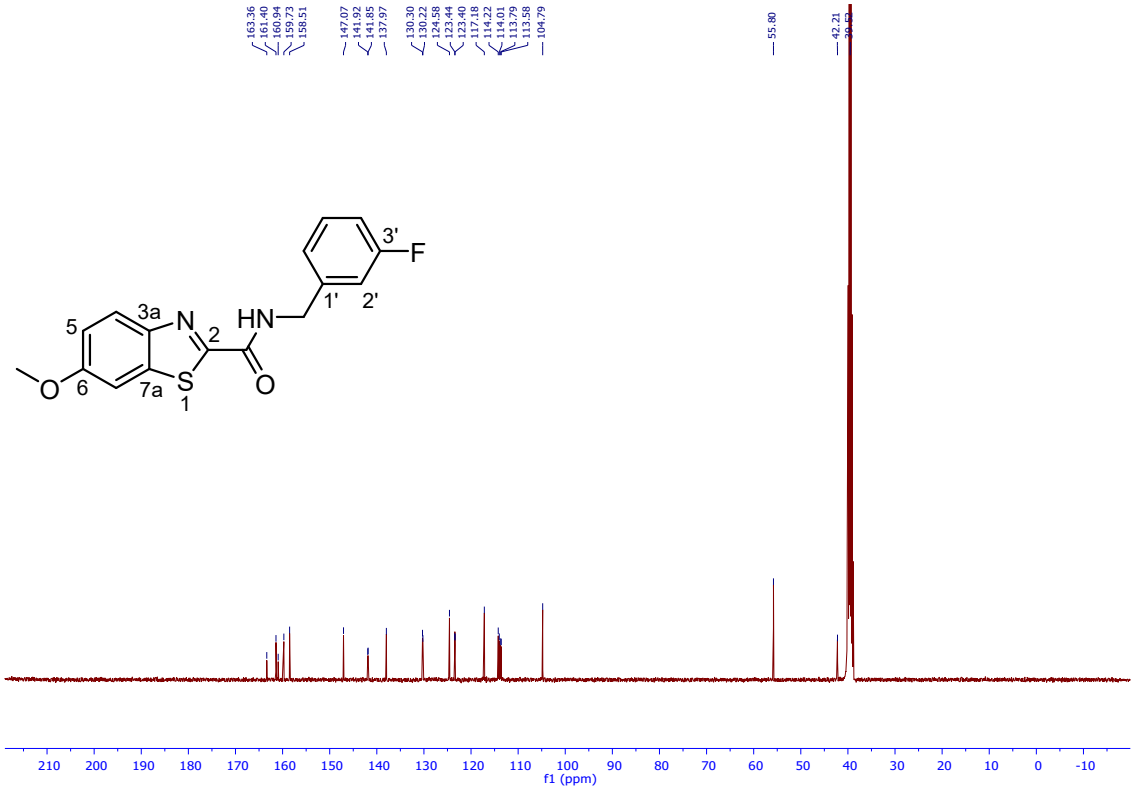


Figure S71. ^{1}H NMR for **121** (400 MHz, DMSO-d_6)

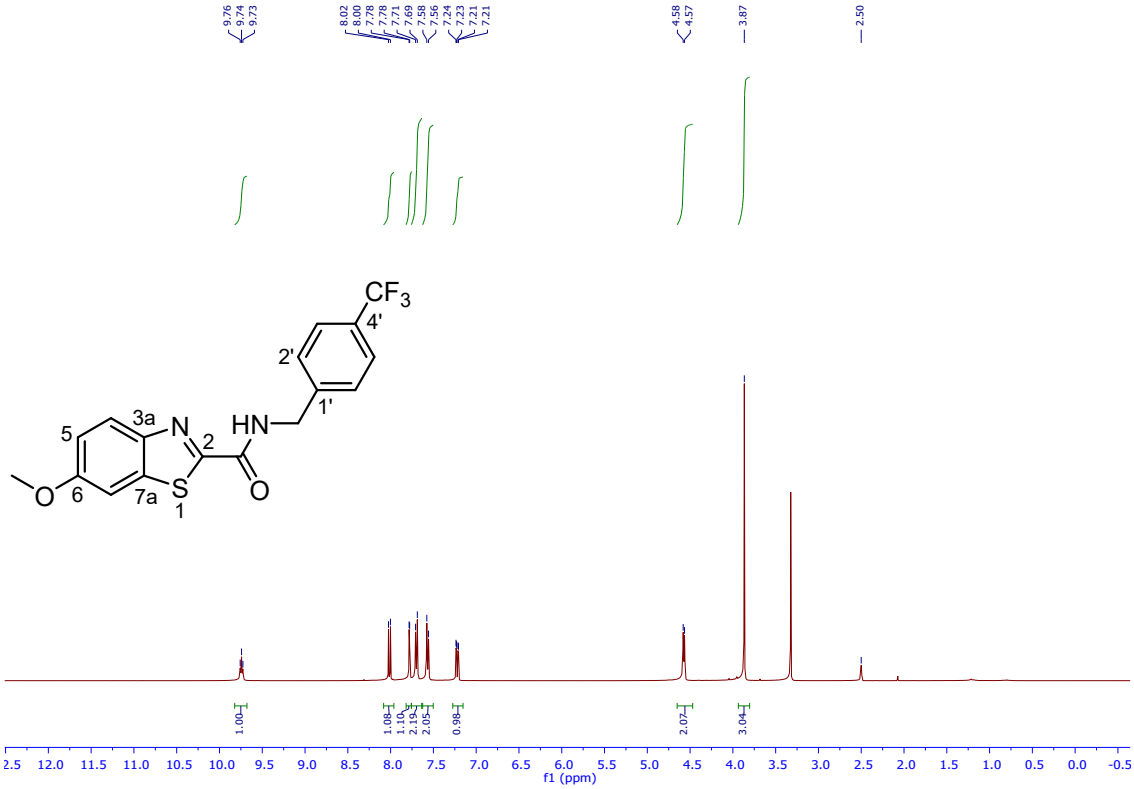


Figure S72. ^{13}C NMR for **121** (100 MHz, DMSO-d_6)

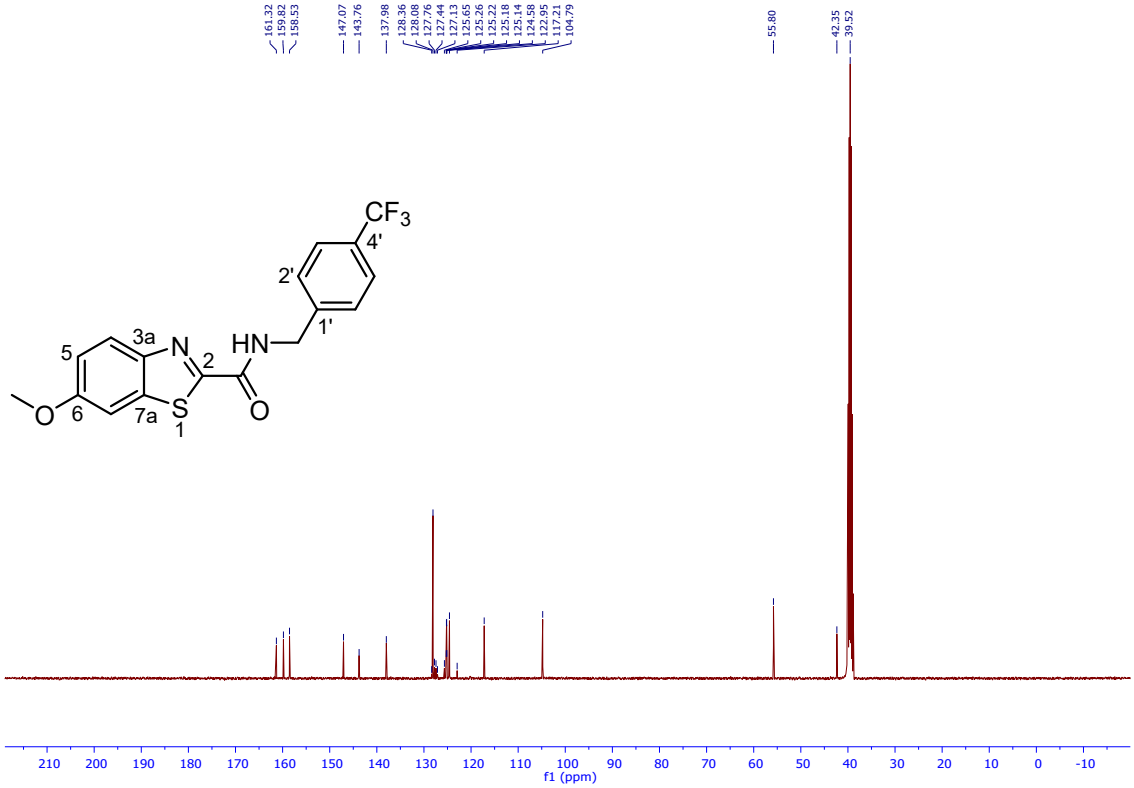


Figure S73. ^{1}H NMR for **127** (500 MHz, $CDCl_3$)

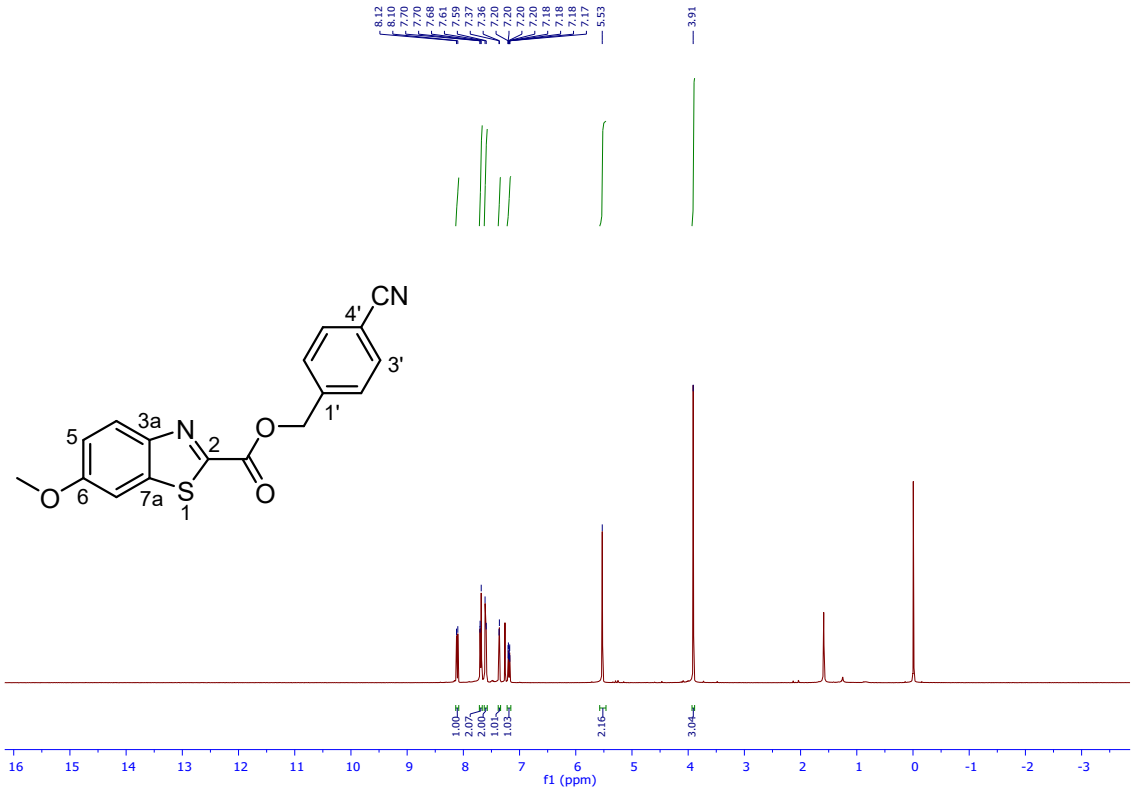


Figure S74. ^{13}C NMR for **127** (500 MHz, $CDCl_3$)

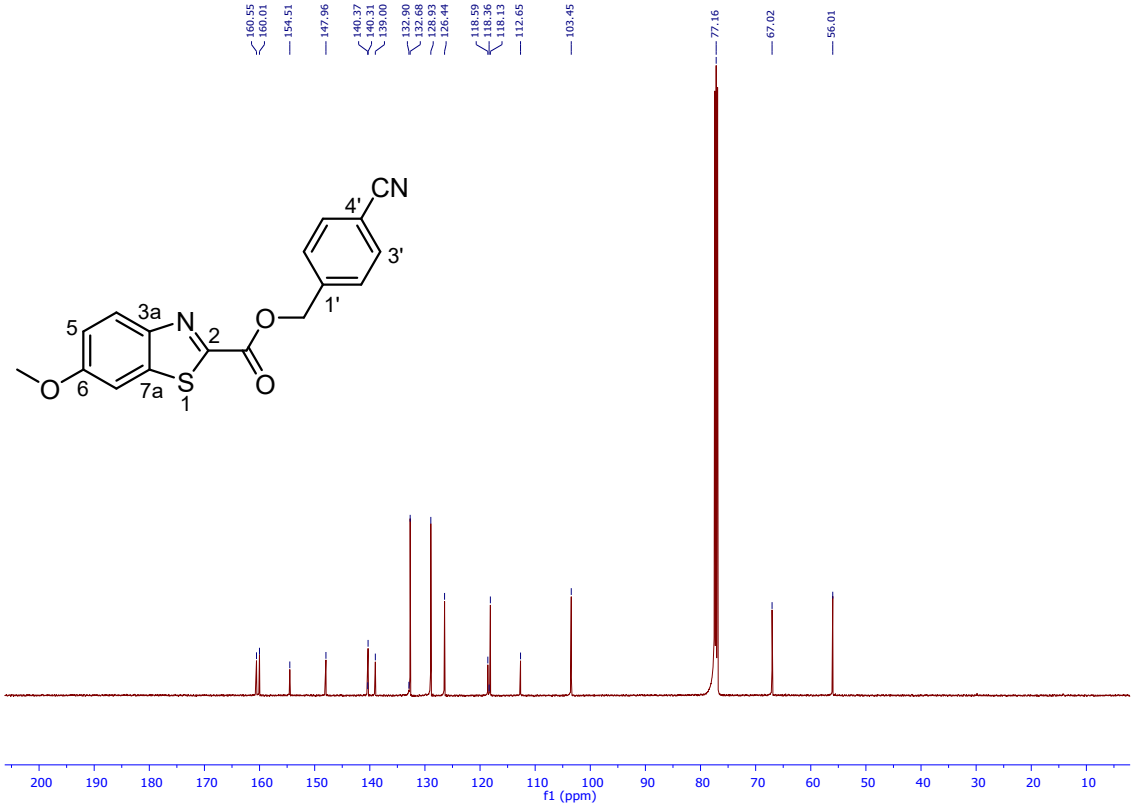


Figure S75. ^{1}H NMR for **128** (500 MHz, DMSO-d_6)

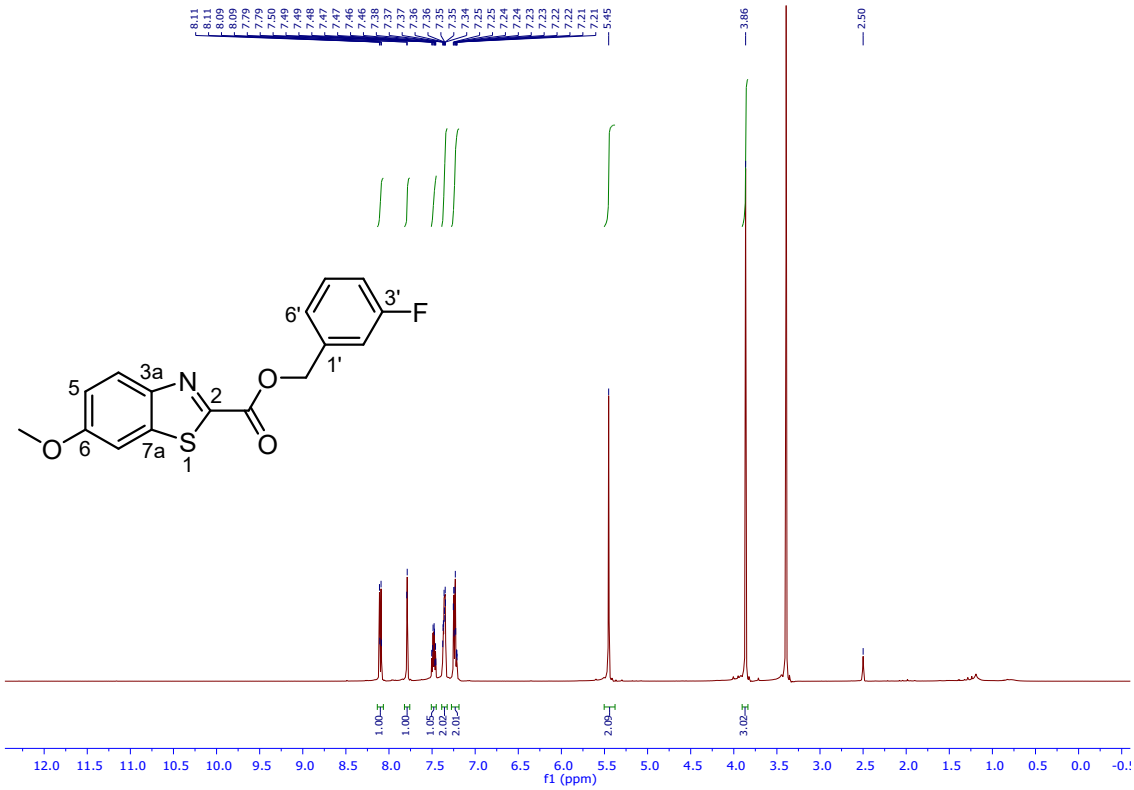


Figure S76. ^{13}C NMR for **128** (125 MHz, DMSO-d_6)

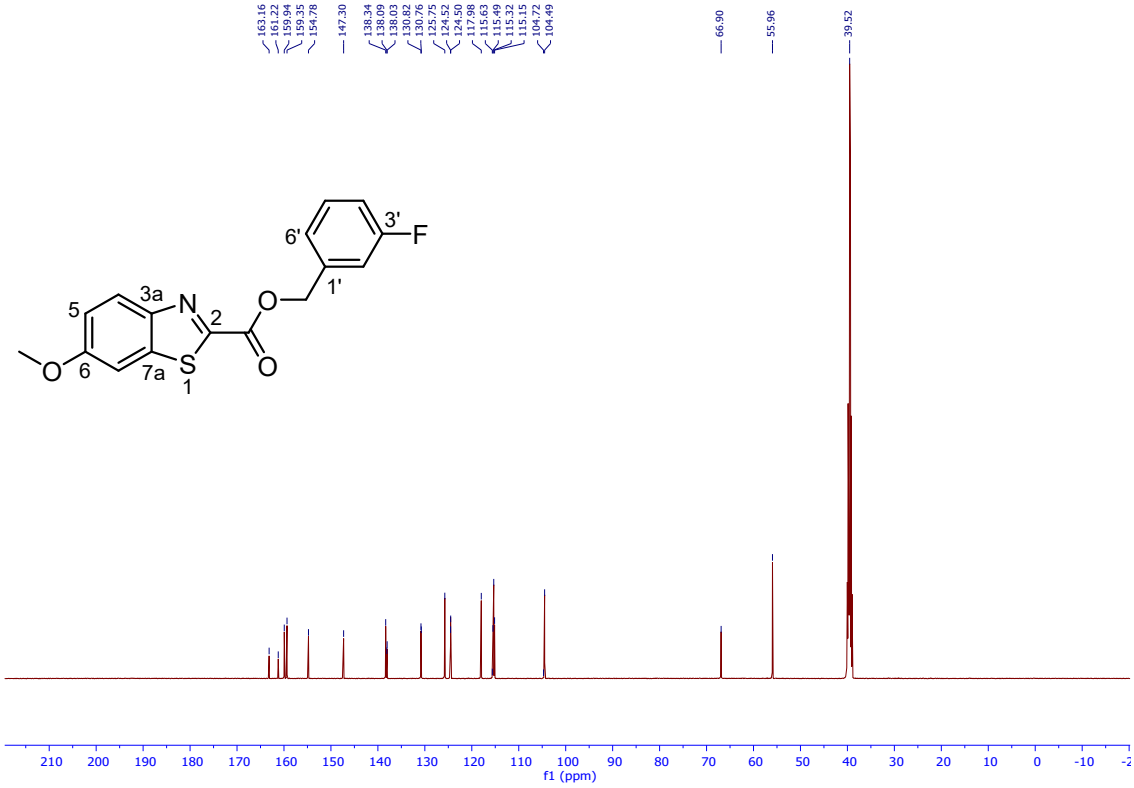


Figure S75. ^{1}H NMR for **129** (500 MHz, DMSO-d_6)

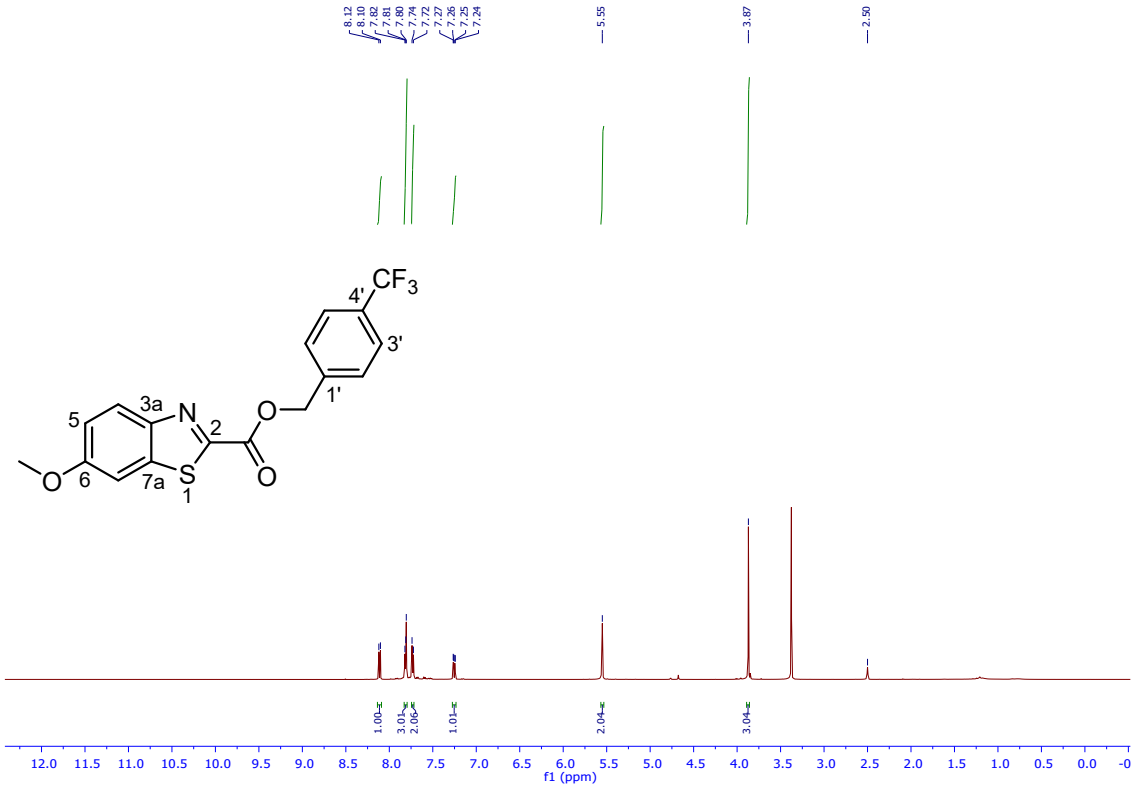


Figure S76. ^{13}C NMR for **129** (125 MHz, DMSO-d_6)

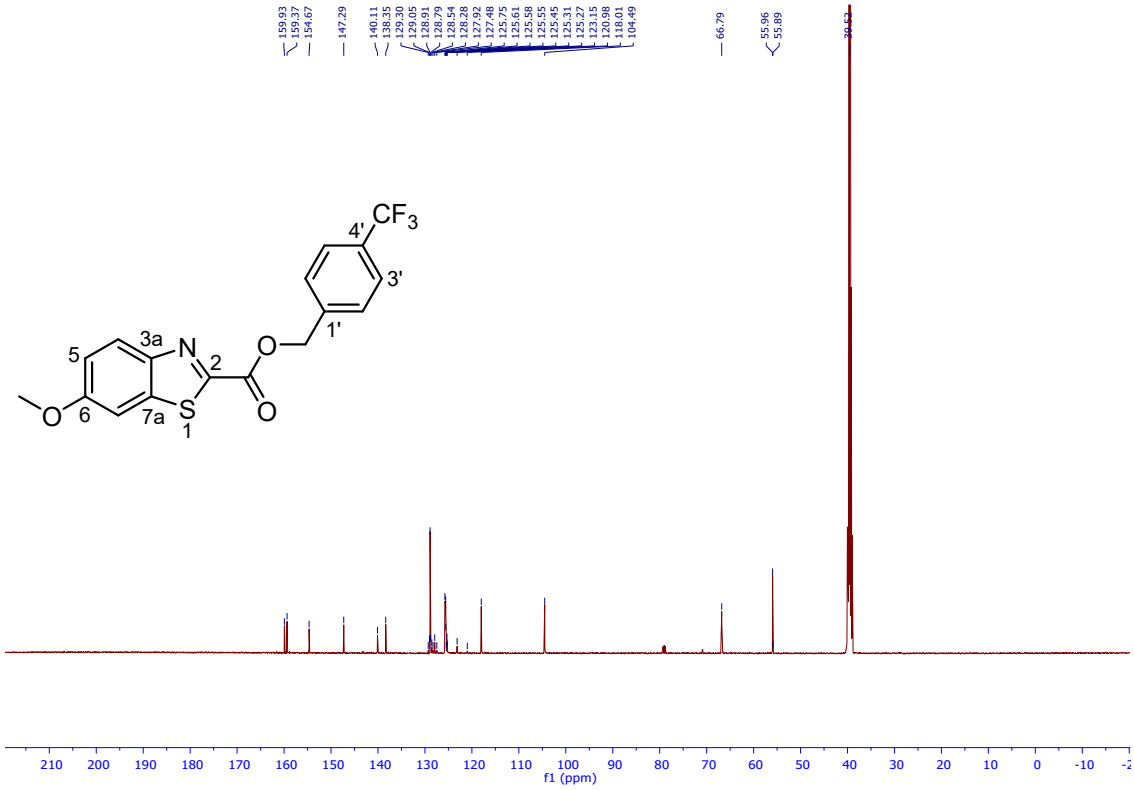


Figure S75. ^{1}H NMR for **130** (400 MHz, $CDCl_3$)

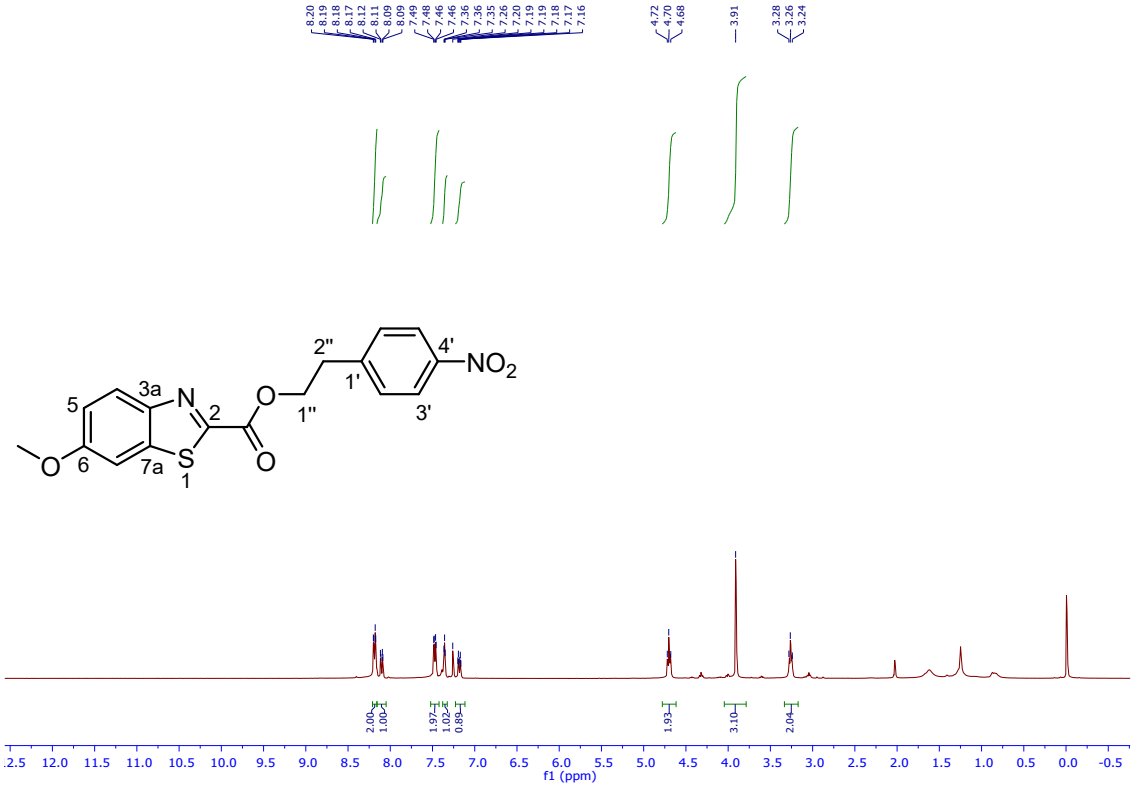
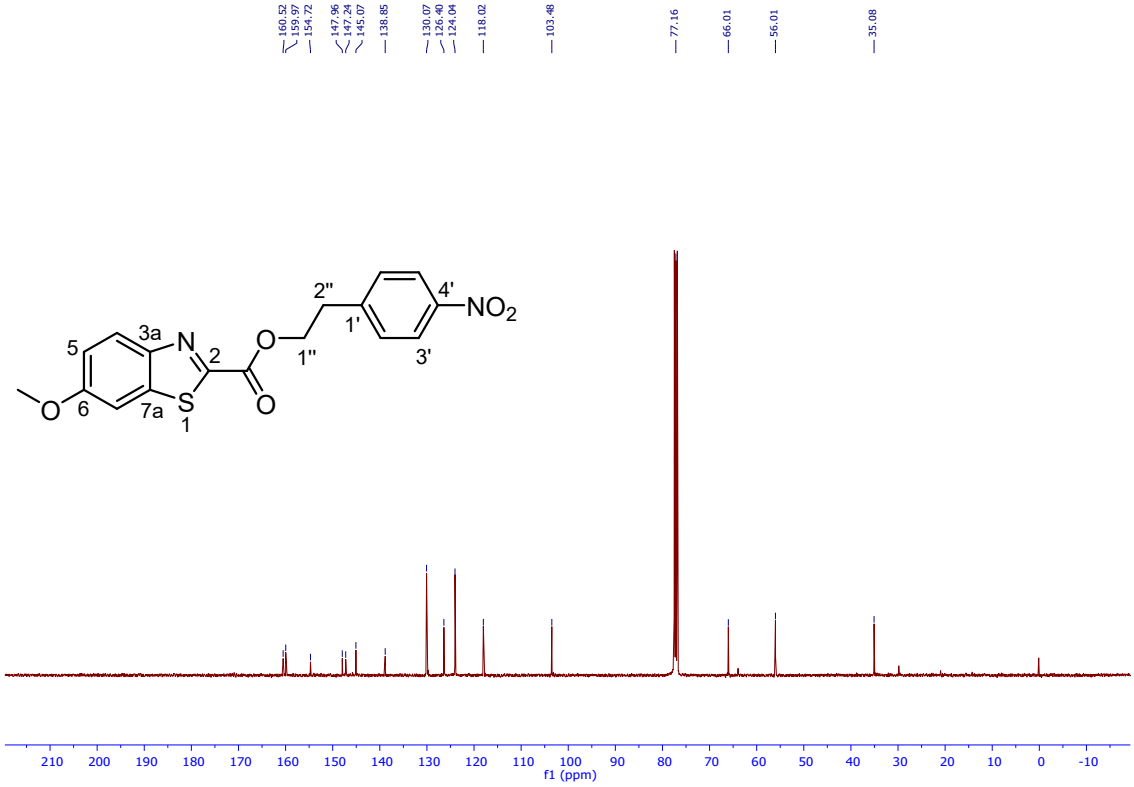
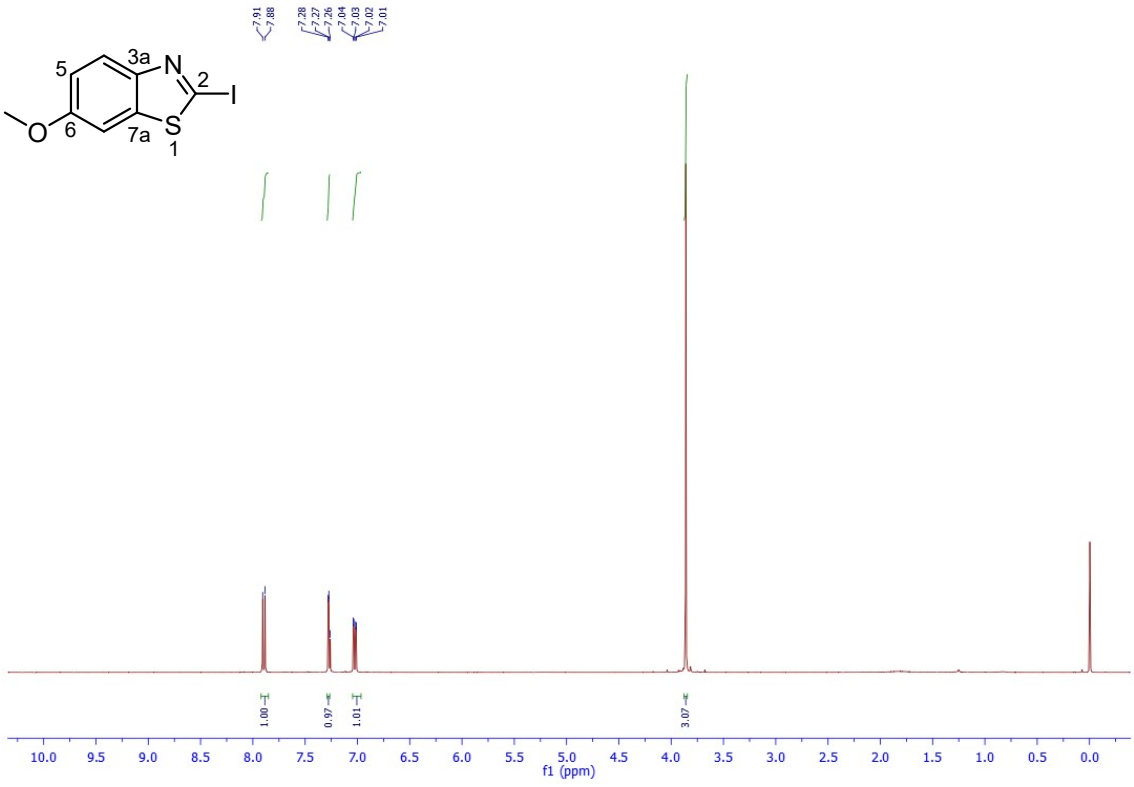


Figure S76. ^{13}C NMR for **130** (400 MHz, $CDCl_3$)

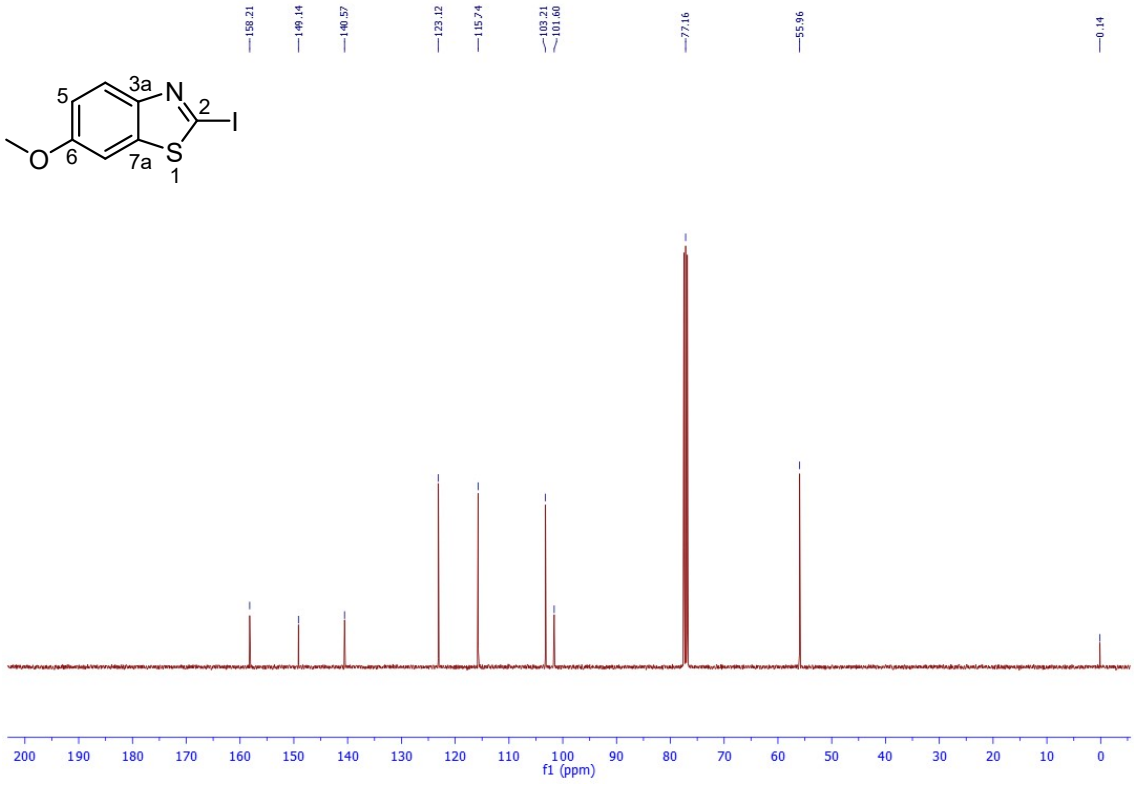


4. ^{1}H NMR and ^{13}C NMR Spectra of Key Intermediates

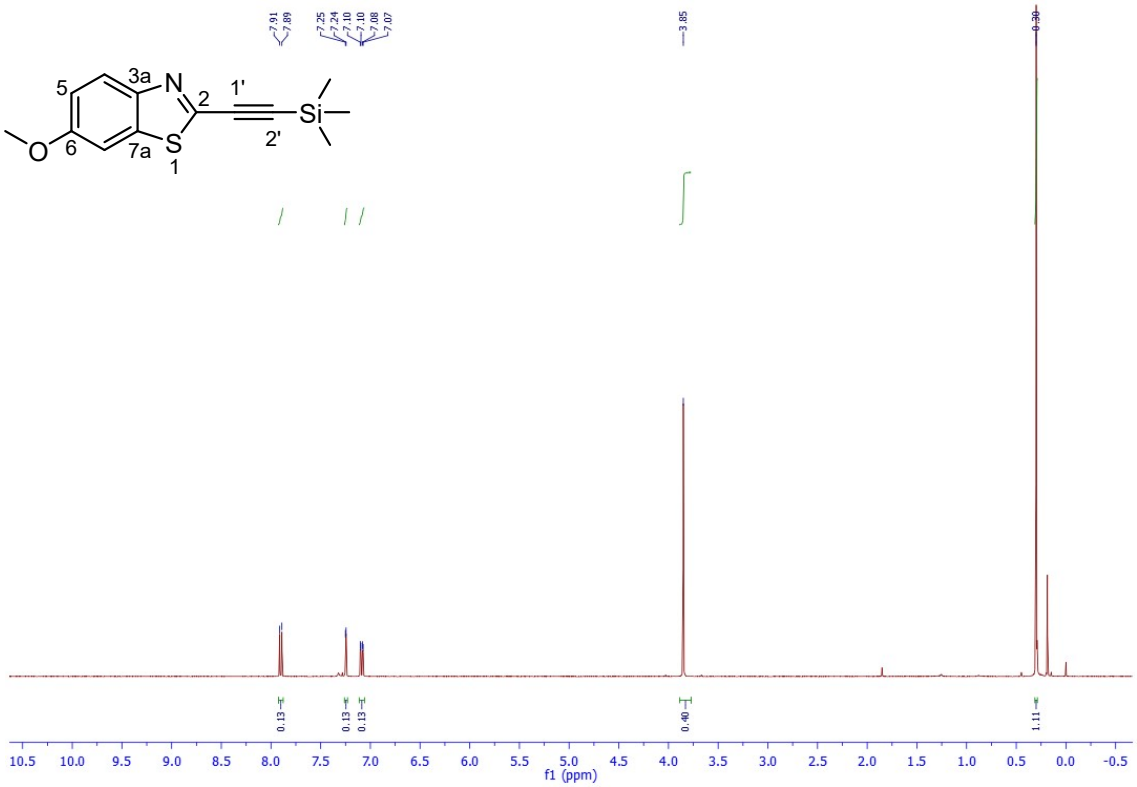
^{1}H NMR for **23** (400 MHz, $CDCl_3$)



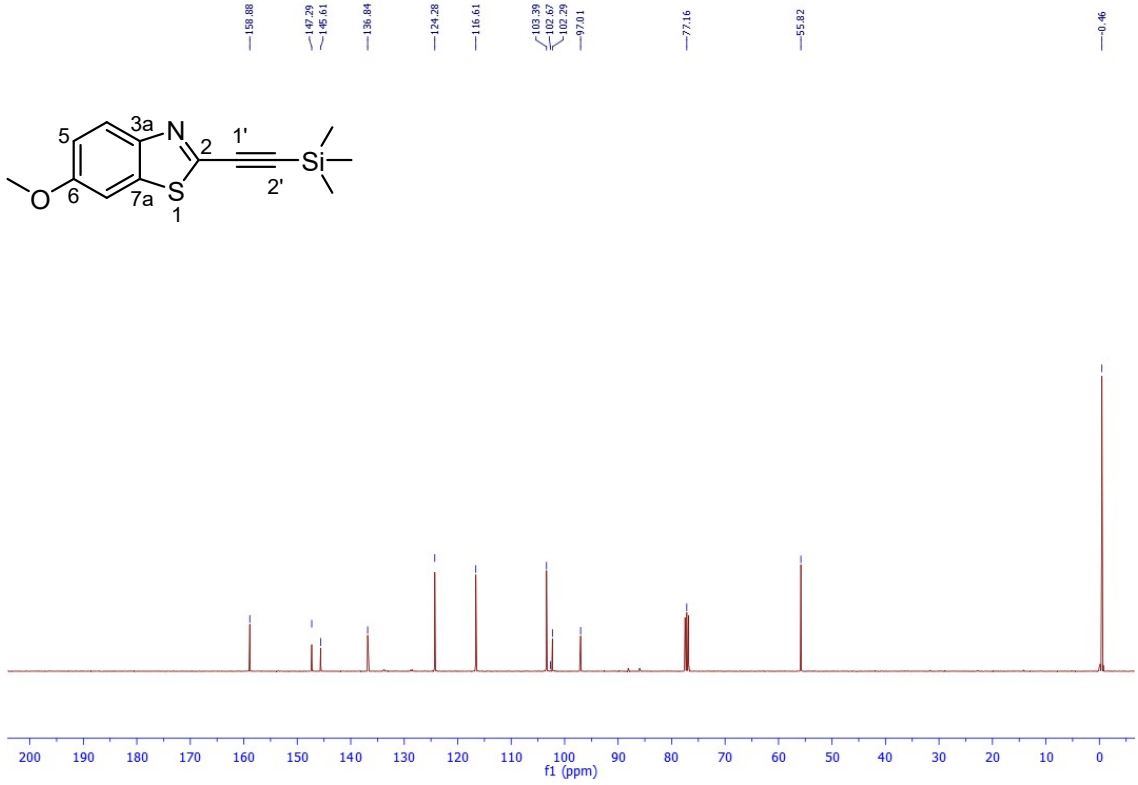
^{13}C NMR for **23** (400 MHz, $CDCl_3$)



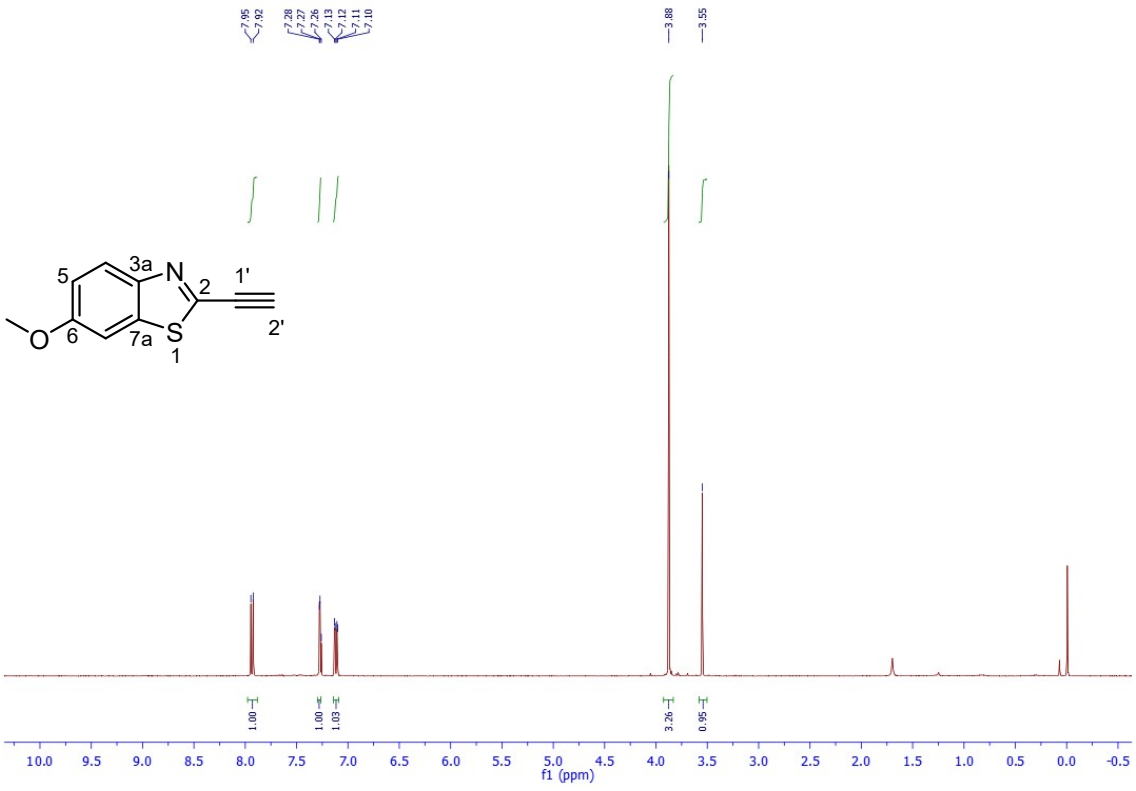
^{1}H NMR for **24** (400 MHz, $CDCl_3$)



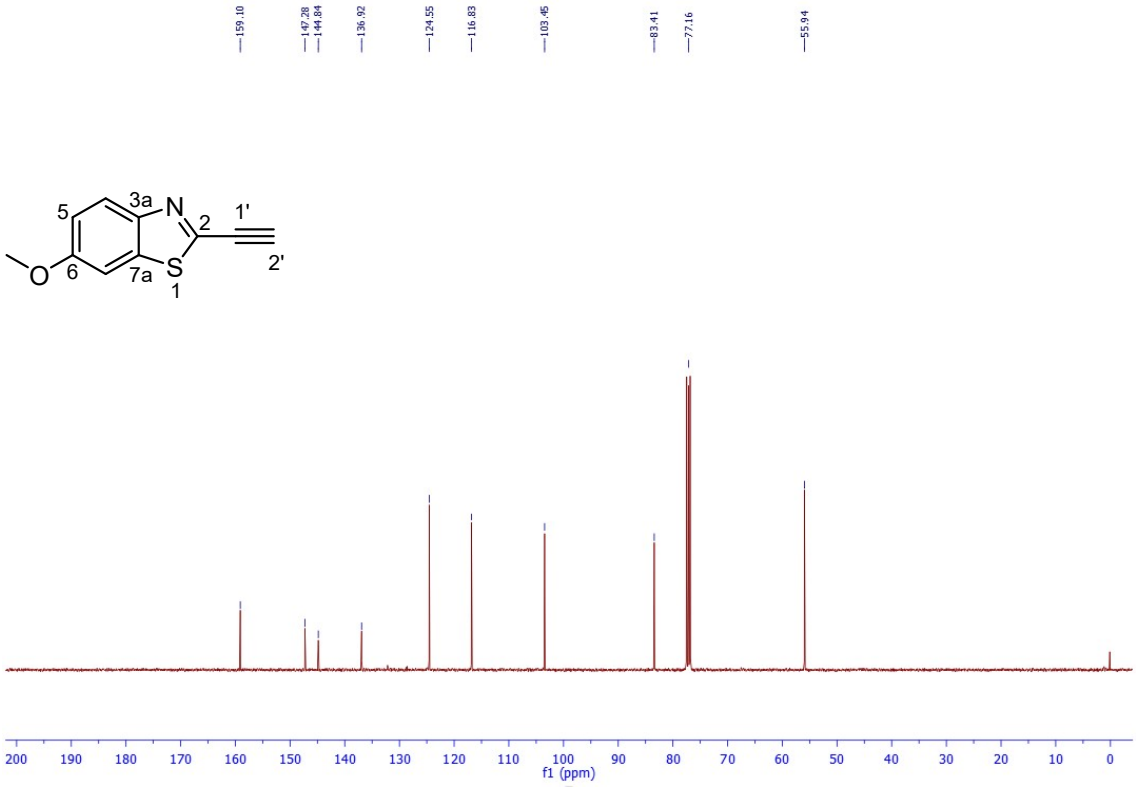
^{13}C NMR for **24** (400 MHz, $CDCl_3$)



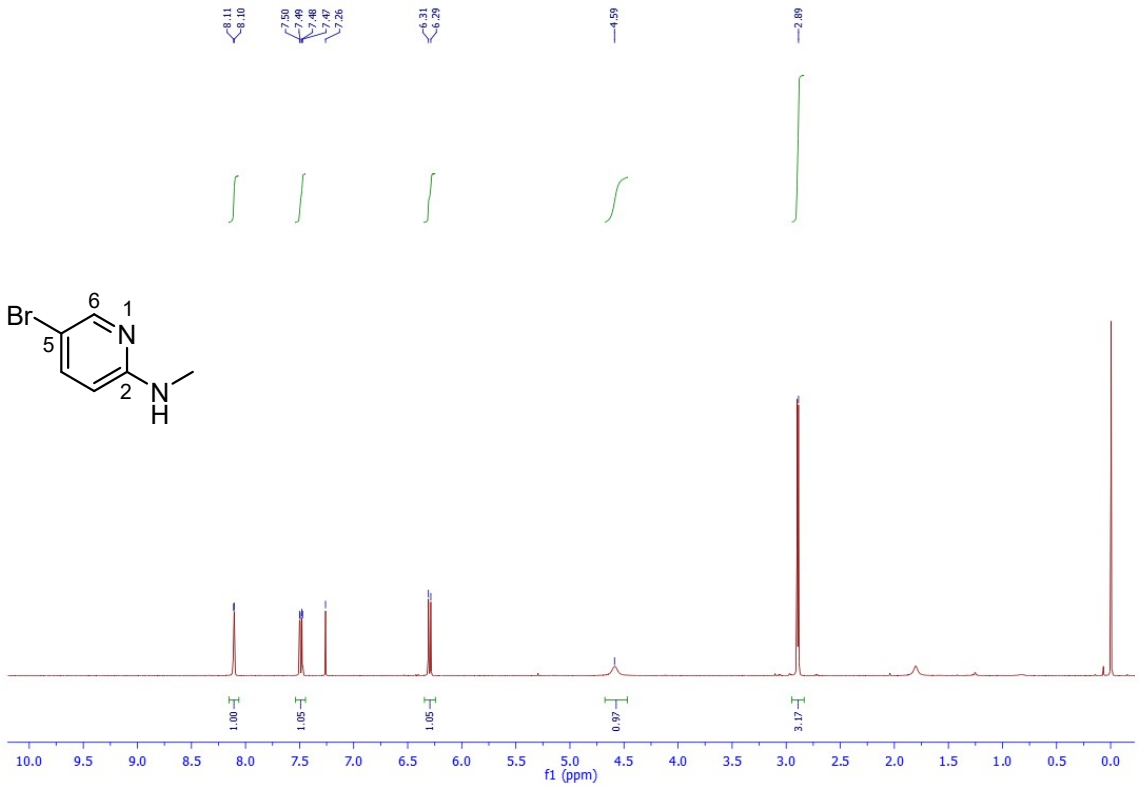
^{1}H NMR for **25** (400 MHz, $CDCl_3$)



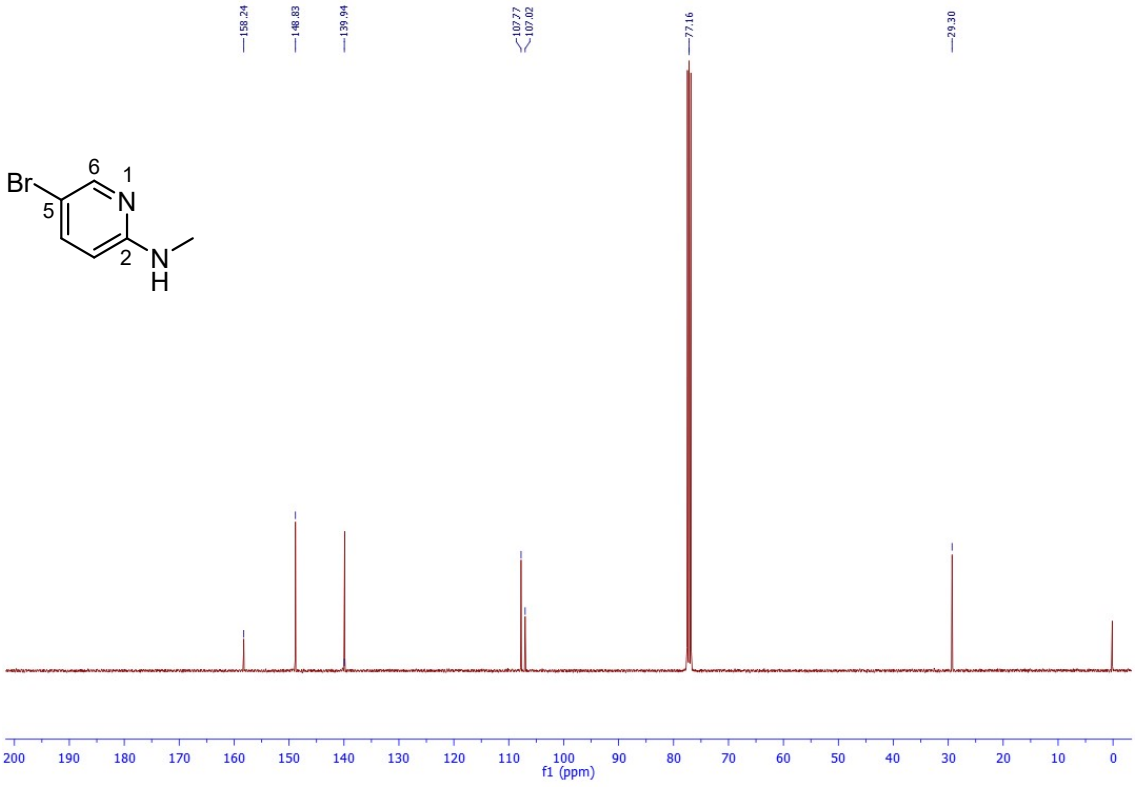
^{13}C NMR for **25** (400 MHz, $CDCl_3$)



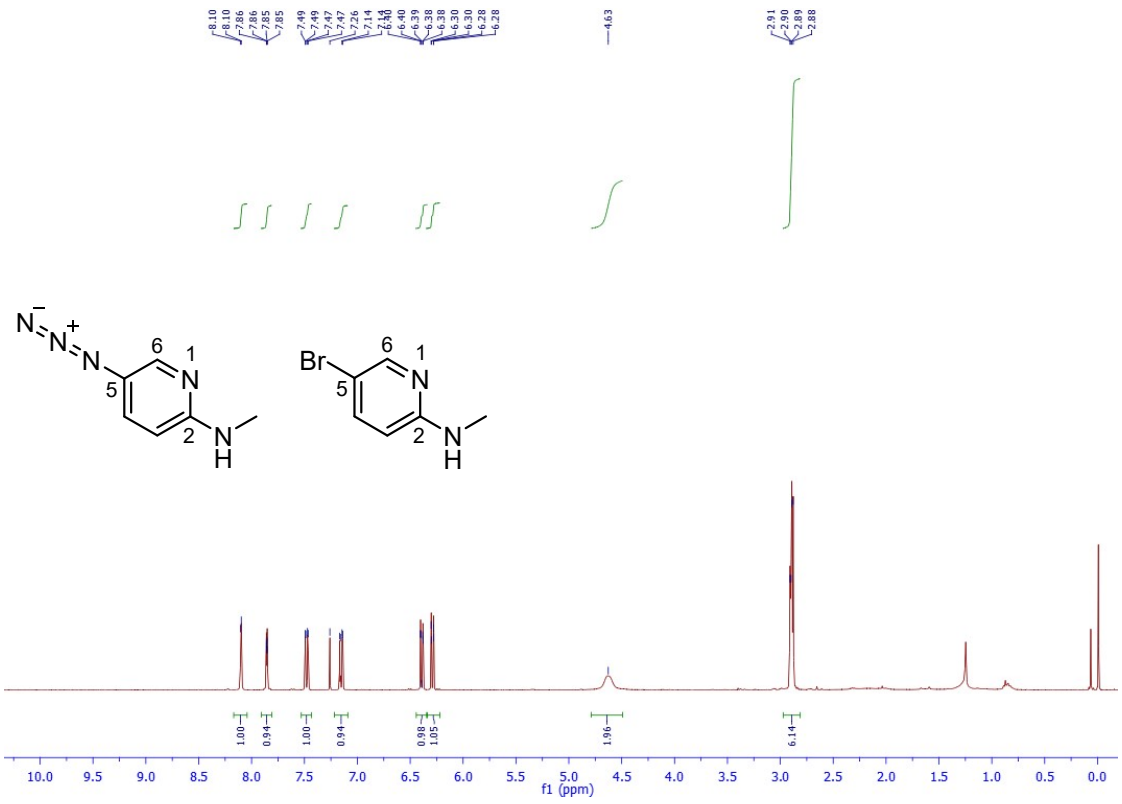
^{1}H NMR for **27** (400 MHz, $CDCl_3$)



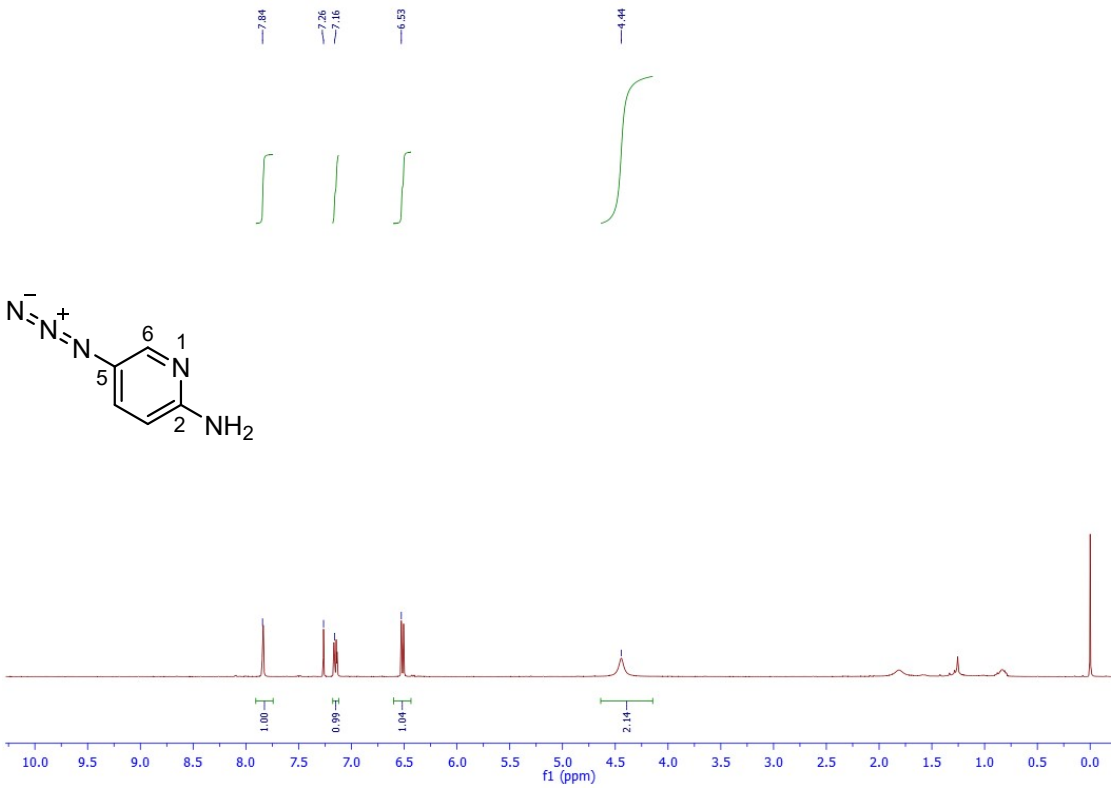
^{13}C NMR for **27** (400 MHz, $CDCl_3$)



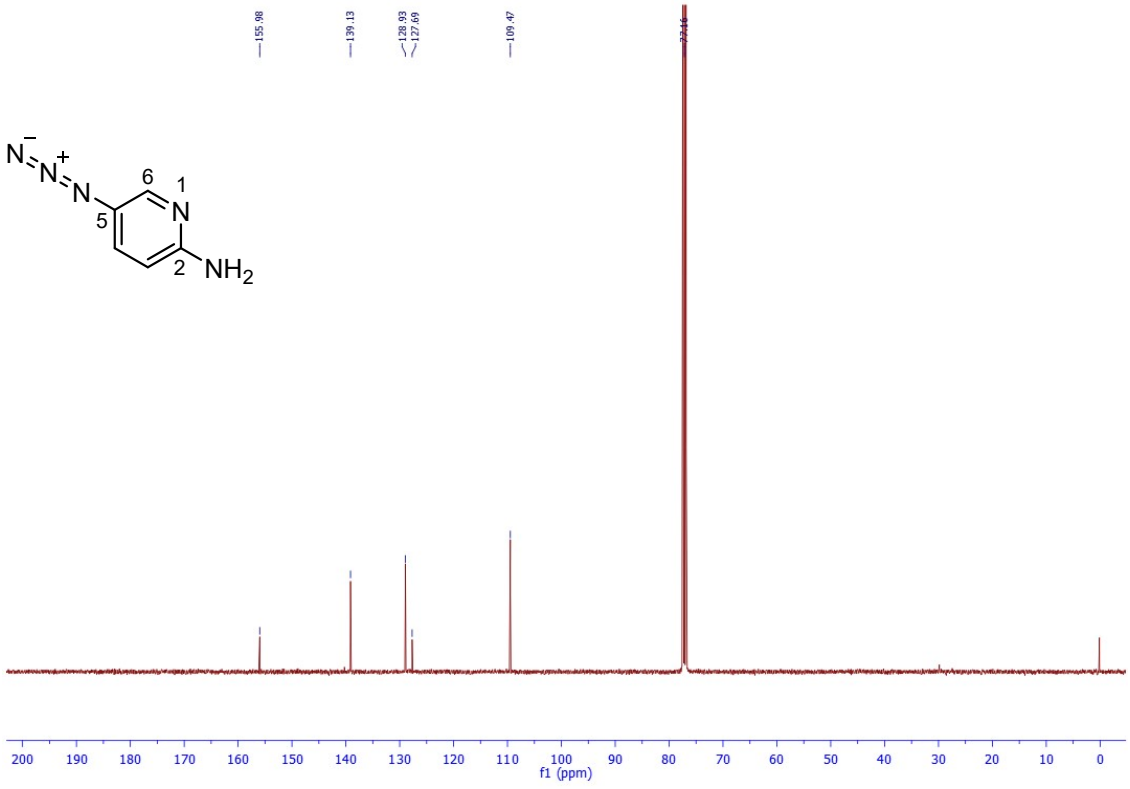
^{1}H NMR for the mixture of **28** and **27** (400 MHz, $CDCl_3$)



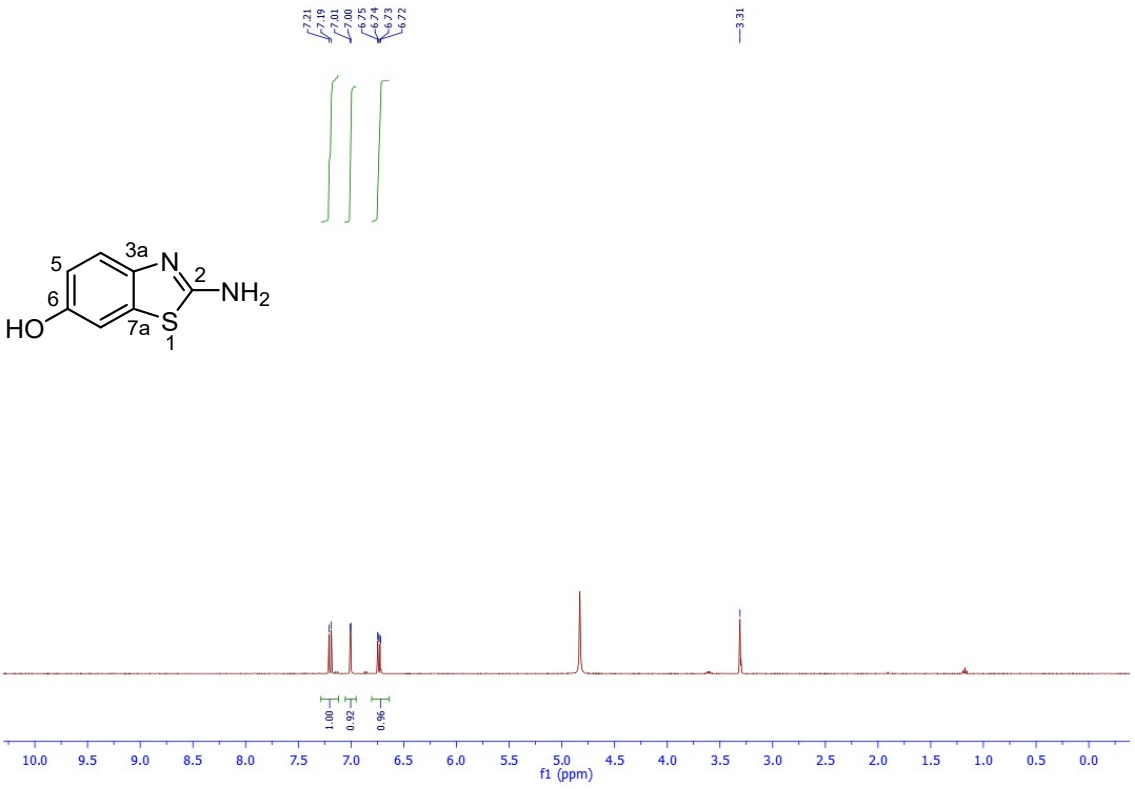
^{1}H NMR for **29** (400 MHz, $CDCl_3$)



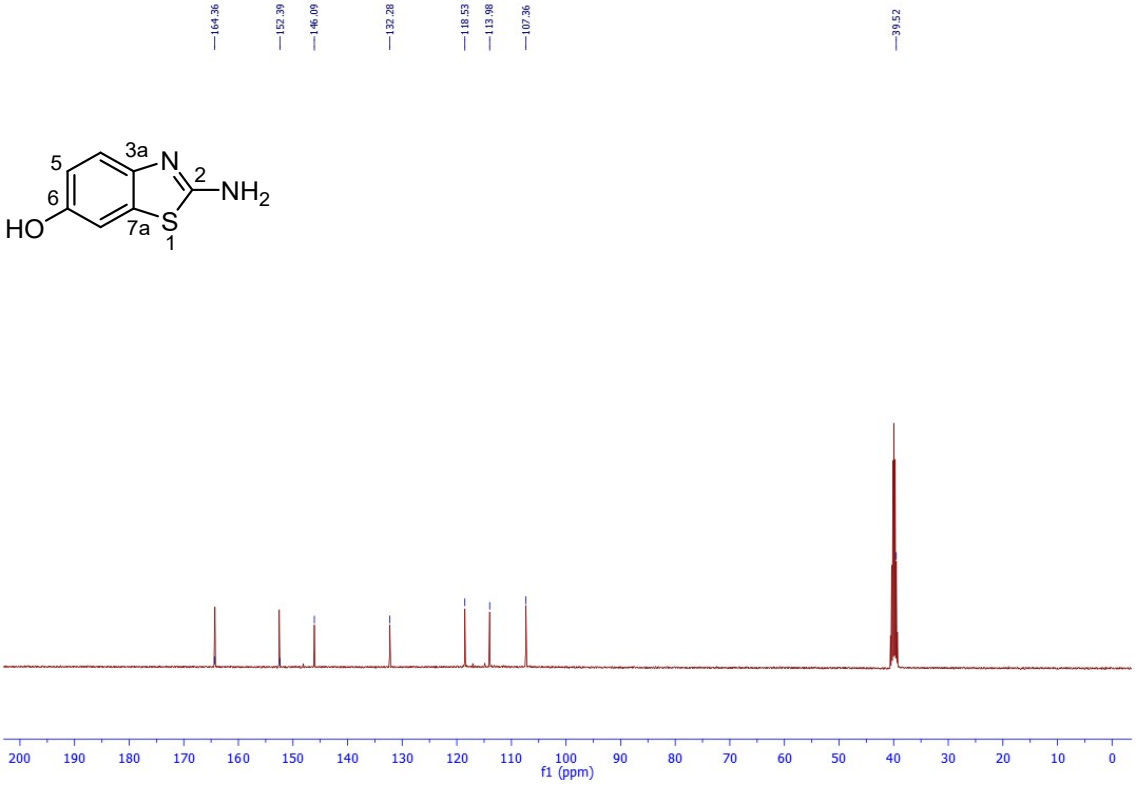
^{13}C NMR for **29** (400 MHz, $CDCl_3$)



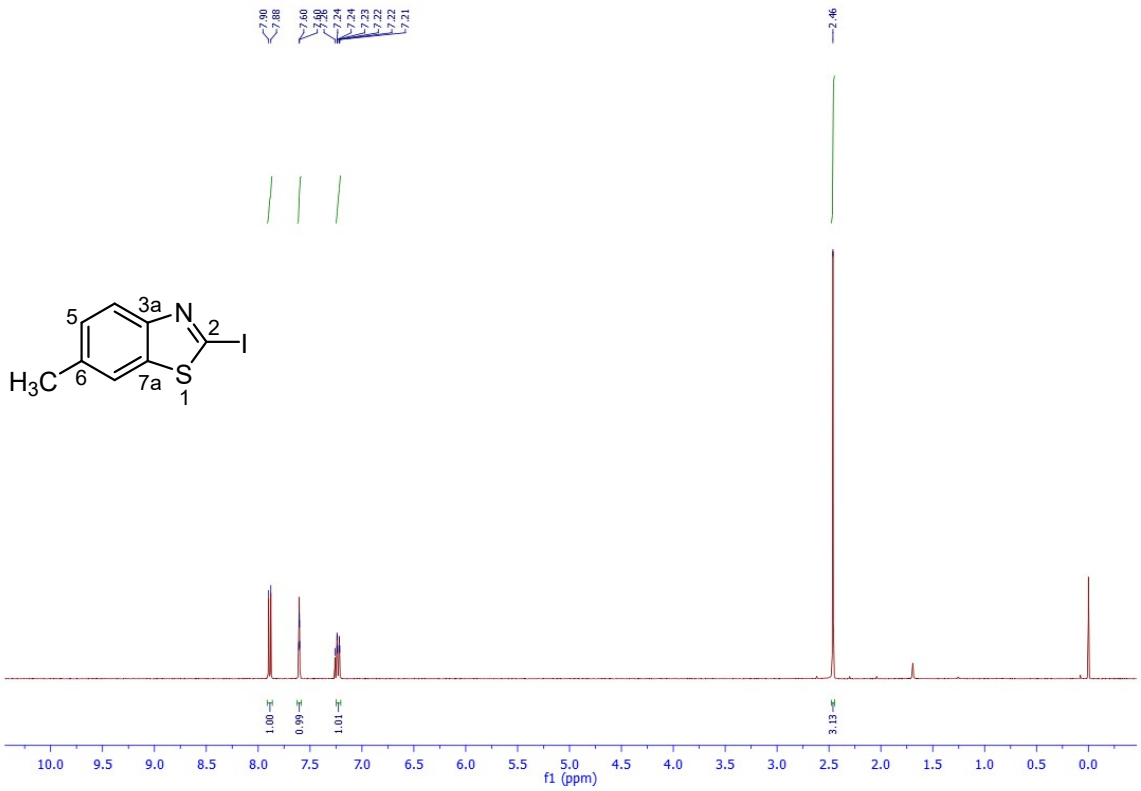
^{1}H NMR for **35** (400 MHz, CD_3OD)



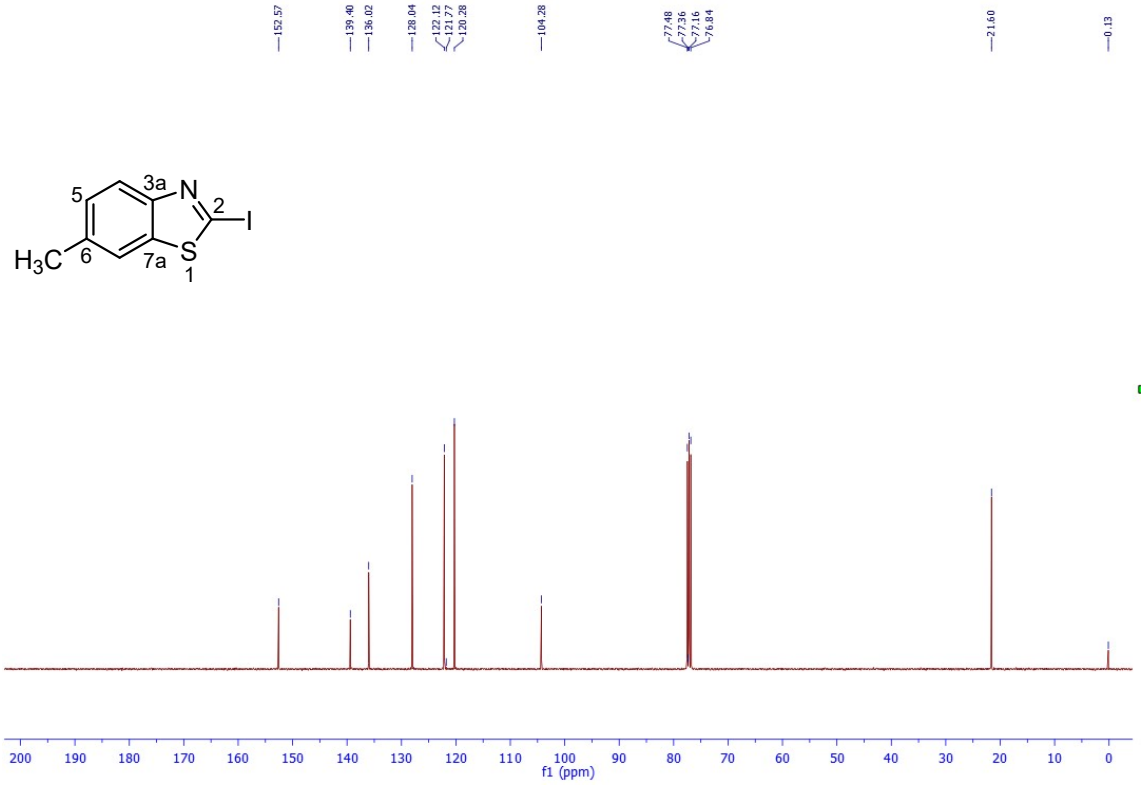
^{13}C NMR for **35** (400 MHz, DMSO-d_6)



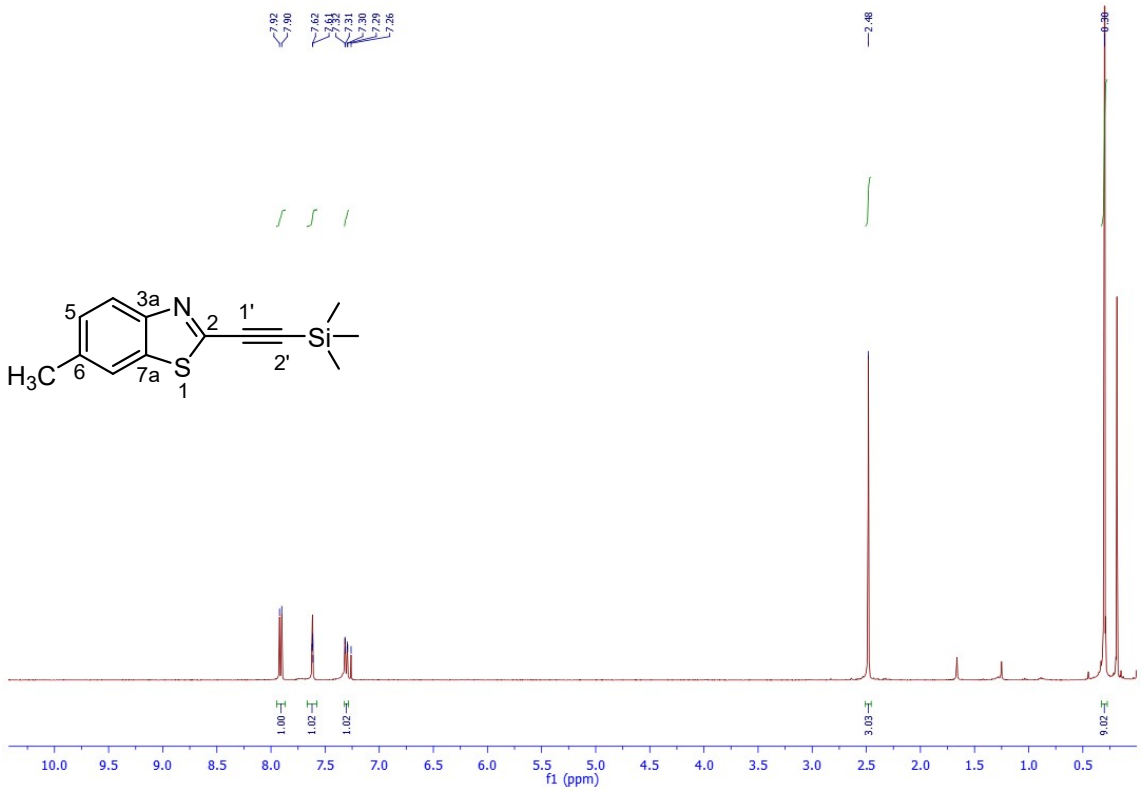
^{1}H NMR for **41** (400 MHz, $CDCl_3$)



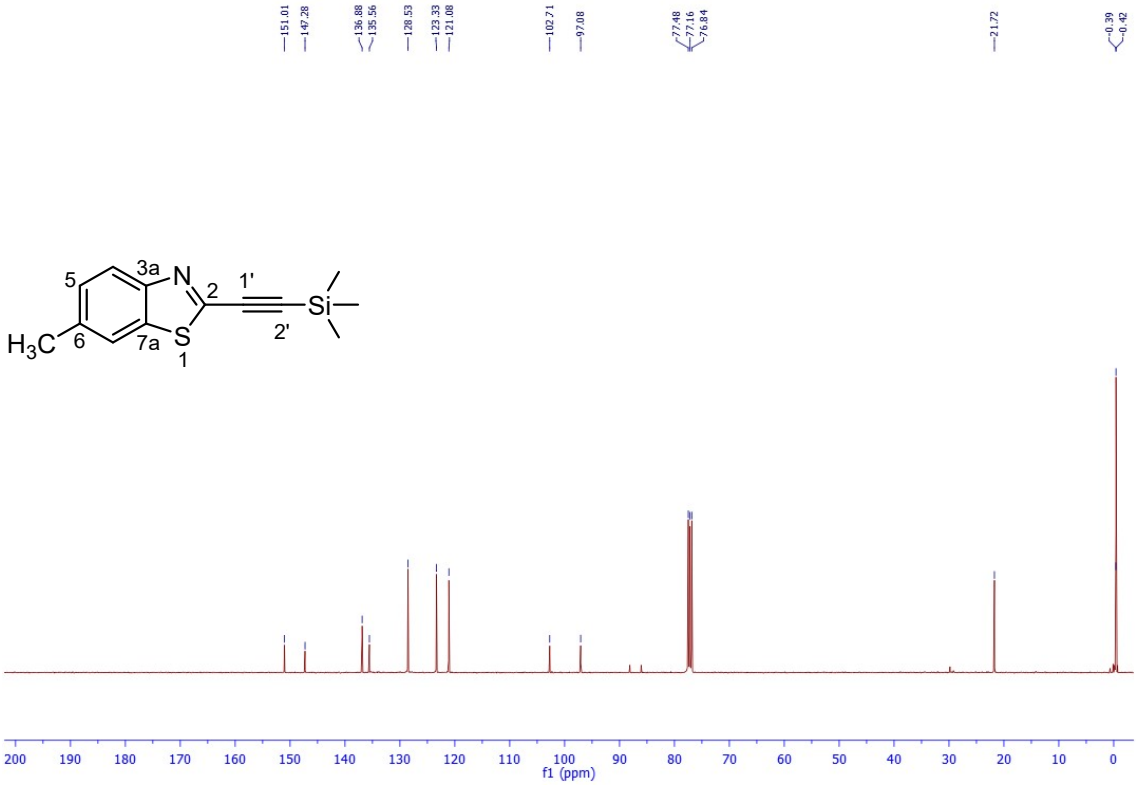
^{13}C NMR for **41** (400 MHz, $CDCl_3$)



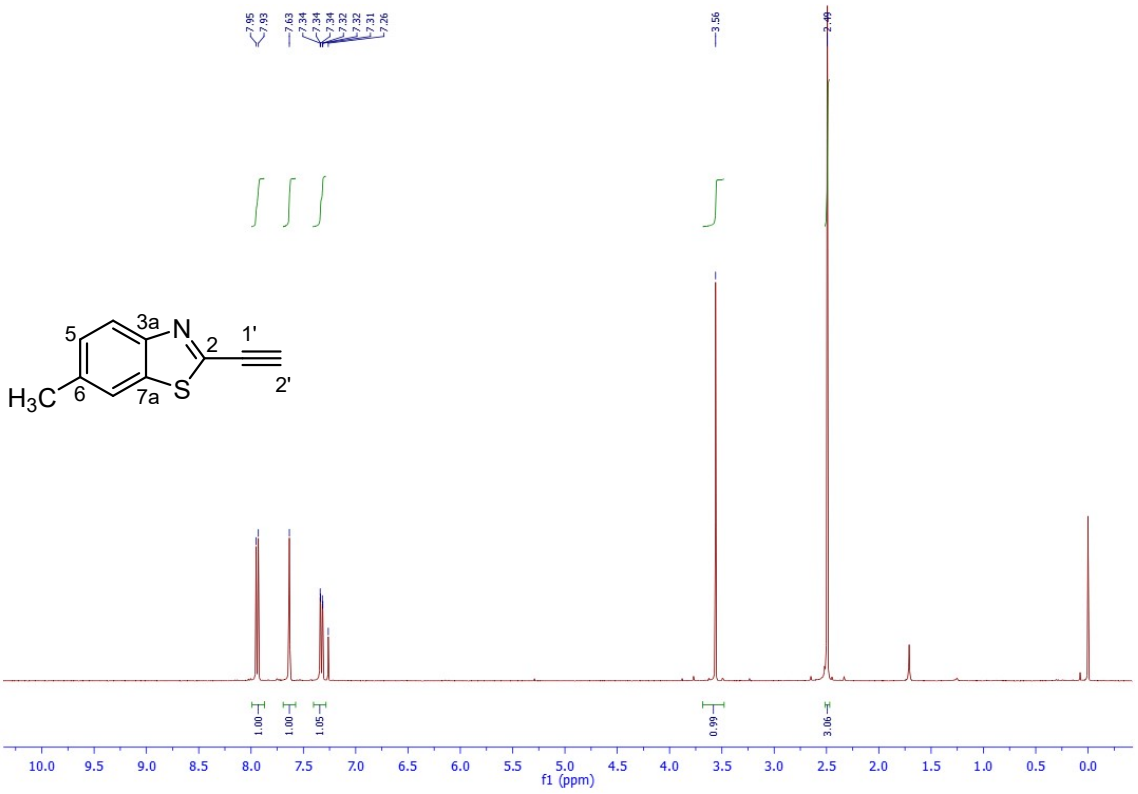
^{1}H NMR for **42** (400 MHz, $CDCl_3$)



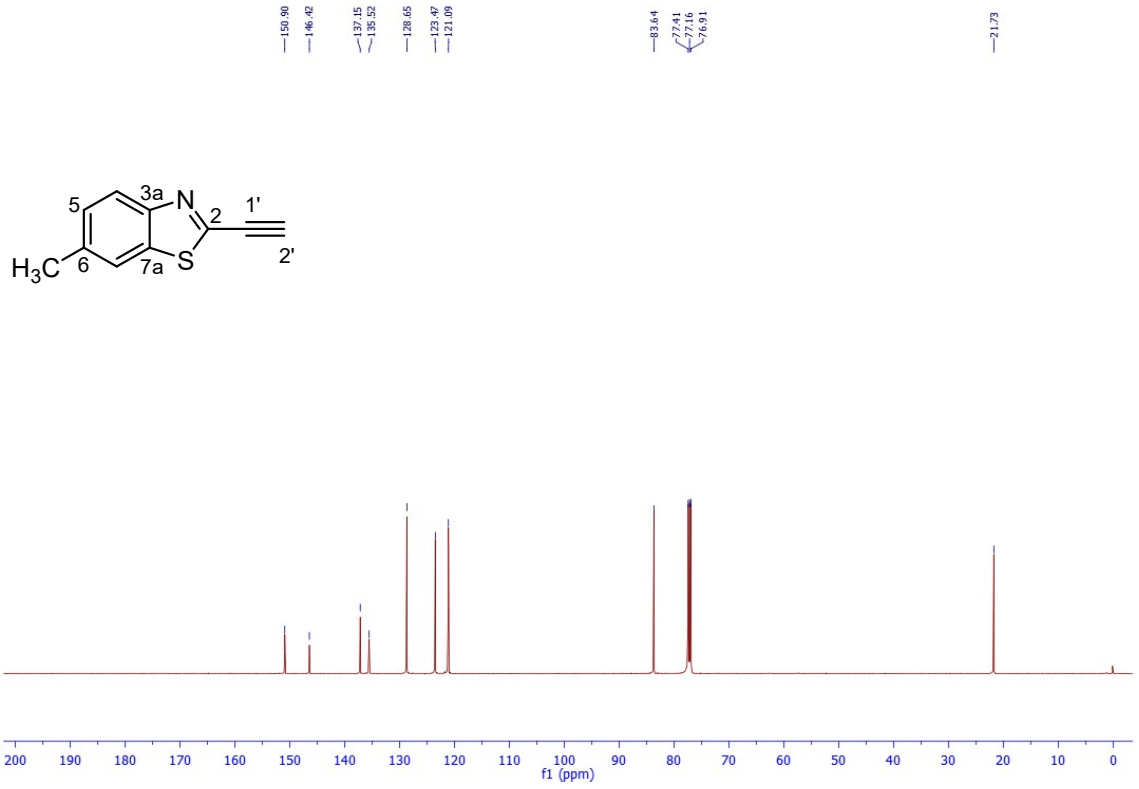
^{13}C NMR for **42** (400 MHz, $CDCl_3$)



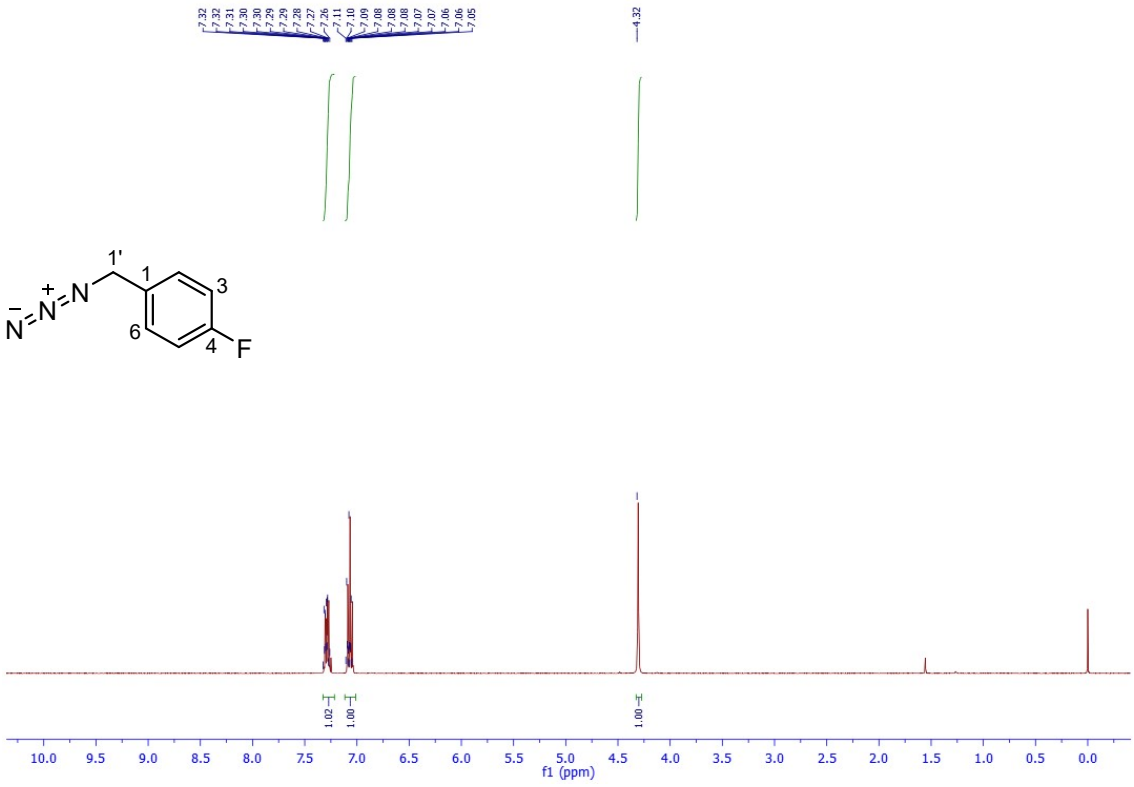
^{1}H NMR for **43** (400 MHz, $CDCl_3$)



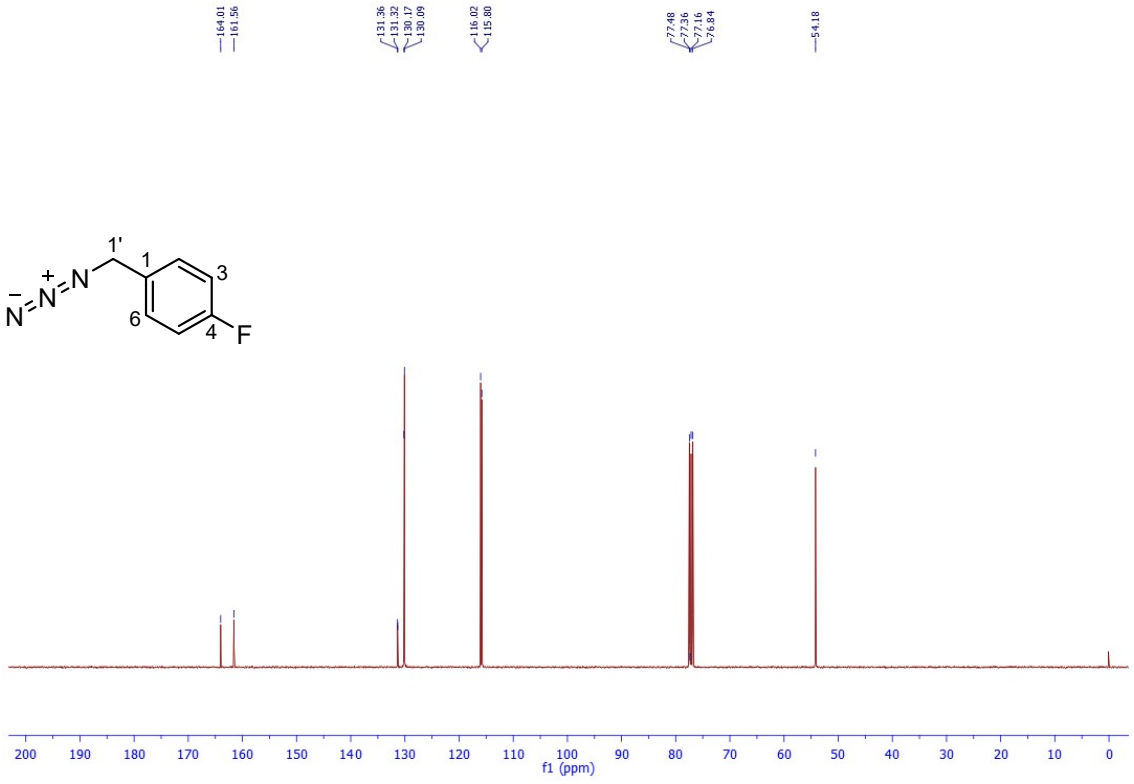
^{13}C NMR for **43** (400 MHz, $CDCl_3$)



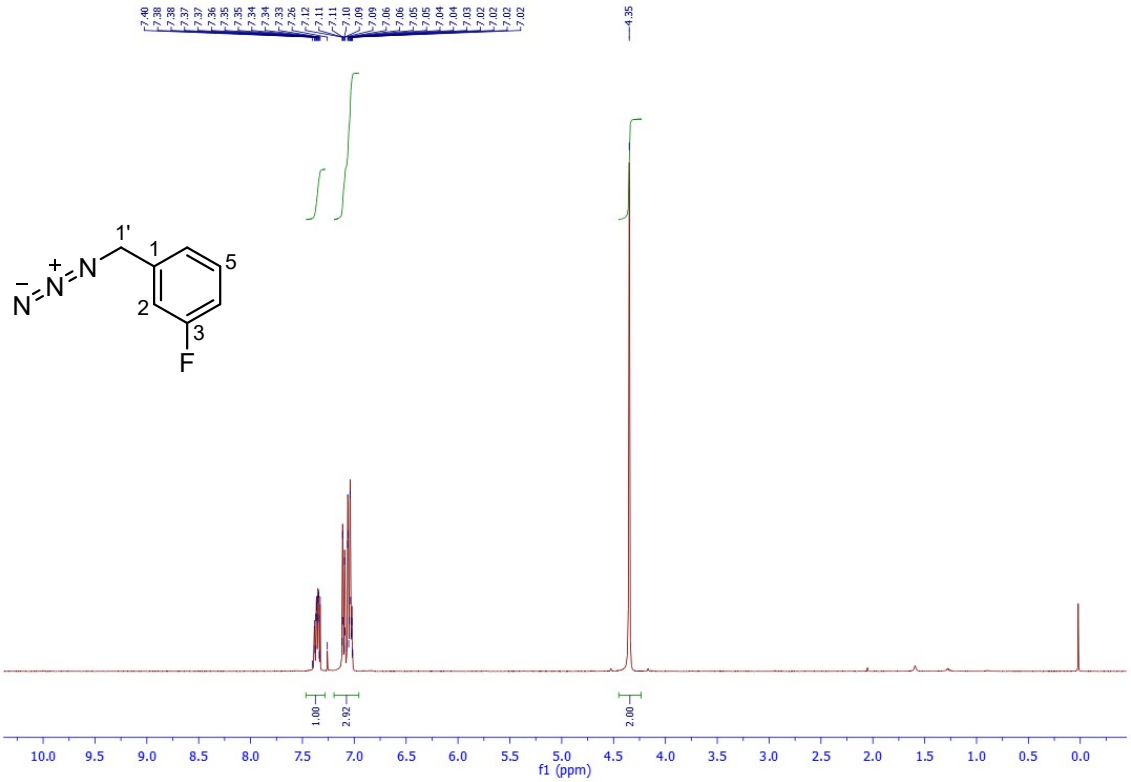
^{1}H NMR for **54** (400 MHz, $CDCl_3$)



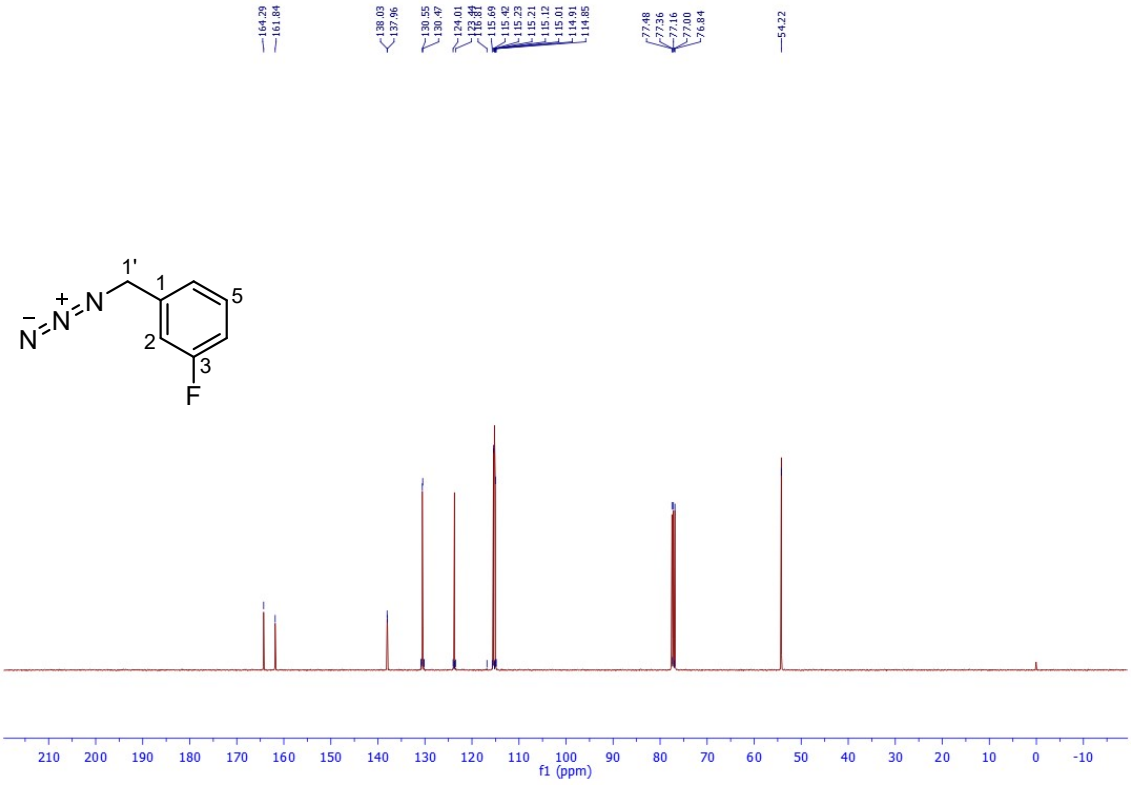
^{13}C NMR for **54** (100 MHz, $CDCl_3$)



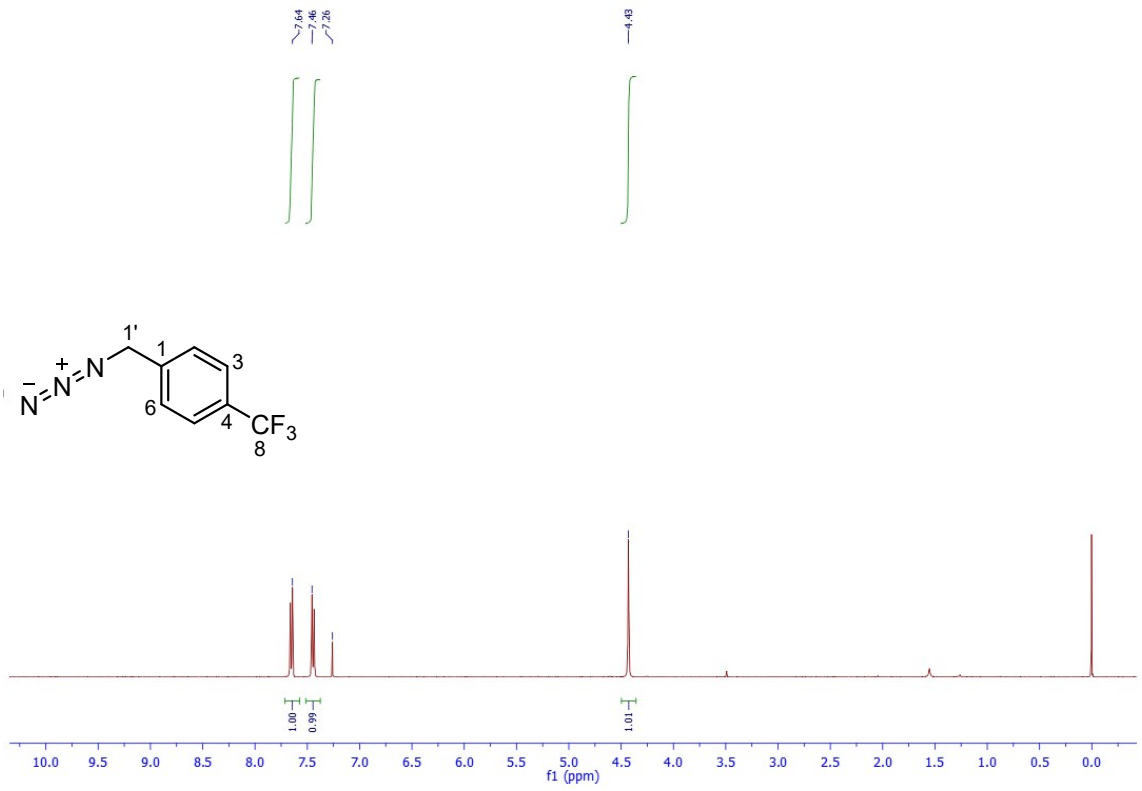
^{1}H NMR for **55** (400 MHz, $CDCl_3$)



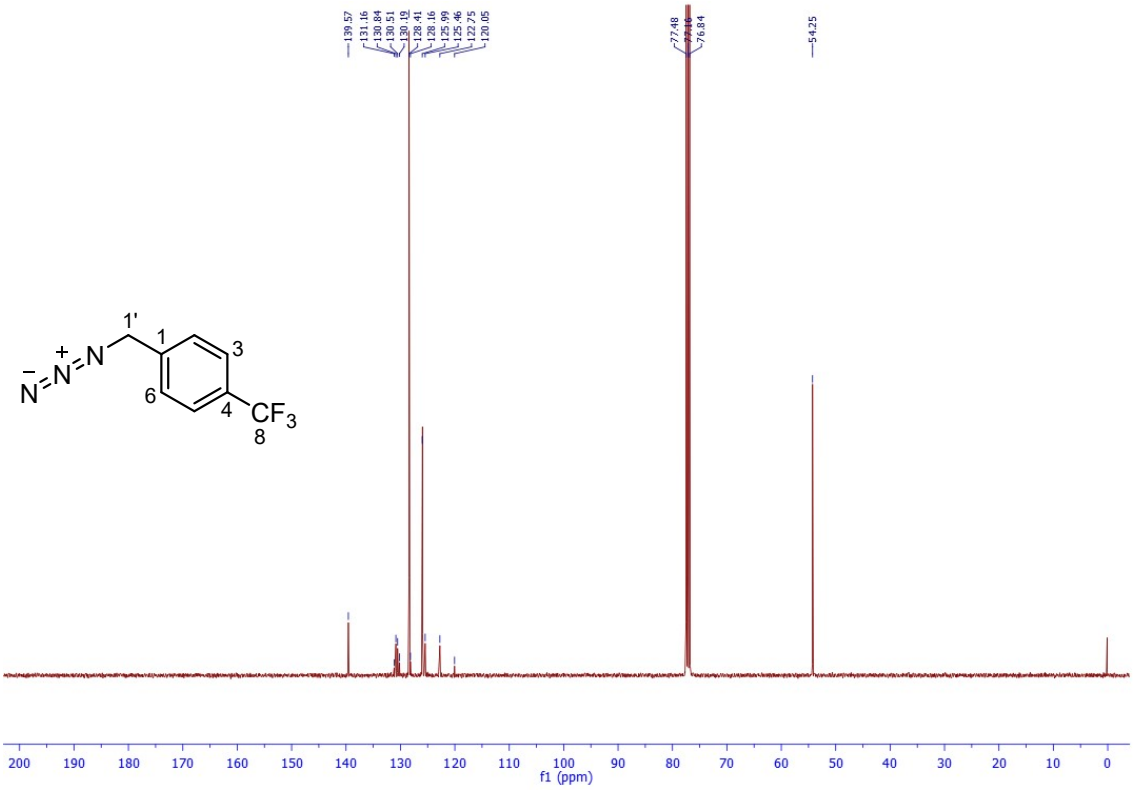
^{13}C NMR for **55** (100 MHz, $CDCl_3$)



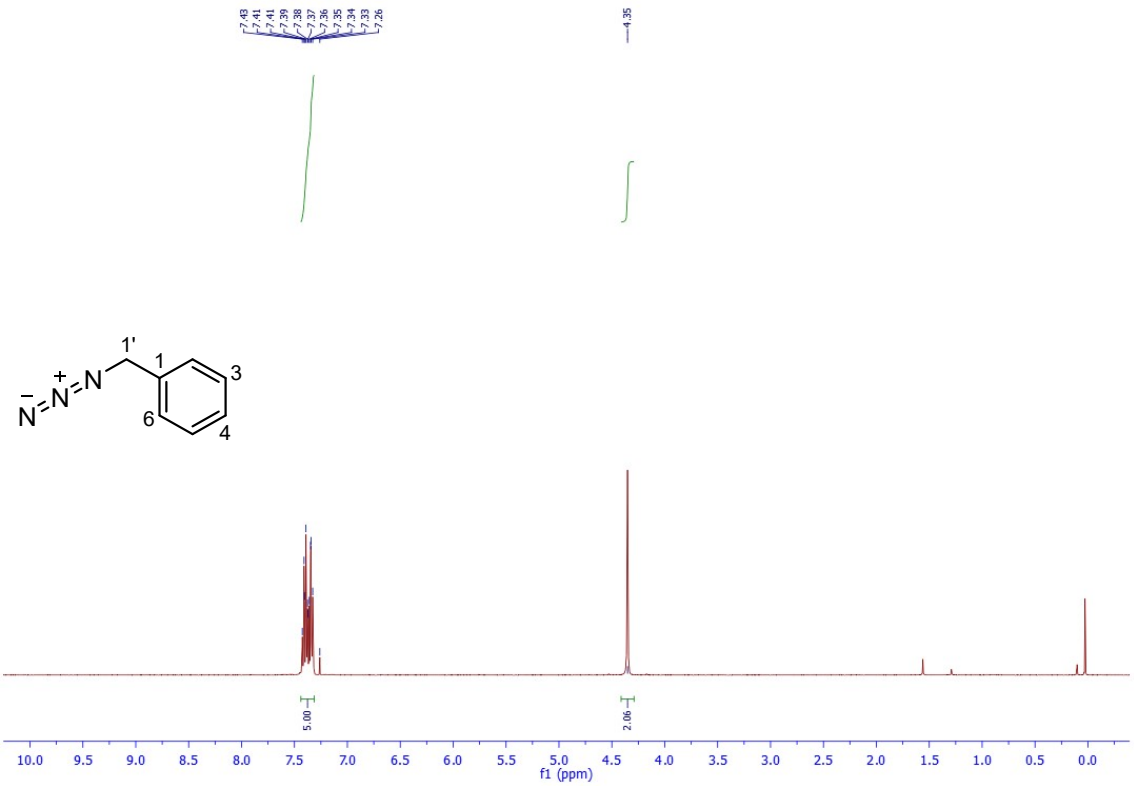
^{1}H NMR for **56** (400 MHz, $CDCl_3$)



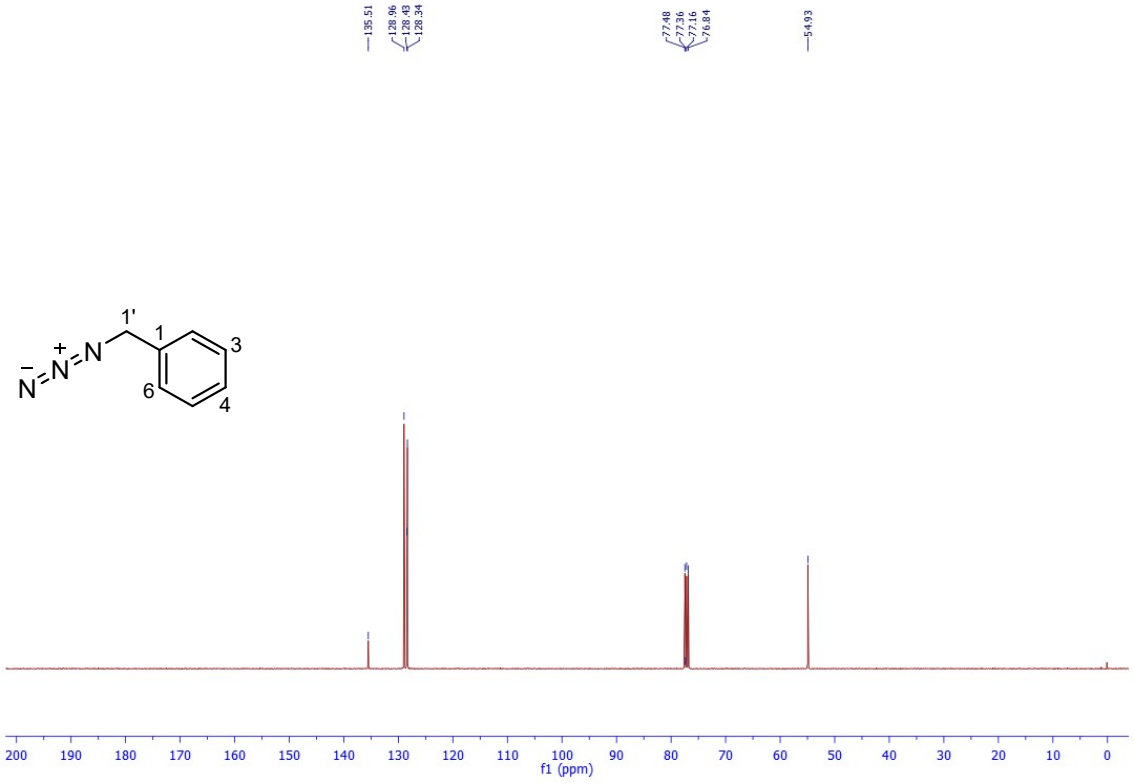
^{13}C NMR for **56** (100 MHz, $CDCl_3$)



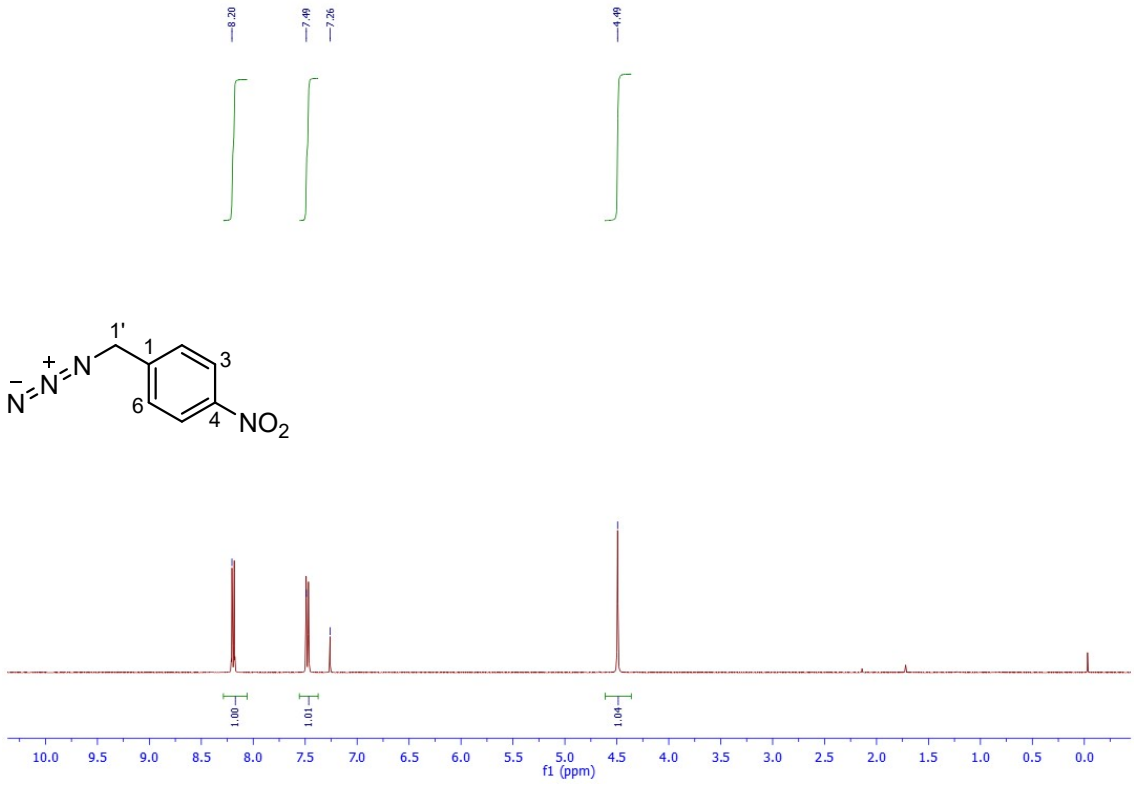
^{1}H NMR for **57** (400 MHz, $CDCl_3$)



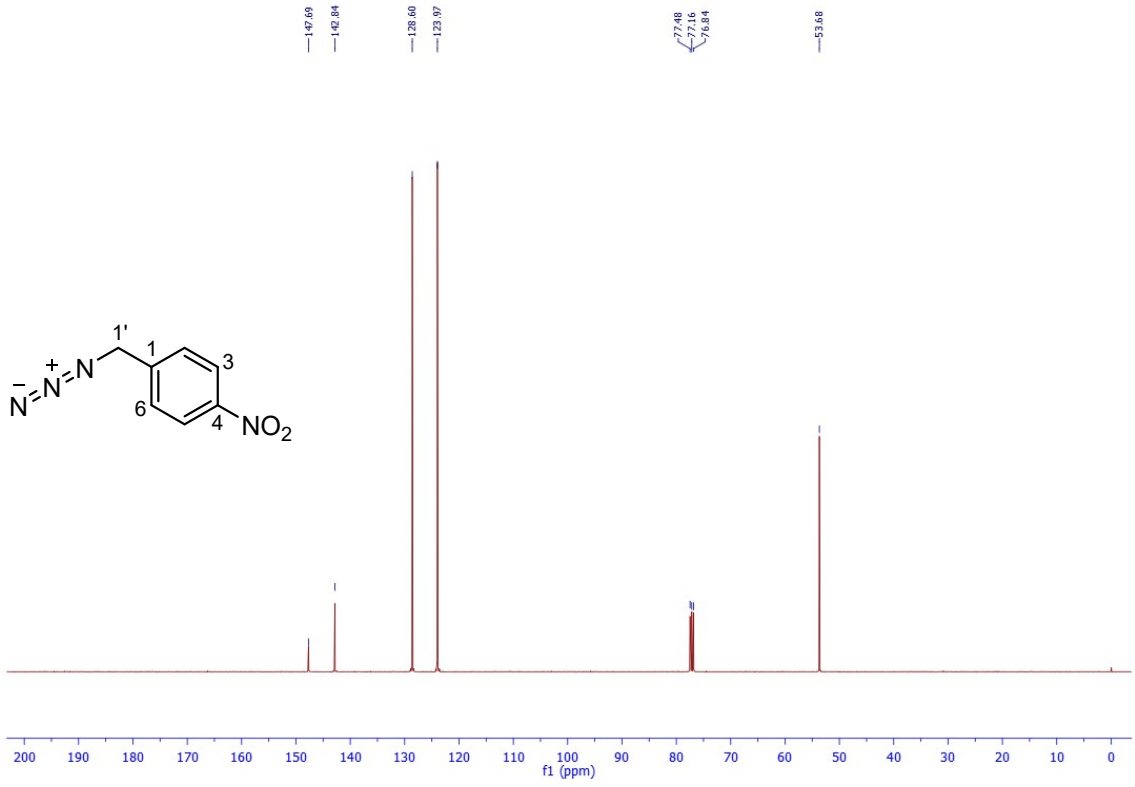
^{13}C NMR for **57** (400 MHz, $CDCl_3$)



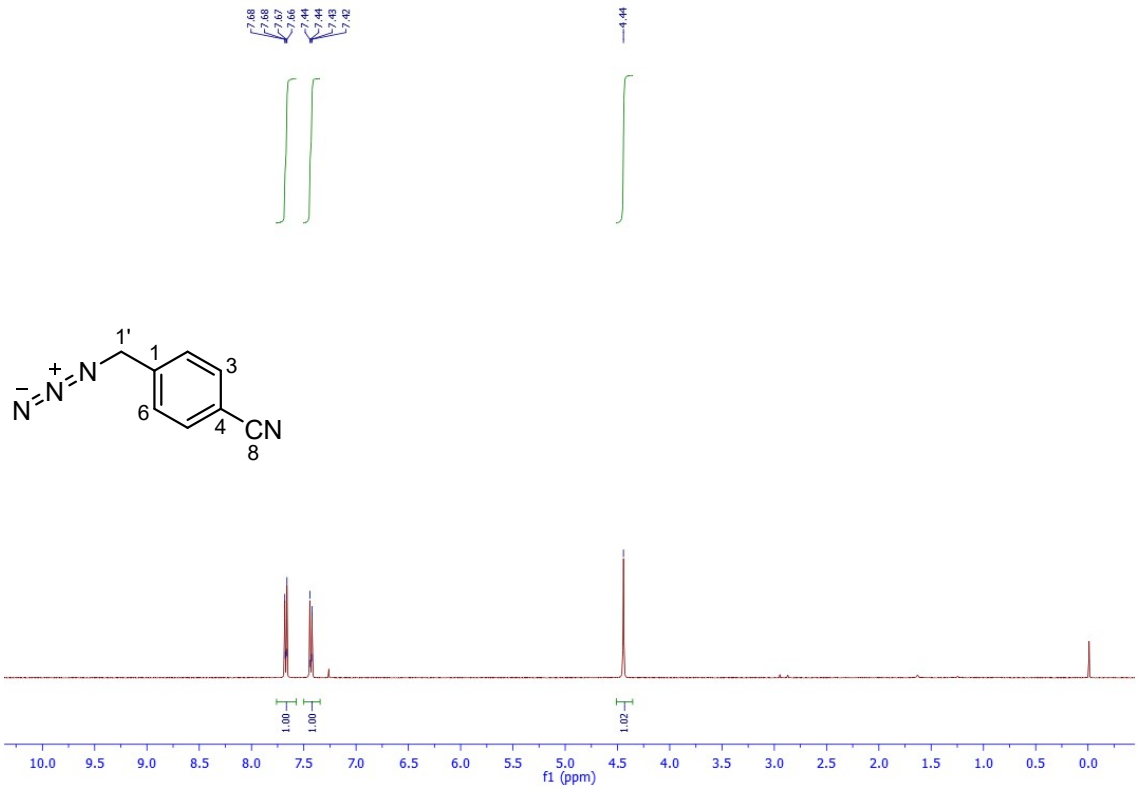
^{1}H NMR for **58** (400 MHz, $CDCl_3$)



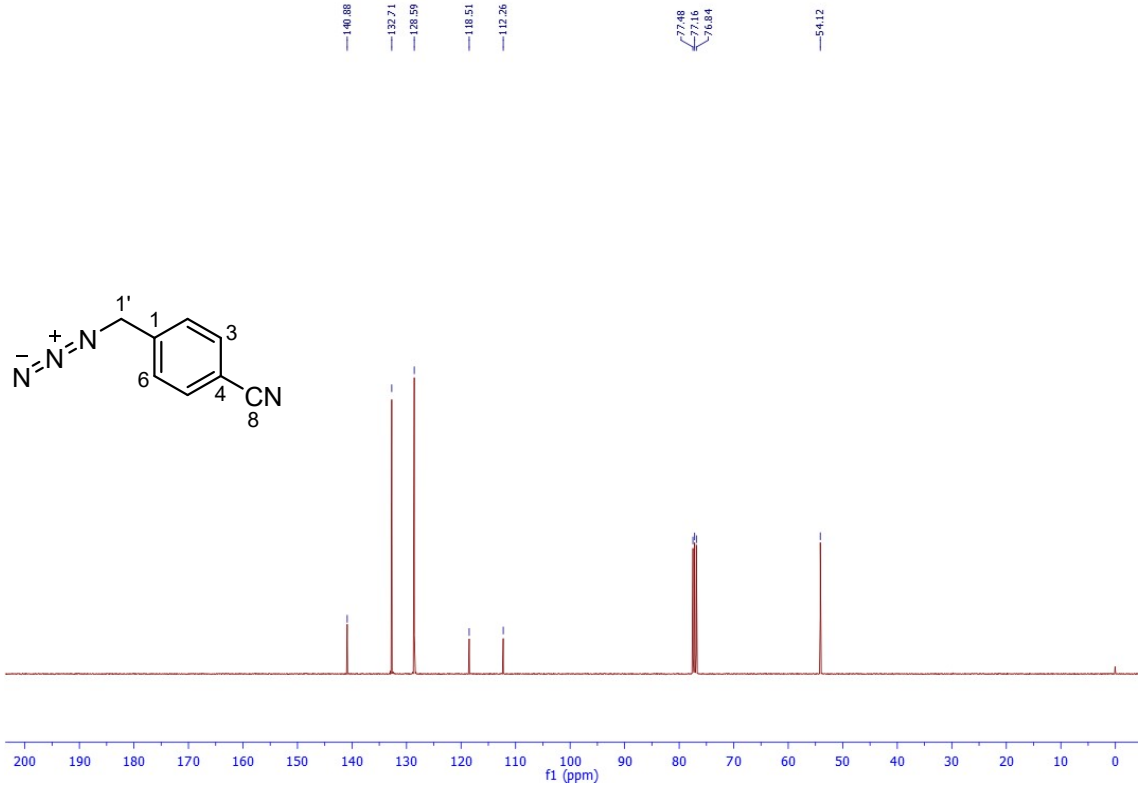
^{13}C NMR for **58** (400 MHz, $CDCl_3$)



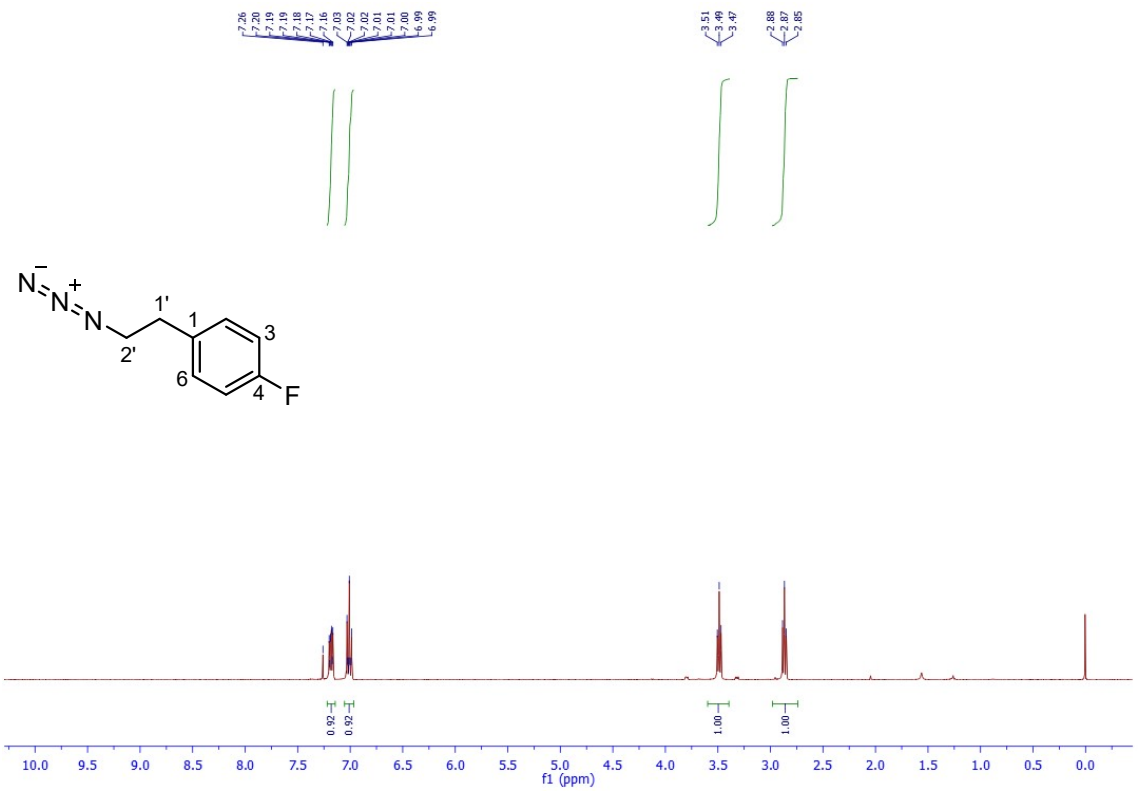
^{1}H NMR for **59** (400 MHz, $CDCl_3$)



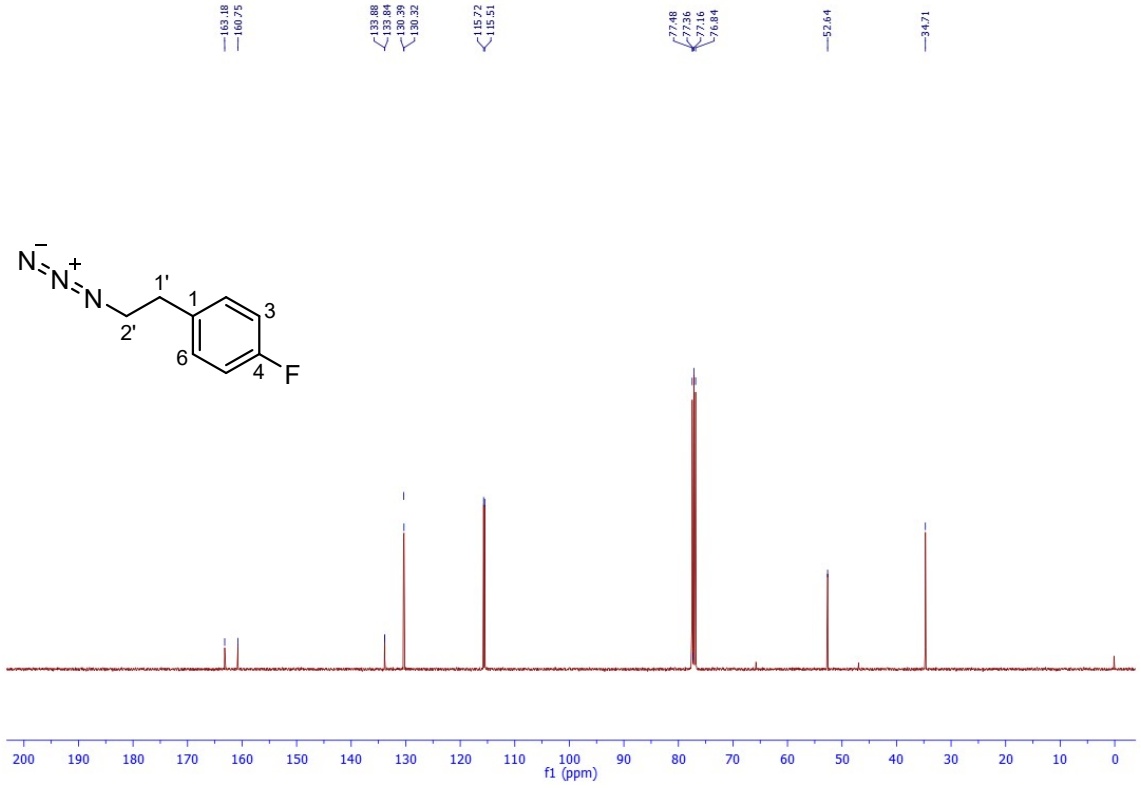
^{13}C NMR for **59** (400 MHz, $CDCl_3$)



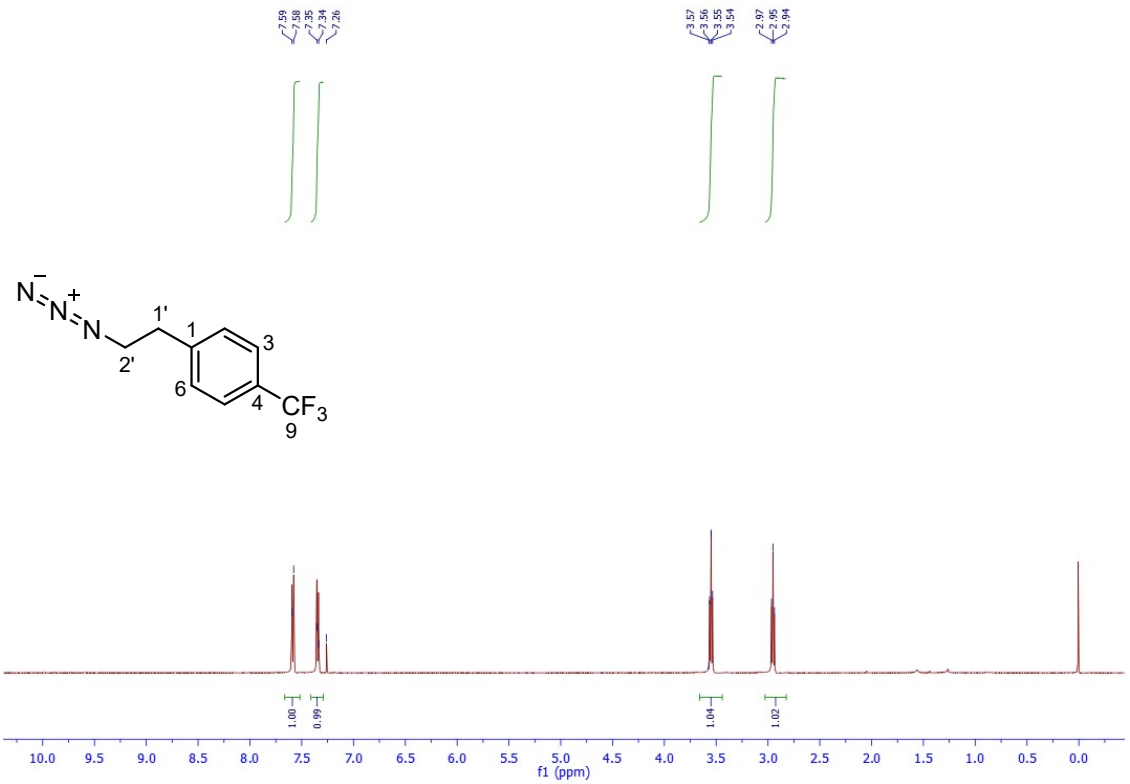
^{1}H NMR for **60** (400 MHz, $CDCl_3$)



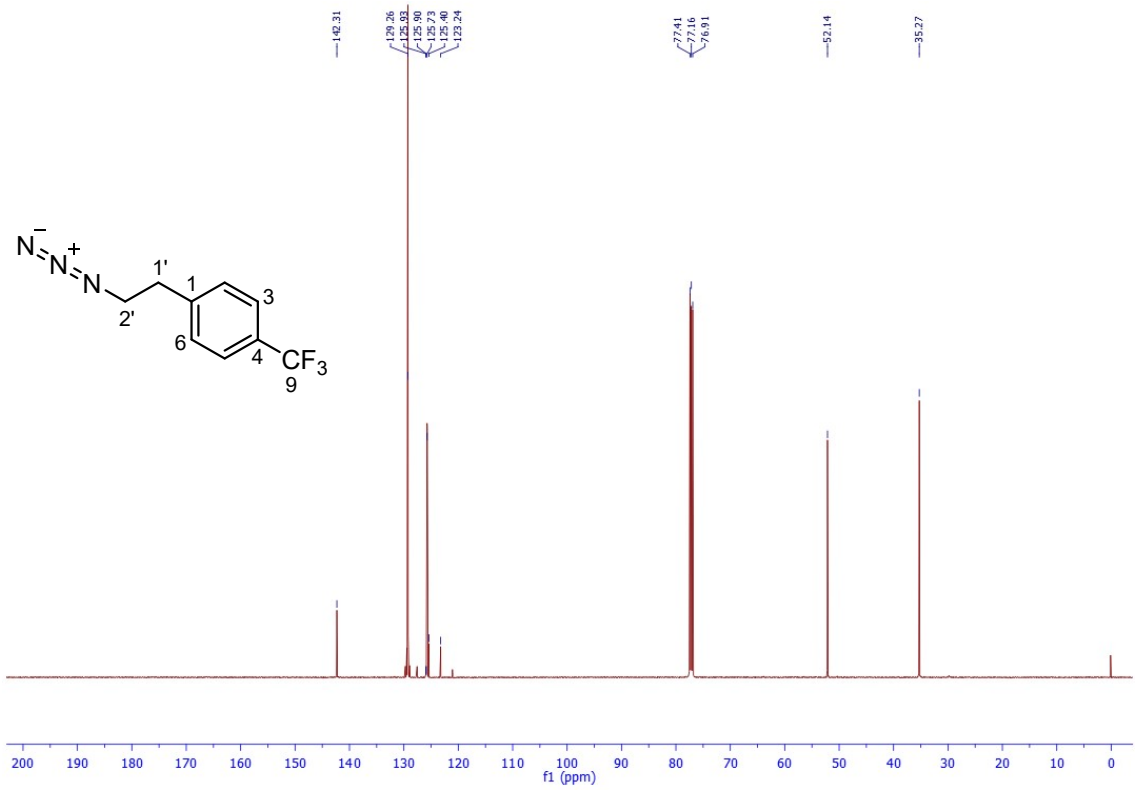
^{13}C NMR for **60** (100 MHz, $CDCl_3$)



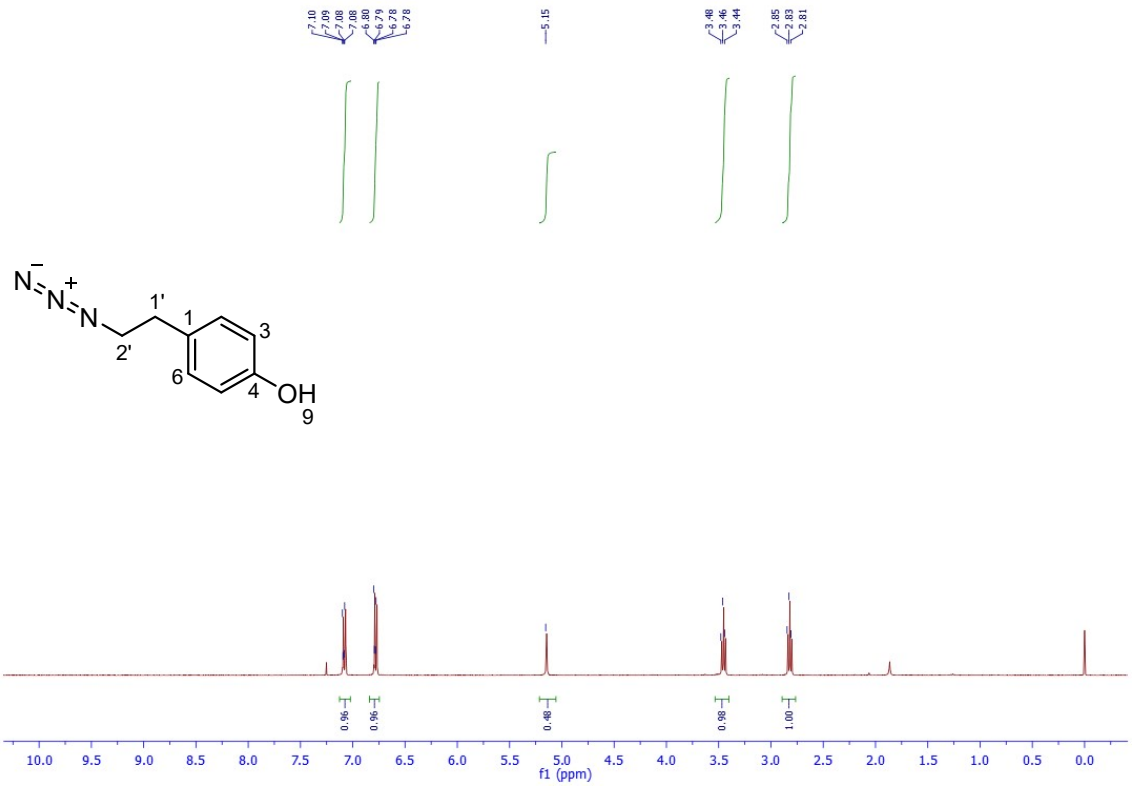
^{1}H NMR for **61** (500 MHz, $CDCl_3$)



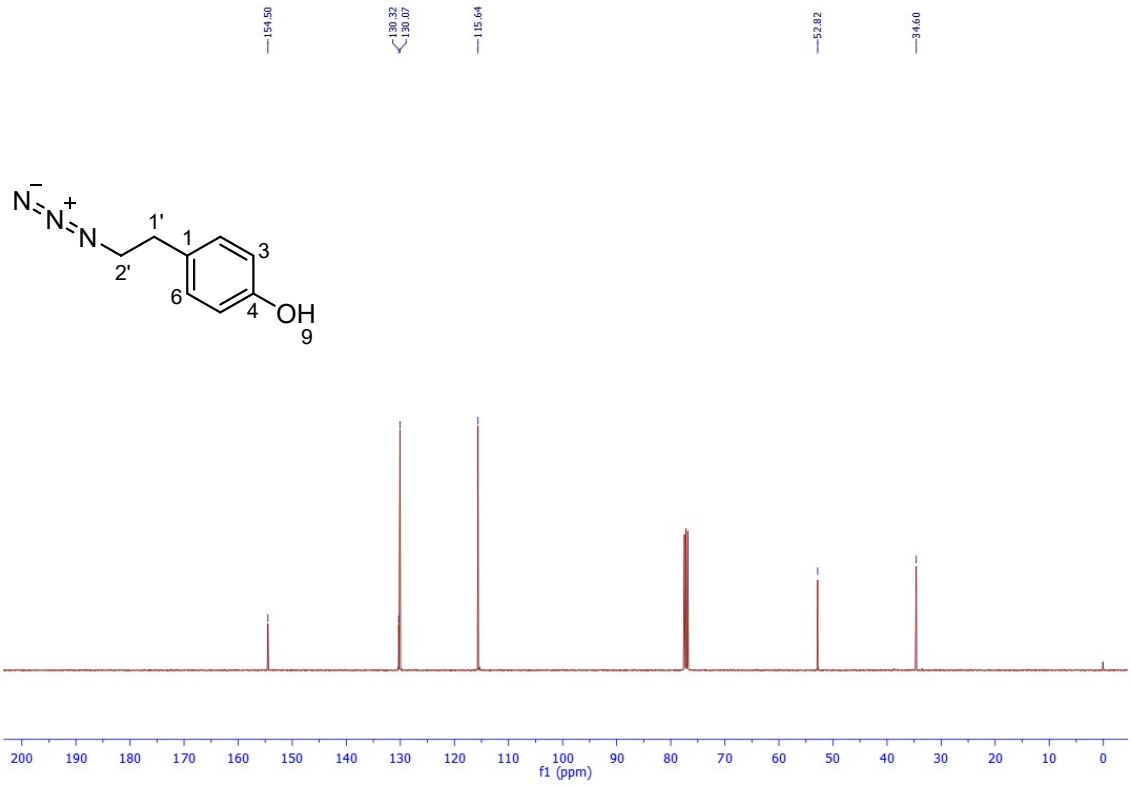
^{13}C NMR for **61** (125 MHz, $CDCl_3$)



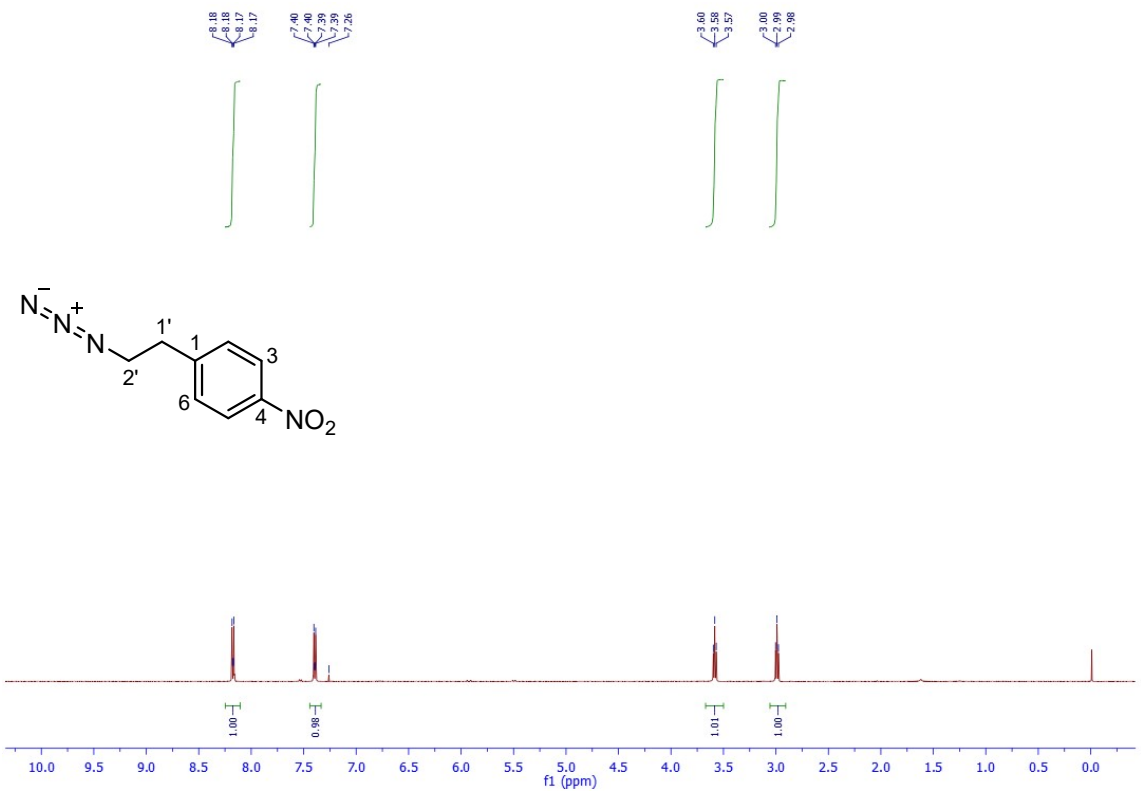
^{1}H NMR for **62** (400 MHz, $CDCl_3$)



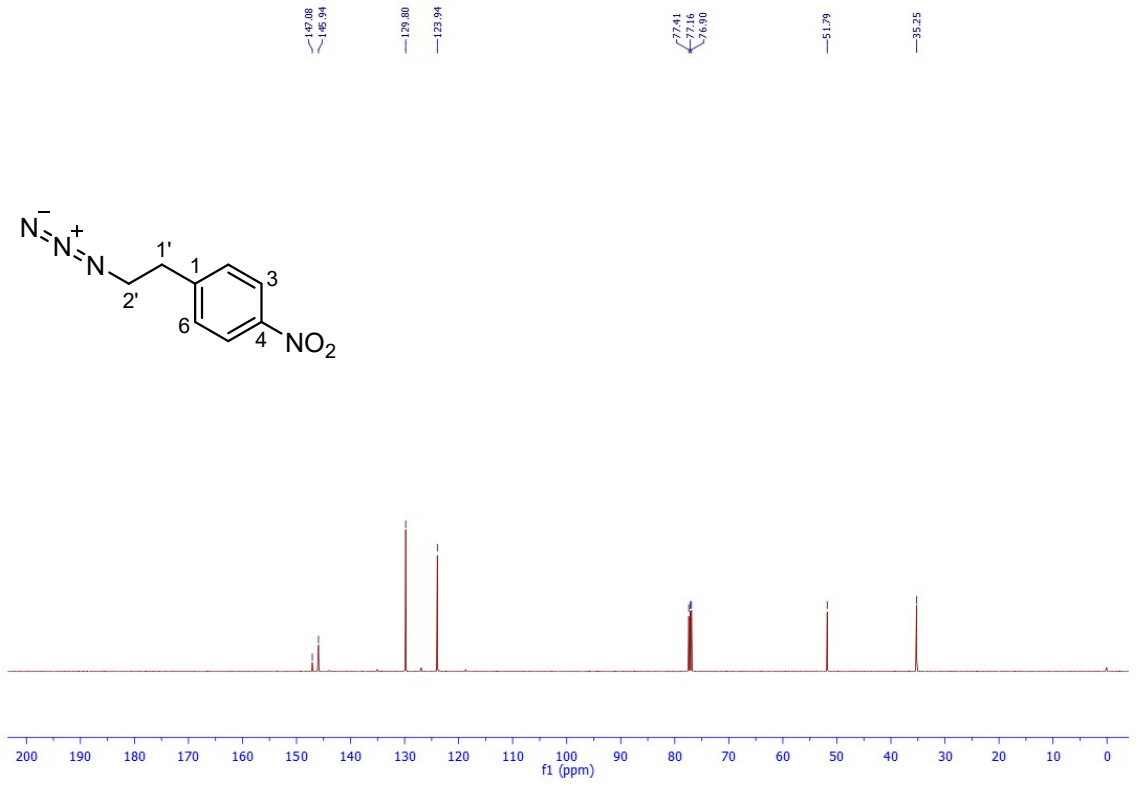
^{13}C NMR for **62** (400 MHz, $CDCl_3$)



^{1}H NMR for **63** (400 MHz, $CDCl_3$)



^{13}C NMR for **63** (400 MHz, $CDCl_3$)



5. HRMS spectra of final compounds

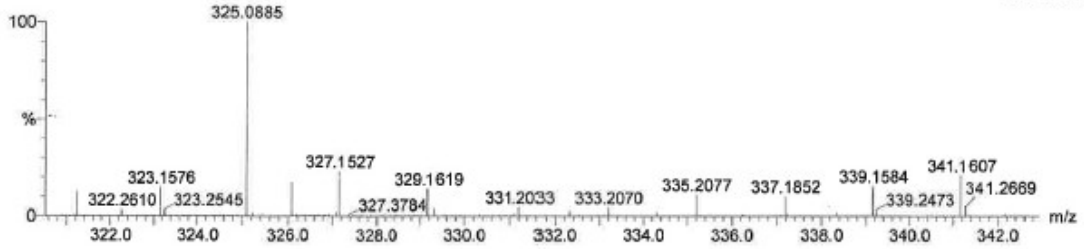
Compound **30**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
1399 formula(e) evaluated with 8 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 9-35 H: 0-66 N: 0-10 O: 0-17 Na: 0-1 S: 0-1
Taus2-FL-R-NH2
PK HendrisW Taus2-FL-R-NH2 73 (1.754) Cm (73:75)

1: TOF MS ES+
7.35e+003



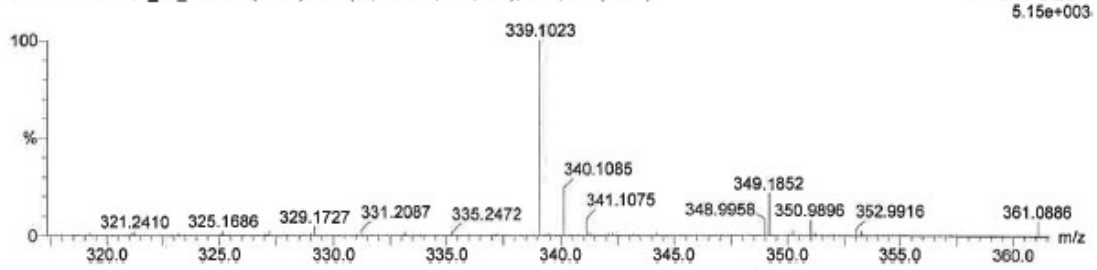
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
325.0885	325.0886	-0.1	-0.3	10.5	192.4	0.9	C10 H10 N10 O2 Na
	325.0883	0.2	0.6	3.5	194.9	3.5	C10 H17 N2 O10
	325.0874	1.1	3.4	8.5	195.9	4.4	C17 H18 O3 Na S
	325.0873	1.2	3.7	5.5	194.7	3.2	C9 H14 N6 O6 Na
	325.0897	-1.2	-3.7	8.5	192.4	1.0	C11 H13 N6 O6
	325.0898	-1.3	-4.0	11.5	197.8	6.4	C19 H17 O3 S
	325.0872	1.3	4.0	12.5	195.7	4.2	C15 H13 N6 O S
	325.0899	-1.4	-4.3	4.5	193.5	2.1	C13 H18 O8 Na

Compound **31**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 11.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
398 formula(e) evaluated with 7 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 0-25 H: 0-25 N: 0-10 O: 0-7 Na: 0-1 S: 1-1
Tau2.FL.OMe
PK HendrisW Tau2_FL_OMe 53 (1.275) AM2 (Ar,10000.0,0.00,0.00); ABS; Cm (52:53) 1: TOF MS ES+ 5.15e+003



Minimum:				-1.5			
Maximum:		55.0	11.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
339.1023	339.1028	-0.5	-1.5	12.5	123.1	4.2	C16 H15 N6 O S
	339.1031	-0.8	-2.4	8.5	121.8	2.9	C18 H20 O3 Na S
	339.1015	0.8	2.4	7.5	124.2	5.3	C15 H19 N2 O5 S
	339.1004	1.9	5.6	9.5	125.2	6.4	C14 H16 N6 O Na S
	339.1055	-3.2	-9.4	11.5	119.0	0.1	C20 H19 O3 S
	339.0991	3.2	9.4	4.5	126.2	7.3	C13 H20 N2 O5 Na S
	339.0988	3.5	10.3	8.5	127.0	8.1	C11 H15 N8 O3 S

Compound **32**

SPECTRUM - simulation :

m/z	Theo. Mass	Delta (mmu)	RDB equiv.	Composition
325.08653	325.08661	-0.08	12.5	C15 H13 O N6 S
	325.08620	0.33	18.0	C23 H12 N Na
	325.08689	-0.36	8.5	C17 H18 O3 Na S
	325.08592	0.61	16.5	C22 H13 O3
	325.08554	0.99	9.0	C15 H16 O2 N3 Na S
	325.08527	1.26	7.5	C14 H17 O5 N2 S
	325.08795	-1.42	12.0	C17 H15 O2 N3 S

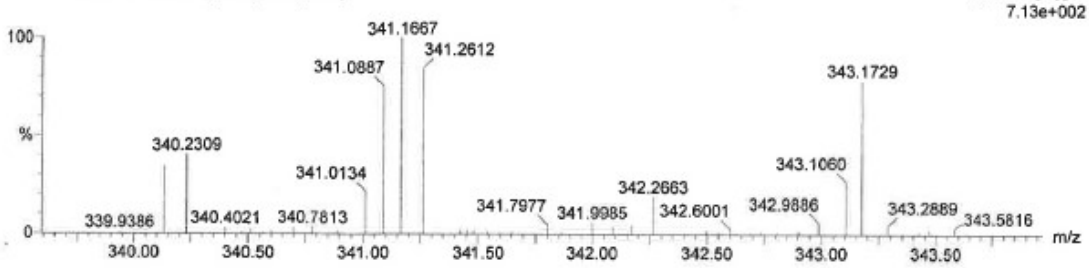
Compound **64**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 6.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
2323 formula(e) evaluated with 12 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-12 Tau
PK Hendris WH-12 Tau 37 (0.904) Cm (37:38)

1: TOF MS ES+
7.13e+002



Minimum:				-1.5			
Maximum:		55.0	6.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
341.0887	341.0886	0.1	0.3	12.5	195.2	2.3	C16 H13 N4 O5
	341.0884	0.3	0.9	3.5	194.7	1.8	C12 H18 O10 F
	341.0890	-0.3	-0.9	17.5	195.2	2.3	C22 H11 N2 F2
	341.0884	0.3	0.9	8.5	196.6	3.7	C14 H15 N4 O2 F2 S
	341.0895	-0.8	-2.3	4.5	196.1	3.3	C11 H16 N4 O3 F3 S
	341.0897	-1.0	-2.9	8.5	194.8	1.9	C13 H14 N4 O6 F
	341.0899	-1.2	-3.5	17.5	195.3	2.4	C17 H9 N8 O
	341.0873	1.4	4.1	7.5	195.2	2.3	C15 H17 O9
	341.0872	1.5	4.4	12.5	197.0	4.1	C17 H14 N4 O F S
	341.0902	-1.5	-4.4	13.5	194.9	2.0	C19 H12 N2 O F3
	341.0870	1.7	5.0	3.5	196.3	3.5	C13 H19 O6 F2 S
	341.0906	-1.9	-5.6	2.5	195.7	2.8	C12 H21 O9 S

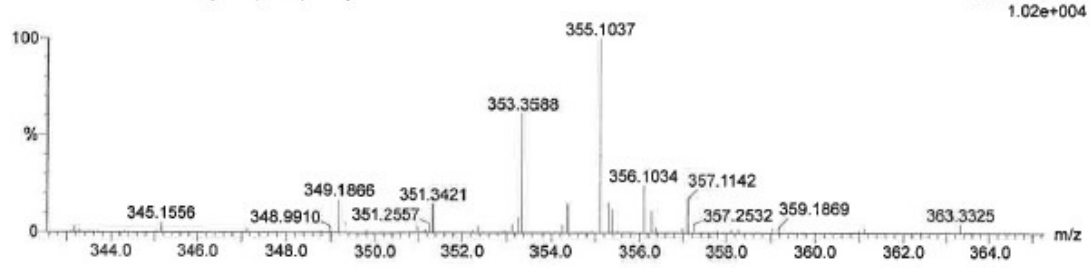
Compound **65**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
2591 formula(e) evaluated with 10 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-20 Tau
PK Hendris WH-20 Tau 39 (0.938) Cm (39:44)

1: TOF MS ES+
1.02e+004



Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
355.1037	355.1038	-0.1	-0.3	-0.5	270.5	3.9	C11 H22 O7 F3 S
	355.1040	-0.3	-0.8	8.5	269.7	3.1	C15 H17 N4 O2 F2 S
	355.1041	-0.4	-1.1	3.5	269.0	2.4	C13 H20 O10 F
	355.1042	-0.5	-1.4	12.5	268.3	1.7	C17 H15 N4 O5
	355.1029	0.8	2.3	7.5	268.5	1.9	C16 H19 O9
	355.1029	0.8	2.3	12.5	269.2	2.7	C18 H16 N4 O F S
	355.1047	-1.0	-2.8	17.5	267.9	1.3	C23 H13 N2 F2
	355.1027	1.0	2.8	3.5	269.9	3.3	C14 H21 O6 F2 S
	355.1052	-1.5	-4.2	4.5	270.3	3.7	C12 H18 N4 O3 F3 S
	355.1054	-1.7	-4.8	8.5	268.8	2.2	C14 H16 N4 O6 F

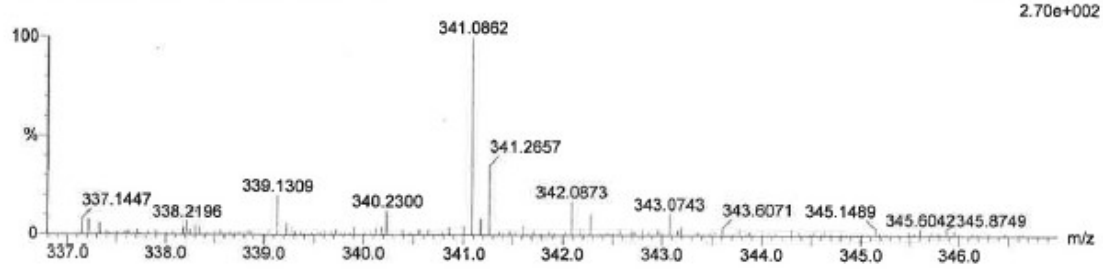
Compound **66**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 4.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
2323 formula(e) evaluated with 8 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-21 Tau
PK Hendris WH-21 Tau 124 (2.958) Cm (124:126)

1: TOF MS ES+
2.70e+002



Minimum:				-1.5			
Maximum:		55.0	4.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
341.0862	341.0862	0.0	0.0	9.5	133.3	5.1	C14 H12 N4 O3 F3
	341.0861	0.1	0.3	16.5	130.6	2.4	C20 H13 N4 S
	341.0859	0.3	0.9	7.5	129.0	0.8	C16 H18 O5 F S
	341.0859	0.3	0.9	13.5	132.9	4.7	C12 H9 N10 O3
	341.0870	-0.8	-2.3	3.5	129.4	1.2	C13 H19 O6 F2 S
	341.0872	-1.0	-2.9	12.5	130.2	2.0	C17 H14 N4 O F S
	341.0873	-1.1	-3.2	7.5	133.0	4.9	C15 H17 O9
	341.0850	1.2	3.5	13.5	133.2	5.0	C17 H11 N4 O2 F2

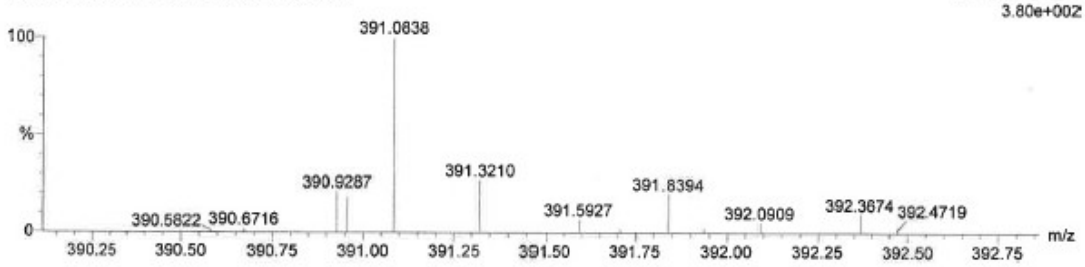
Compound **67**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 4.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3312 formula(e) evaluated with 16 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-14 Tau
PK Hendris WH-14 Tau 29 (0.708) Cm (29:30)

1: TOF MS ES+
3.80e+002



Minimum:				-1.5			
Maximum:		55.0	4.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
391.0838	391.0838	0.0	0.0	16.5	62.8	3.5	C16 H11 N10 O S
	391.0836	0.2	0.5	7.5	62.8	3.4	C12 H16 N6 O6 F S
	391.0840	-0.2	-0.5	12.5	62.8	3.4	C18 H14 N4 O F3 S
	391.0841	-0.3	-0.8	7.5	61.4	2.0	C16 H17 O9 F2
	391.0843	-0.5	-1.3	16.5	61.9	2.6	C20 H12 N4 O4 F
	391.0831	0.7	1.8	20.5	62.4	3.1	C23 H11 N4 O3
	391.0829	0.9	2.3	11.5	62.0	2.7	C19 H16 O8 F
	391.0829	0.9	2.3	16.5	63.2	3.9	C21 H13 N4 F2 S
	391.0827	1.1	2.8	7.5	63.1	3.8	C17 H18 O5 F3 S
	391.0849	-1.1	-2.8	12.5	62.9	3.5	C13 H12 N10 O2 F S
	391.0827	1.1	2.8	13.5	61.3	2.0	C13 H9 N10 O3 F2
	391.0850	-1.2	-3.1	7.5	61.1	1.8	C11 H15 N6 O10
	391.0825	1.3	3.3	11.5	63.3	4.0	C15 H15 N6 O5 S
	391.0852	-1.4	-3.6	3.5	61.2	1.9	C13 H18 O10 F3
	391.0852	-1.4	-3.6	10.5	63.3	3.9	C19 H19 O7 S
	391.0823	1.5	3.8	2.5	63.4	4.1	C11 H20 N2 O10 F S

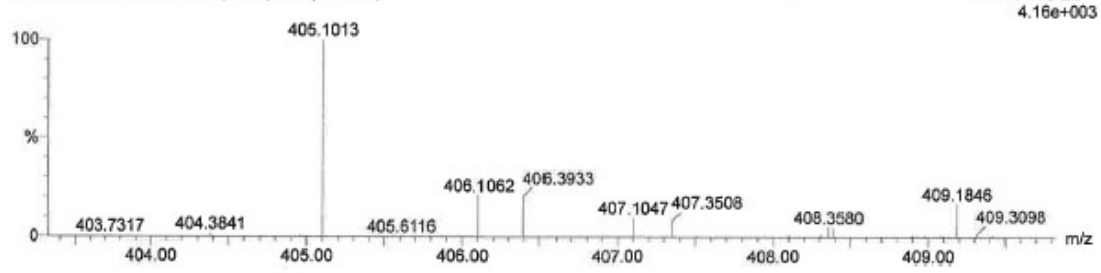
Compound **68**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3590 formula(e) evaluated with 20 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-19 Tau
PK Hendris WH-19 Tau 169 (4.020) Cm (169:170)

1: TOF MS ES+
4.16e+003



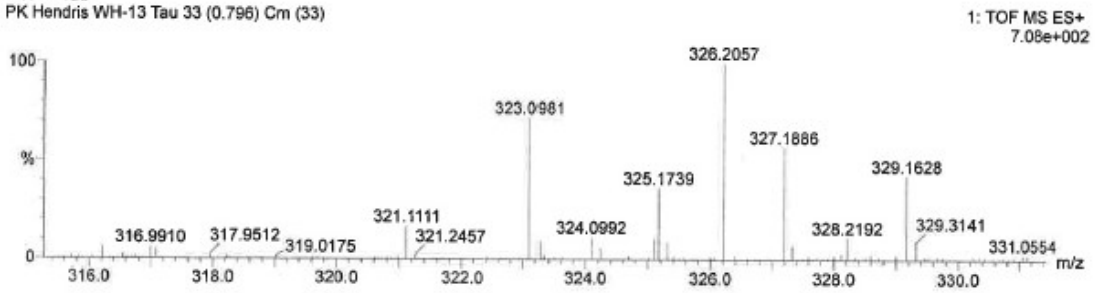
Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
405.1013	405.1012	0.1	0.2	21.5	91.9	7.0	C22 H10 N8 F
	405.1011	0.2	0.5	12.5	91.0	6.2	C18 H15 N4 O5 F2
	405.1017	-0.4	-1.0	8.5	90.9	6.1	C11 H15 N10 O3 F2 S
	405.1009	0.4	1.0	3.5	90.7	5.9	C14 H20 O10 F3
	405.1008	0.5	1.2	10.5	86.8	2.0	C20 H21 O7 S
	405.1019	-0.6	-1.5	6.5	85.1	0.3	C17 H22 O8 F S
	405.1006	0.7	1.7	12.5	89.6	4.8	C14 H14 N10 O2 F S
	405.1020	-0.7	-1.7	12.5	91.6	6.8	C13 H13 N10 O6
	405.1006	0.7	1.7	7.5	91.6	6.8	C12 H17 N6 O10
	405.1021	-0.8	-2.0	15.5	88.7	3.9	C21 H17 N4 O3 S
	405.1022	-0.9	-2.2	8.5	91.3	6.5	C15 H16 N4 O6 F3
	405.1024	-1.1	-2.7	17.5	91.8	7.0	C19 H11 N8 O F2
	405.0999	1.4	3.5	16.5	91.9	7.1	C21 H14 N4 O4 F
	405.1028	-1.5	-3.7	24.5	93.2	8.4	C29 H13 N2 O
	405.0997	1.6	3.9	12.5	89.9	5.1	C19 H16 N4 O F3 S
	405.0997	1.6	3.9	7.5	91.3	6.5	C17 H19 O9 F2
	405.0995	1.8	4.4	9.5	93.7	8.9	C11 H12 N10 O4 F3
	405.0995	1.8	4.4	16.5	90.5	5.7	C17 H13 N10 O S
	405.1031	-1.8	-4.4	2.5	88.5	3.7	C14 H23 O9 F2 S
	405.1033	-2.0	-4.9	11.5	87.7	2.9	C18 H18 N4 O4 F S

Compound **69**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 19.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
644 formula(e) evaluated with 9 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 S: 0-1
WH-13 Tau
PK Hendris WH-13 Tau 33 (0.796) Cm (33)



Minimum:				-1.5							
Maximum:		55.0	19.0	120.0							
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula				
323.0981	323.0978	0.3	0.9	3.5	87.5	2.1	C12	H19	O10		
	323.0992	-1.1	-3.4	8.5	87.7	2.3	C13	H15	N4	O6	
	323.0967	1.4	4.3	12.5	86.7	1.3	C17	H15	N4	O	S
	323.1005	-2.4	-7.4	13.5	88.2	2.8	C14	H11	N8	O2	
	323.0953	2.8	8.7	7.5	86.6	1.2	C16	H19	O5	S	
	323.0933	4.8	14.9	17.5	89.7	4.3	C20	H11	N4	O	
	323.1032	-5.1	-15.8	12.5	90.2	4.8	C18	H15	N2	O4	
	323.0926	5.5	17.0	8.5	88.3	2.9	C12	H15	N6	O3	S
	323.1039	-5.8	-18.0	8.5	88.4	2.9	C11	H15	N8	O2	S

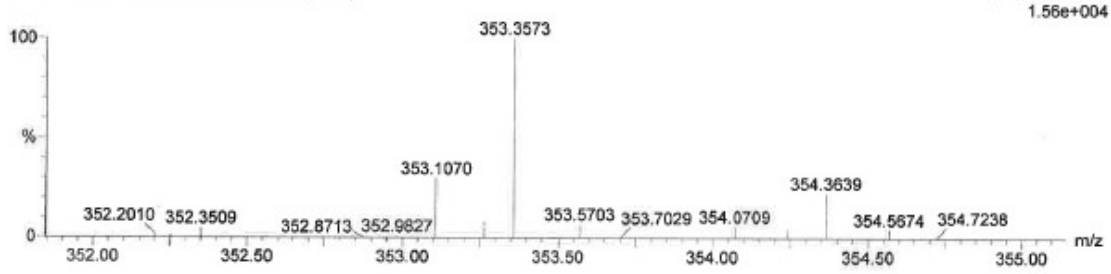
Compound **70**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 6.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
2558 formula(e) evaluated with 15 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-09 Tau
PK Hendris WH-09 Tau 49 (1.187) Cm (44:51)

1: TOF MS ES+
1.56e+004



Minimum:				-1.5			
Maximum:		55.0	6.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
353.1070	353.1070	0.0	0.0	3.5	179.5	3.9	C14 H22 O7 F S
	353.1072	-0.2	-0.6	12.5	179.5	3.9	C18 H17 N4 O2 S
	353.1073	-0.3	-0.8	5.5	177.7	2.1	C12 H16 N4 O5 F3
	353.1075	-0.5	-1.4	14.5	177.6	2.0	C16 H11 N8 F2
	353.1061	0.9	2.5	9.5	177.9	2.3	C15 H15 N4 O4 F2
	353.1079	-0.9	-2.5	21.5	178.8	3.2	C26 H13 N2
	353.1059	1.1	3.1	0.5	178.2	2.6	C11 H20 O9 F3
	353.1059	1.1	3.1	7.5	179.5	3.9	C17 H21 O6 S
	353.1082	-1.2	-3.4	-0.5	179.5	3.9	C11 H23 O8 F2 S
	353.1057	1.3	3.7	9.5	179.2	3.6	C11 H14 N10 O F S
	353.1084	-1.4	-4.0	8.5	179.4	3.8	C15 H18 N4 O3 F S
	353.1084	-1.4	-4.0	3.5	178.6	3.0	C13 H21 O11
	353.1086	-1.6	-4.5	10.5	177.1	1.5	C13 H12 N8 O F3
	353.1050	2.0	5.7	13.5	178.2	2.6	C18 H14 N4 O3 F
	353.1090	-2.0	-5.7	17.5	178.6	3.0	C23 H14 N2 O F

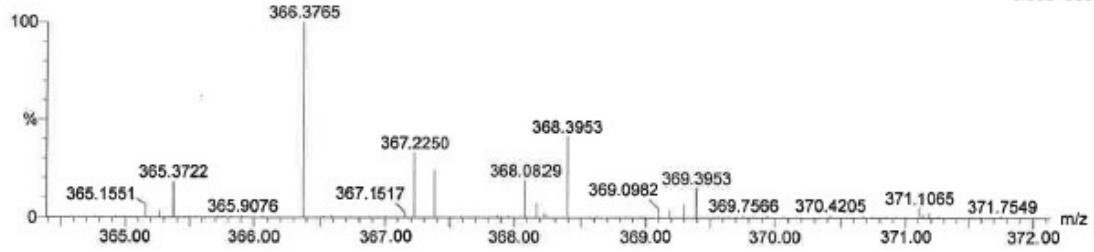
Compound **71**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
1080 formula(e) evaluated with 7 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 9-35 H: 0-20 N: 0-10 O: 0-17 Na: 0-1 S: 0-1
Taus-FL-HO2-OMe
PK HendrisW Taus-FL-HO2-OMe 58 (1.399) Cm (55:58)

1: TOF MS ES+
3.55e+003



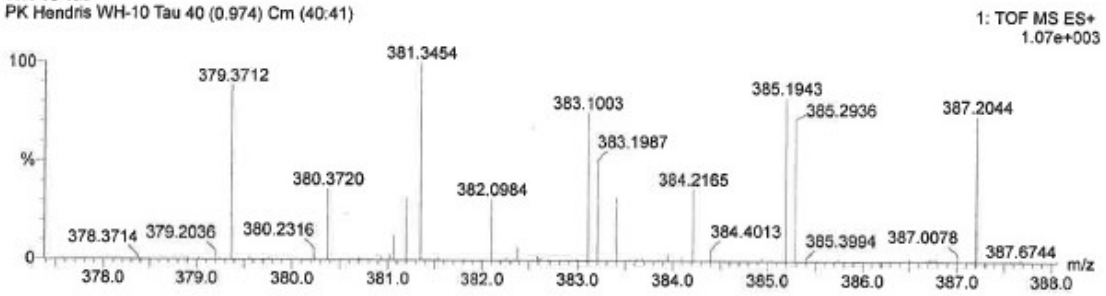
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
368.0829	368.0829	0.0	0.0	4.5	203.4	2.7	C12 H18 N O12
	368.0832	-0.3	-0.8	11.5	203.0	2.3	C12 H11 N9 O4 Na
	368.0824	0.5	1.4	22.5	201.9	1.2	C25 H10 N3 O
	368.0834	-0.5	-1.4	14.5	202.5	1.8	C20 H15 N3 O Na S
	368.0818	1.1	3.0	6.5	203.8	3.1	C11 H15 N5 O8 Na
	368.0817	1.2	3.3	13.5	202.7	2.0	C17 H14 N5 O3 S
	368.0842	-1.3	-3.5	9.5	202.4	1.7	C13 H14 N5 O8

Compound **72**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 6.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3137 formula(e) evaluated with 15 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-10 Tau
PK Hendris WH-10 Tau 40 (0.974) Cm (40:41)



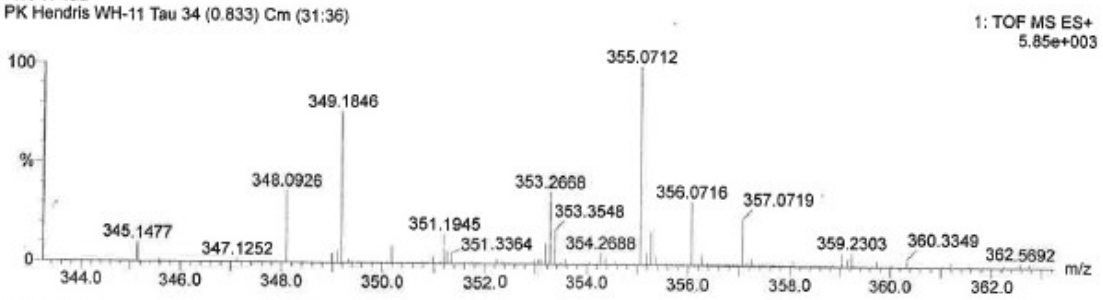
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	6.0	120.0			
382.0984	382.0985	-0.1	-0.3	9.5	139.7	2.1	C15 H17 N5 O4 F S
	382.0983	0.1	0.3	0.5	140.1	2.4	C11 H22 N O9 F2 S
	382.0988	-0.4	-1.0	11.5	140.3	2.7	C13 H11 N9 O2 F3
	382.0980	0.4	1.0	22.5	140.3	2.6	C26 H12 N3 O
	382.0992	-0.8	-2.1	18.5	141.3	3.6	C23 H13 N3 O2 F
	382.0976	0.8	2.1	15.5	140.1	2.4	C16 H10 N9 O F2
	382.0974	1.0	2.6	6.5	140.3	2.6	C12 H15 N5 O6 F3
	382.0974	1.0	2.6	13.5	139.6	1.9	C18 H16 N5 O3 S
	382.0972	1.2	3.1	4.5	139.8	2.2	C14 H21 N O8 F S
	382.0997	-1.3	-3.4	5.5	140.8	3.1	C12 H18 N5 O5 F2 S
	382.0999	-1.5	-3.9	9.5	141.9	4.2	C14 H16 N5 O8
	382.0999	-1.5	-3.9	14.5	140.7	3.0	C16 H13 N9 F S
	382.0965	1.9	5.0	19.5	140.7	3.1	C19 H9 N9 F
	382.1003	-1.9	-5.0	14.5	142.6	5.0	C20 H14 N3 O3 F2
	382.0963	2.1	5.5	10.5	140.9	3.3	C15 H14 N5 O5 F2

Compound **73**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 6.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
2466 formula(e) evaluated with 13 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-1
WH-11 Tau
PK Hendris WH-11 Tau 34 (0.833) Cm (31:36)



Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	6.0	120.0			
348.0926	348.0929	-0.3	-0.9	1.5	171.1	10.3	C11 H20 N O7 F2 S
	348.0930	-0.4	-1.1	10.5	170.6	9.8	C15 H15 N5 O2 F S
	348.0931	-0.5	-1.4	5.5	167.3	6.5	C13 H18 N O10
	348.0920	0.6	1.7	7.5	162.7	1.9	C12 H13 N5 O4 F3
	348.0933	-0.7	-2.0	12.5	161.0	0.2	C13 H9 N9 F3
	348.0919	0.7	2.0	14.5	170.5	9.8	C18 H14 N5 O S
	348.0917	0.9	2.6	5.5	171.0	10.2	C14 H19 N O6 F S
	348.0937	-1.1	-3.2	19.5	169.6	8.8	C23 H11 N3 F
	348.0942	-1.6	-4.6	6.5	171.2	10.4	C12 H16 N5 O3 F2 S
	348.0944	-1.8	-5.2	10.5	166.4	5.7	C14 H14 N5 O6
	348.0908	1.8	5.2	11.5	164.1	3.4	C15 H12 N5 O3 F2
	348.0906	2.0	5.7	2.5	166.6	5.8	C11 H17 N O8 F3
	348.0906	2.0	5.7	9.5	171.6	10.8	C17 H18 N O5 S

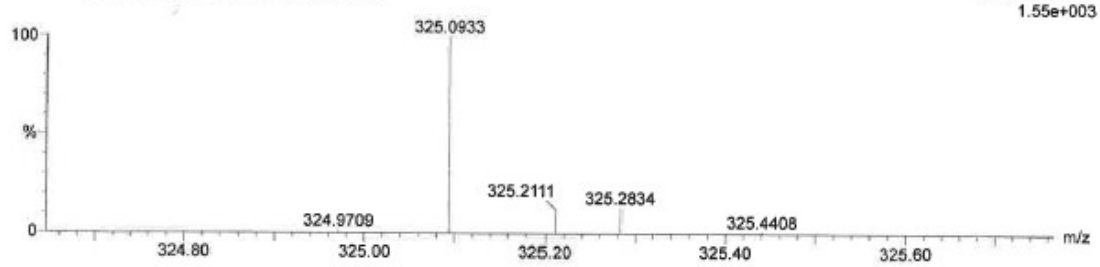
Compound **74**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 15.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
782 formula(e) evaluated with 12 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 F: 0-3 Na: 0-1 S: 0-2
WH-17 Tau
PK Hendris WH-17 Tau 122 (2.904) Cm (122:123)

1: TOF MS ES+
1.55e+003



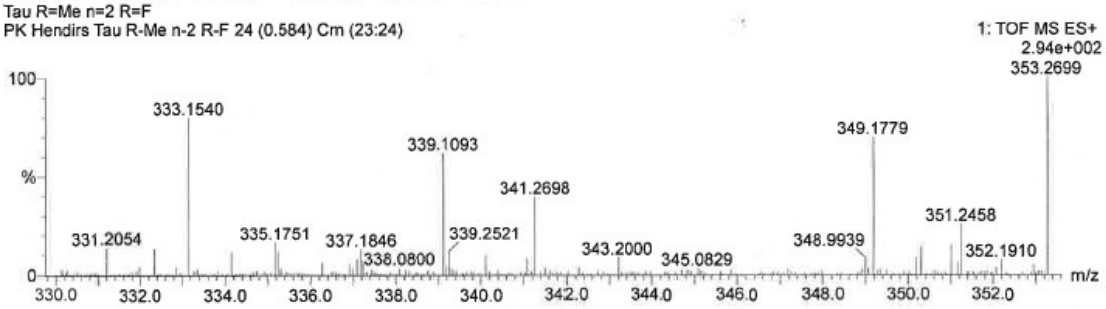
Minimum:				-1.5			
Maximum:		55.0	15.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
325.0933	325.0933	0.0	0.0	4.5	50.8	1.9	C12 H19 N4 F Na S2
	325.0929	0.4	1.2	10.5	50.9	2.0	C17 H13 N2 F3 Na
	325.0926	0.7	2.2	14.5	50.9	2.0	C15 H10 N8 Na
	325.0923	1.0	3.1	12.5	51.1	2.1	C17 H14 N4 F S
	325.0950	-1.7	-5.2	17.5	51.4	2.4	C17 H9 N8
	325.0953	-2.0	-6.2	13.5	51.5	2.5	C19 H12 N2 F3
	325.0957	-2.4	-7.4	7.5	51.6	2.7	C14 H18 N4 F S2
	325.0960	-2.7	-8.3	9.5	51.6	2.7	C12 H14 N8 Na S
	325.0962	-2.9	-8.9	5.5	51.8	2.8	C14 H17 N2 F3 Na S
	325.0899	3.4	10.5	9.5	52.1	3.2	C15 H15 N4 F Na S
	325.0896	3.7	11.4	7.5	52.4	3.4	C17 H19 F2 S2
	325.0889	4.4	13.5	17.5	52.7	3.8	C20 H10 N4 F

Compound **75**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 11.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
1022 formula(e) evaluated with 6 results within limits (up to 20 closest results for each mass)
Elements Used:
C: 15-44 H: 0-66 N: 0-11 O: 0-11 F: 0-1 S: 0-1
Tau R=Me n=2 R=F
PK Hendirs Tau R-Me n-2 R-F 24 (0.584) Cm (23:24)



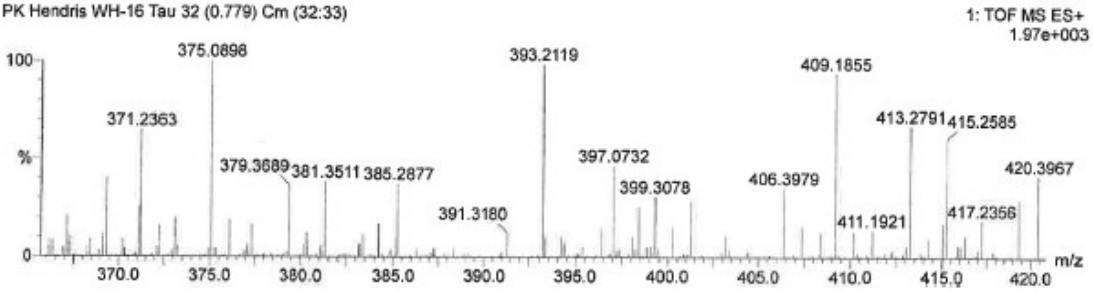
Minimum:				-1.5							
Maximum:		55.0	11.0	120.0							
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula				
339.1093	339.1093	0.0	0.0	12.5	113.6	3.3	C17	H15	N4	O4	
	339.1080	1.3	3.8	7.5	113.2	2.9	C16	H19	O8		
	339.1080	1.3	3.8	12.5	111.5	1.2	C18	H16	N4	F	S
	339.1107	-1.4	-4.1	17.5	114.0	3.7	C18	H11	N8		
	339.1118	-2.5	-7.4	13.5	113.5	3.2	C15	H12	N8	O	F
	339.1066	2.7	8.0	7.5	110.9	0.6	C17	H20	O4	F	S

Compound **76**

Elemental Composition Report **Page 1**

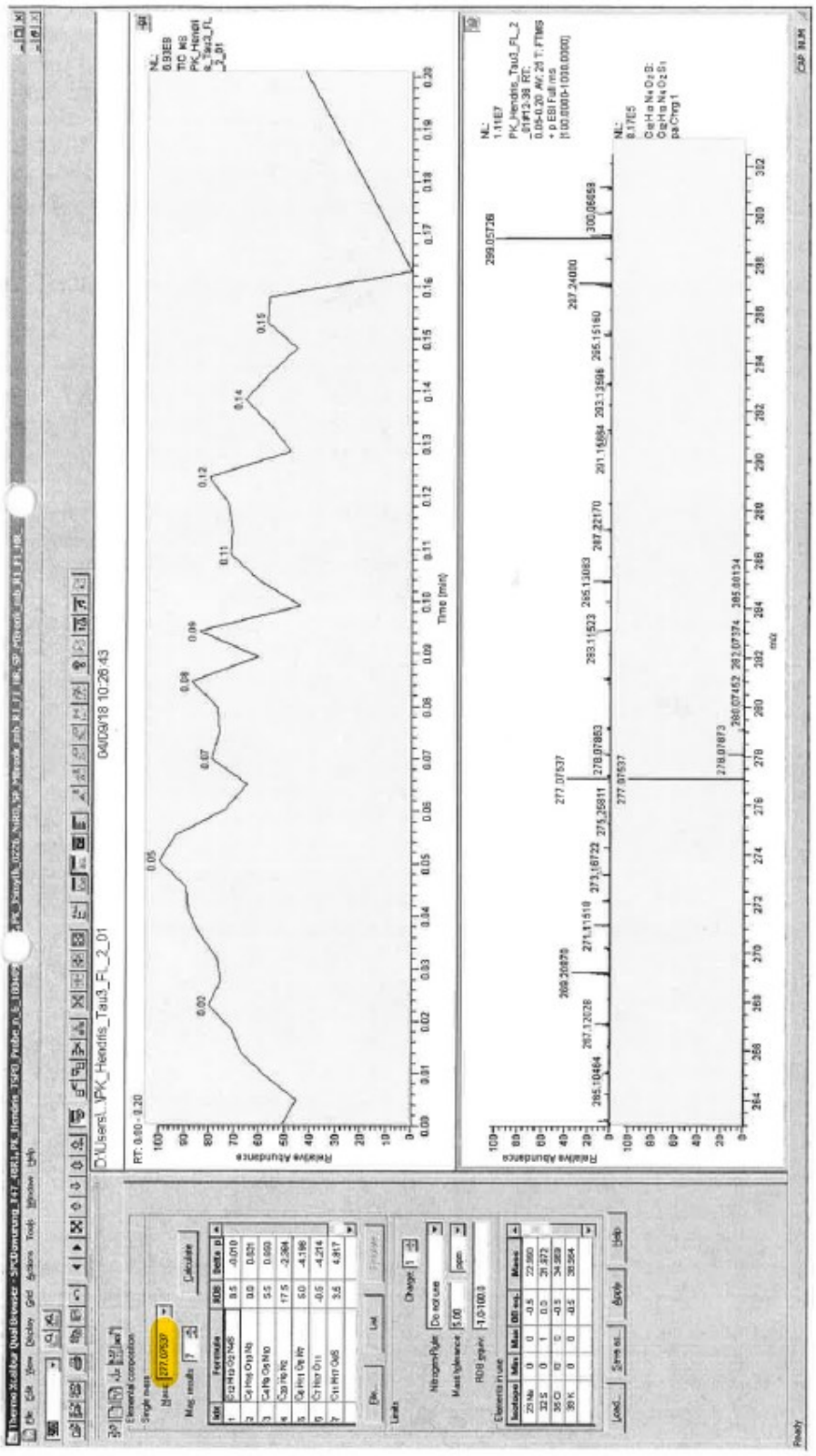
Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
4015 formula(e) evaluated with 21 results within limits (up to 15 closest results for each mass)
Elements Used:
C: 11-44 H: 0-99 N: 0-11 O: 0-11 F: 0-3 S: 0-2
WH-16 Tau
PK Hendris WH-16 Tau 32 (0.779) Cm (32:33)

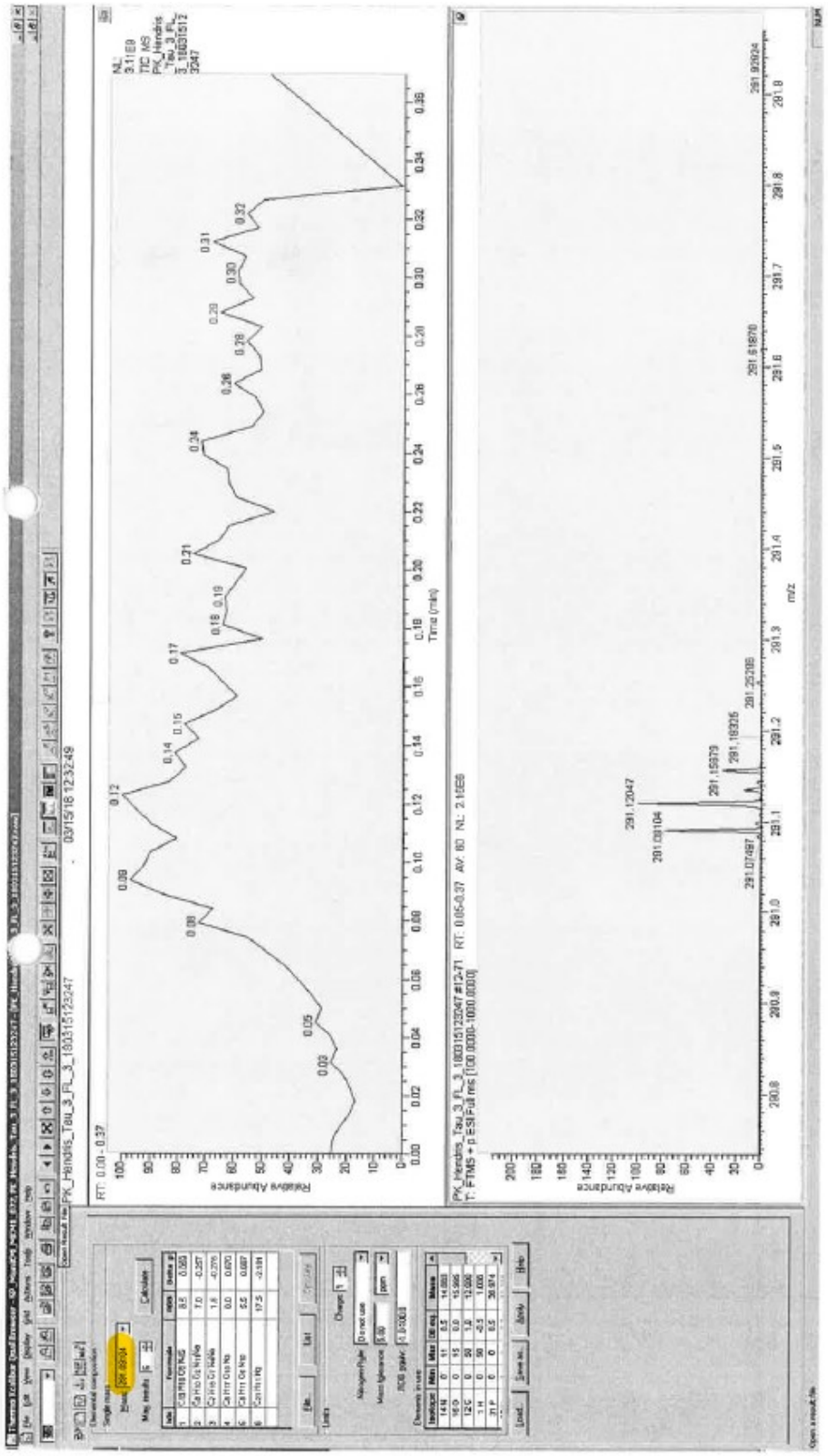


Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
375.0898	375.0896	0.2	0.5	1.5	106.3	6.9	C11 H23 N2 O8 S2
	375.0900	-0.2	-0.5	12.5	99.7	0.4	C13 H12 N10 O F S
	375.0900	-0.2	-0.5	6.5	105.3	6.0	C17 H21 O3 F2 S2
	375.0901	-0.3	-0.8	7.5	105.2	5.9	C11 H15 N6 O9
	375.0902	-0.4	-1.1	10.5	102.0	2.6	C19 H19 O6 S
	375.0903	-0.5	-1.3	3.5	105.4	6.1	C13 H18 O9 F3
	375.0893	0.5	1.3	16.5	106.0	6.7	C20 H12 N4 O3 F
	375.0905	-0.7	-1.9	12.5	105.7	6.4	C17 H13 N4 O4 F2
	375.0891	0.7	1.9	12.5	102.6	3.2	C18 H14 N4 F3 S
	375.0891	0.7	1.9	7.5	104.7	5.4	C16 H17 O8 F2
	375.0889	0.9	2.4	16.5	103.4	4.1	C16 H11 N10 S
	375.0889	0.9	2.4	10.5	106.7	7.4	C20 H20 O2 F S2
	375.0909	-1.1	-2.9	6.5	105.8	6.5	C12 H19 N6 O4 S2
	375.0887	1.1	2.9	7.5	101.2	1.8	C12 H16 N6 O5 F S
	375.0912	-1.4	-3.7	2.5	105.8	6.5	C14 H22 O4 F3 S2

Compound **89**



Compound **90**

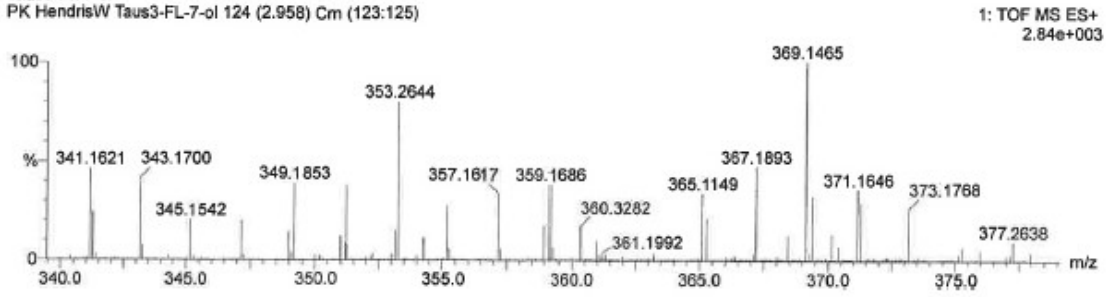


Compound **91**

Elemental Composition Report **Page 1**

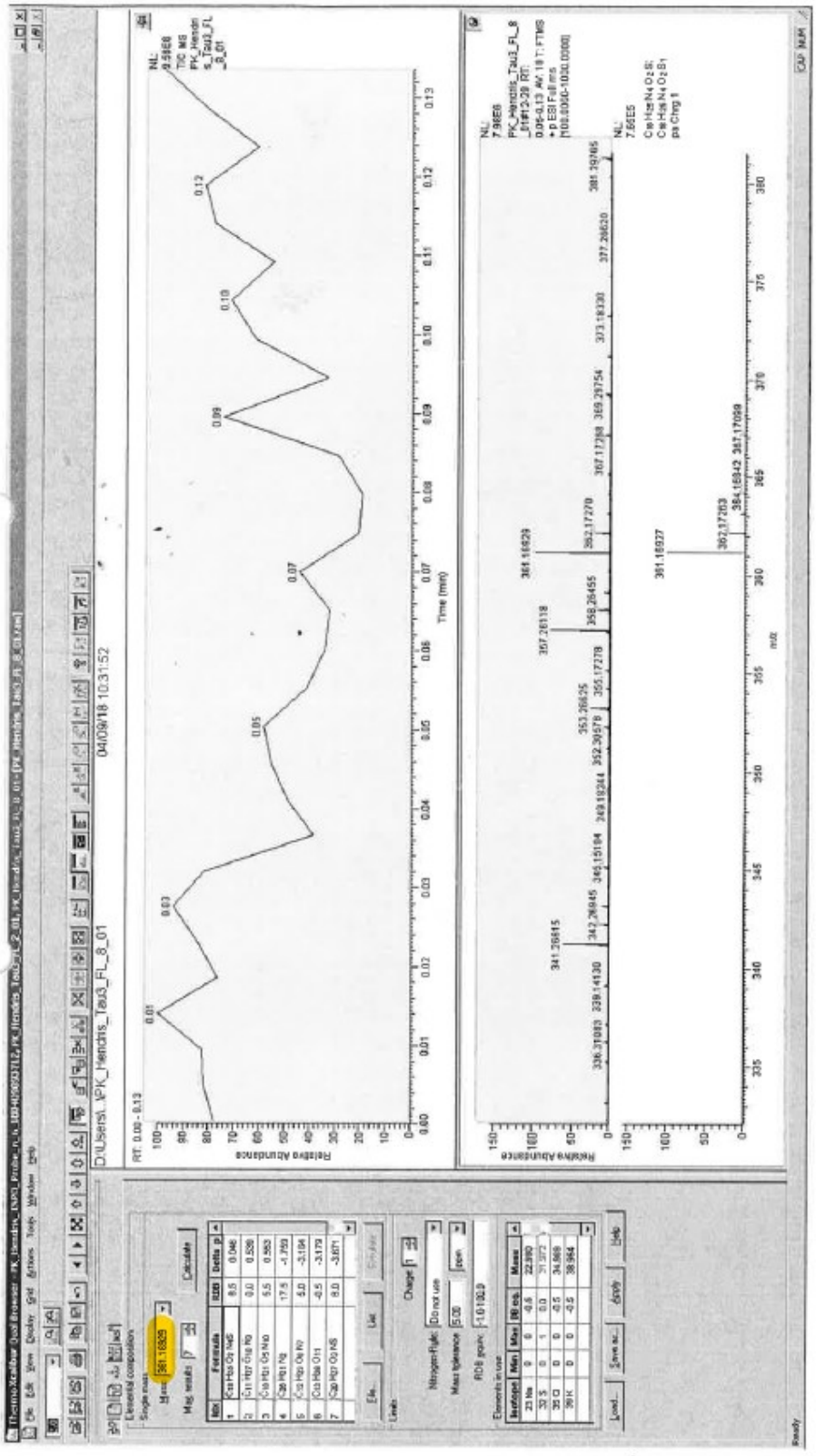
Single Mass Analysis
Tolerance = 6.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
1641 formula(e) evaluated with 8 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 9-35 H: 0-66 N: 0-10 O: 0-17 Na: 0-1 S: 0-1
Taus3-FL-7-ol
PK HendrisW Taus3-FL-7-ol 124 (2.958) Cm (123:125)



Minimum:				-1.5			
Maximum:		55.0	6.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
347.1556	347.1556	0.0	0.0	6.5	117.2	2.0	C12 H20 N8 O3 Na
	347.1558	-0.2	-0.6	9.5	117.9	2.7	C20 H24 N2 Na S
	347.1553	0.3	0.9	-0.5	117.0	1.8	C12 H27 O11
	347.1548	0.8	2.3	17.5	117.4	2.2	C25 H19 N2
	347.1567	-1.1	-3.2	4.5	117.0	1.8	C13 H23 N4 O7
	347.1543	1.3	3.7	1.5	117.1	1.9	C11 H24 N4 O7 Na
	347.1542	1.4	4.0	8.5	118.0	2.8	C17 H23 N4 O2 S
	347.1540	1.6	4.6	5.5	117.2	2.0	C9 H19 N10 O5

Compound **92**

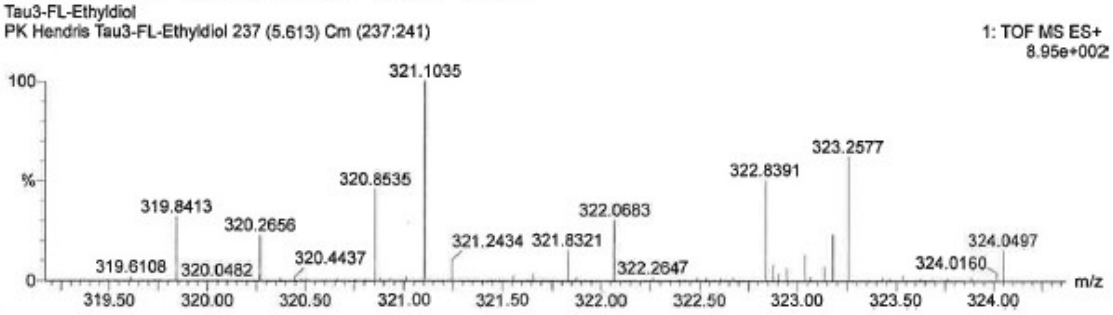


Compound **93**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 10.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
1268 formula(e) evaluated with 11 results within limits (up to 25 closest results for each mass)
Elements Used:
C: 9-39 H: 0-75 N: 0-10 O: 0-12 Na: 0-1 S: 0-1
Tau3-FL-Ethyldiol
PK Hendris Tau3-FL-Ethyldiol 237 (5.613) Cm (237:241)



Minimum:				-1.5			
Maximum:		55.0	10.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
321.1035	321.1036	-0.1	-0.3	6.5	203.2	4.9	C9 H14 N8 O4 Na
	321.1033	0.2	0.6	-0.5	203.5	5.2	C9 H21 O12
	321.1038	-0.3	-0.9	9.5	200.2	1.9	C17 H18 N2 O Na S
	321.1028	0.7	2.2	17.5	199.8	1.5	C22 H13 N2 O
	321.1046	-1.1	-3.4	4.5	203.1	4.8	C10 H17 N4 O8
	321.1021	1.4	4.4	8.5	201.2	2.8	C14 H17 N4 O3 S
	321.1060	-2.5	-7.8	9.5	202.8	4.5	C11 H13 N8 O4
	321.1062	-2.7	-8.4	12.5	199.2	0.9	C19 H17 N2 O S
	321.1008	2.7	8.4	3.5	202.0	3.7	C13 H21 O7 S
	321.1063	-2.8	-8.7	5.5	202.7	4.4	C13 H18 N2 O6 Na
	321.1004	3.1	9.7	14.5	200.6	2.3	C20 H14 N2 O Na

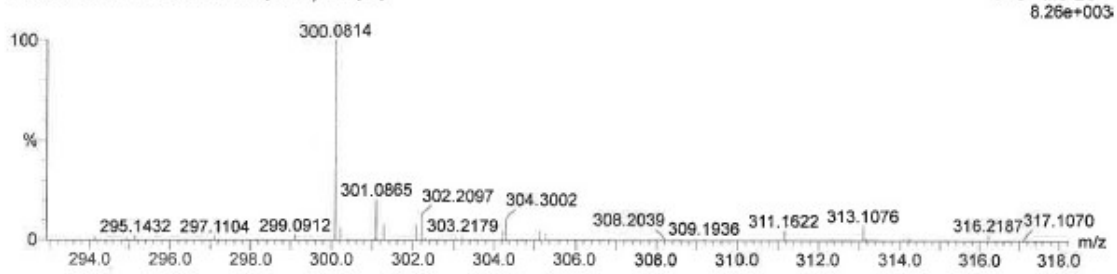
Compound **109**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
875 formula(e) evaluated with 3 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-50 H: 3-70 N: 0-10 O: 0-11 Na: 0-1 S: 0-2
Tau2G n-0 R-MeN
PK Hendris Tau2G n-0 R-MeN 21 (0.513) Cm (21)

1: TOF MS ES+
8.26e+003



Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
300.0814	300.0813	0.1	0.3	19.5	136.2	10.8	C23 H10 N
	300.0807	0.7	2.3	10.5	127.0	1.5	C15 H14 N3 O2 S
	300.0823	-0.9	-3.0	11.5	125.7	0.3	C18 H15 N Na S

Compound **110**

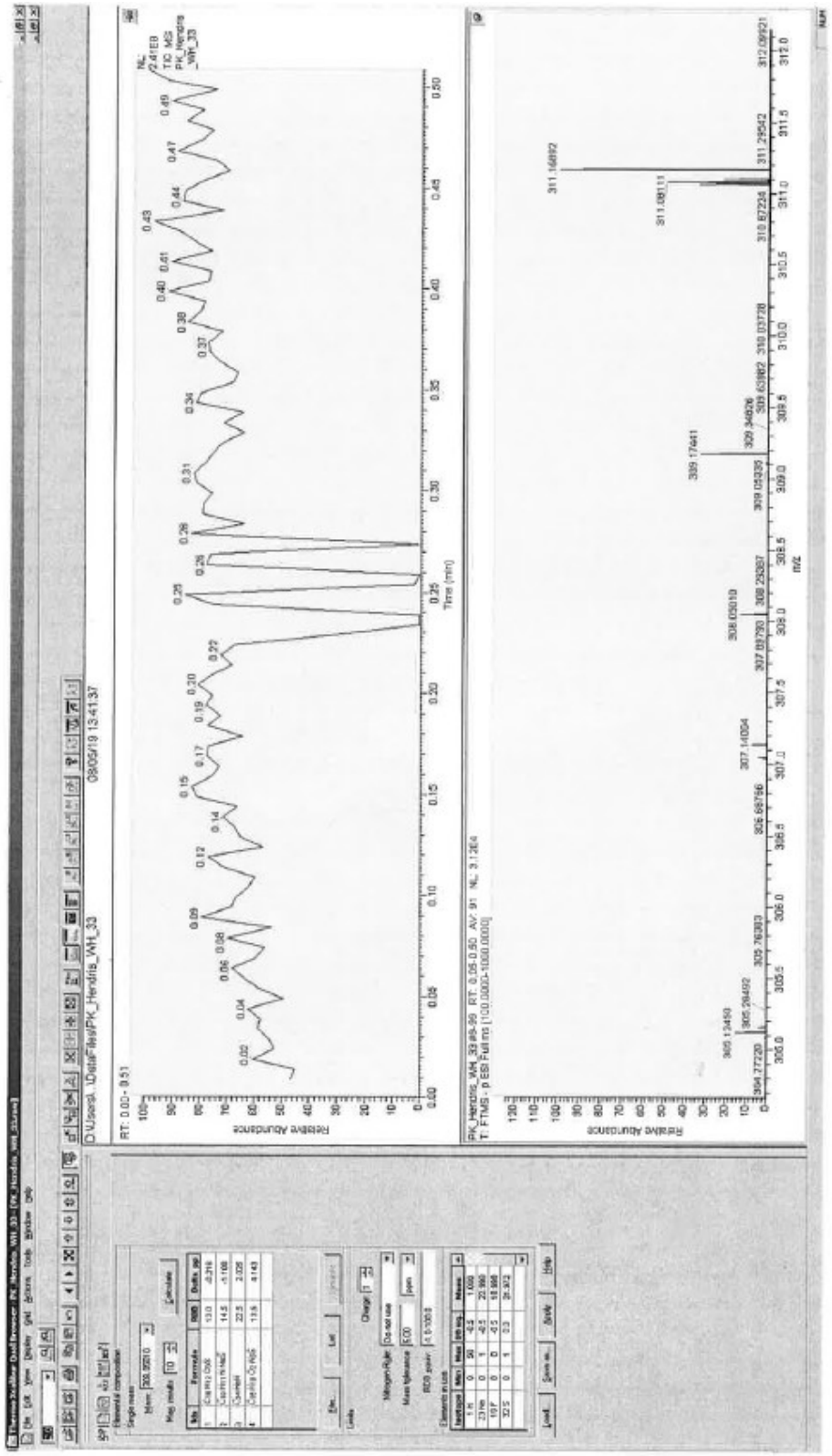
SPECTRUM - simulation :

m/z	Theo. Mass	Delta (mmu)	RDB equiv.	Composition
286.06450	286.06447	0.03	10.5	C14 H12 O2 N3 S
	286.06493	-0.43	16.0	C17 H7 N4 F
	286.06513	-0.63	19.5	C22 H8 N
	286.06359	0.91	11.0	C16 H11 O4 F
	286.06582	-1.32	10.0	C16 H14 O3 S

Compound **111**

SPECTRUM - simulation :

m/z	Theo. Mass	Delta (mmu)	RDB equiv.	Composition
308.05010	308.05017	-0.07	13.0	C18 H12 O3 S
	308.05044	-0.34	14.5	C19 H11 N Na S
	308.04948	0.62	22.5	C24 H6 N
	308.04882	1.28	13.5	C16 H10 O2 N3 S



Compound **112**

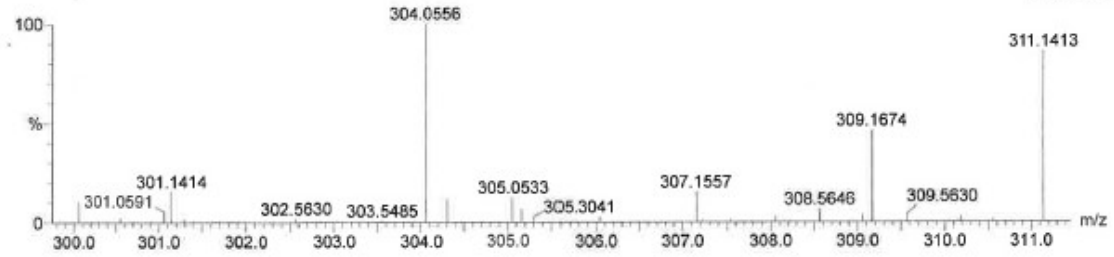
Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3636 formula(e) evaluated with 9 results within limits (up to 15 closest results for each mass)
Elements Used:
C: 12-55 H: 3-70 N: 0-10 O: 0-15 F: 0-3 Na: 0-1 S: 0-2

Tau2G-FL-03
PK Hendris Tau2G-FL-03 37 (0.904) Cm (35:38)

1: TOF MS ES+
7.69e+003



Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
304.0556	304.0556	0.0	0.0	10.5	160.9	3.8	C14 H11 N3 O2 F S
	304.0554	0.2	0.7	6.5	162.6	5.5	C12 H15 N3 O Na S2
	304.0559	-0.3	-1.0	12.5	158.5	1.4	C12 H7 N7 O2 Na
	304.0559	-0.3	-1.0	12.5	159.0	1.8	C12 H5 N7 F3
	304.0561	-0.5	-1.6	8.5	159.0	1.8	C14 H10 N O2 F3 Na
	304.0550	0.6	2.0	12.5	160.8	3.7	C17 H9 N O F2 Na
	304.0563	-0.7	-2.3	19.5	163.0	5.8	C22 H7 N F
	304.0545	1.1	3.6	14.5	161.6	4.5	C17 H10 N3 O S
	304.0570	-1.4	-4.6	10.5	158.2	1.0	C13 H10 N3 O6

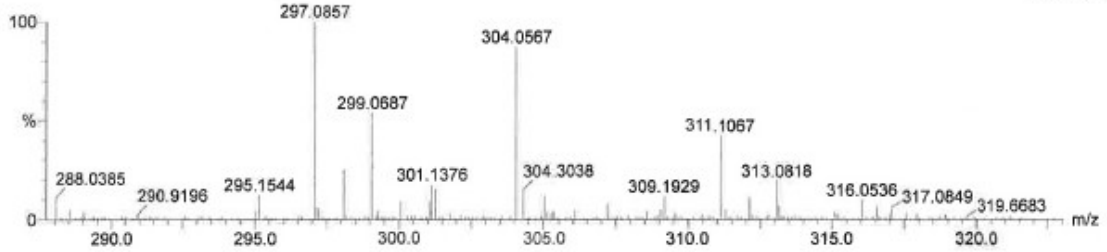
Compound **113**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 9.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
2158 formula(e) evaluated with 10 results within limits (up to 15 closest results for each mass)
Elements Used:
C: 12-55 H: 3-70 N: 0-10 O: 0-15 F: 0-1 Na: 0-1 S: 0-2
Tau2G-FL-01
PK Hendris Tau2G-FL-01 37 (0.904)

1: TOF MS ES+
3.98e+002



Minimum:				-1.5			
Maximum:		55.0	9.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
304.0567	304.0570	-0.3	-1.0	10.5	67.6	2.0	C13 H10 N3 O6
	304.0563	0.4	1.3	19.5	70.6	5.0	C22 H7 N F
	304.0572	-0.5	-1.6	11.5	68.0	2.4	C17 H12 N F Na S
	304.0559	0.8	2.6	12.5	67.8	2.2	C12 H7 N7 O2 Na
	304.0556	1.1	3.6	10.5	66.4	0.8	C14 H11 N3 O2 F S
	304.0578	-1.1	-3.6	9.5	69.6	4.0	C14 H14 N3 O S2
	304.0554	1.3	4.3	6.5	68.7	3.1	C12 H15 N3 O Na S2
	304.0583	-1.6	-5.3	15.5	69.1	3.5	C14 H6 N7 O2
	304.0586	-1.9	-6.2	11.5	69.4	3.8	C16 H11 N O4 Na
	304.0545	2.2	7.2	14.5	68.3	2.7	C17 H10 N3 O S

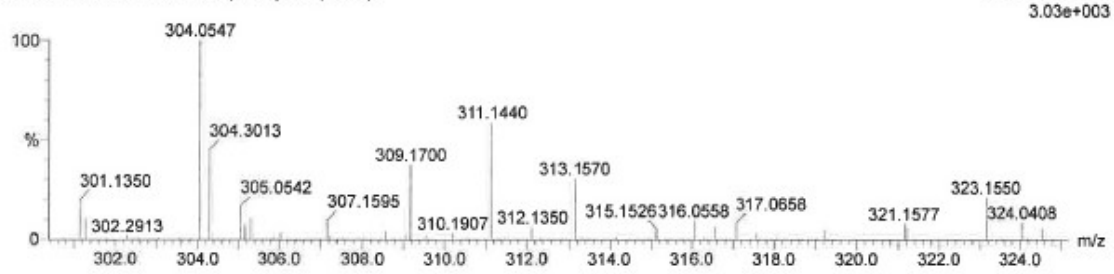
Compound **114**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
3636 formula(e) evaluated with 10 results within limits (up to 15 closest results for each mass)
Elements Used:
C: 12-55 H: 3-70 N: 0-10 O: 0-15 F: 0-3 Na: 0-1 S: 0-2
Tau2G-FL-02
PK Hendris Tau2G-FL-02 36 (0.867) Cm (36:37)

1: TOF MS ES+
3.03e+003



Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
304.0547	304.0545	0.2	0.7	14.5	153.1	3.2	C17 H10 N3 O S
	304.0550	-0.3	-1.0	12.5	152.6	2.7	C17 H9 N O F2 Na
	304.0554	-0.7	-2.3	6.5	155.1	5.2	C12 H15 N3 O Na S2
	304.0538	0.9	3.0	16.5	153.9	4.0	C20 H8 N F Na
	304.0556	-0.9	-3.0	10.5	152.4	2.5	C14 H11 N3 O2 F S
	304.0559	-1.2	-3.9	12.5	152.0	2.0	C12 H7 N7 O2 Na
	304.0559	-1.2	-3.9	12.5	152.8	2.9	C12 H5 N7 F3
	304.0534	1.3	4.3	11.5	151.2	1.2	C14 H8 N3 O3 F2
	304.0561	-1.4	-4.6	8.5	152.4	2.5	C14 H10 N O2 F3 Na
	304.0532	1.5	4.9	7.5	151.5	1.6	C12 H12 N3 O2 F Na S

Compound **115**

SPECTRUM - simulation :

m/z	Theo. Mass	Delta (mmu)	RDB equiv.	Composition
315.07979	315.07979	0.00	10.5	C16 H15 O3 N2 S
	315.08006	-0.27	12.0	C17 H14 N3 Na S
	315.08044	-0.65	19.5	C24 H11 O
	315.07910	0.69	20.0	C22 H9 N3
	315.07845	1.34	11.0	C14 H13 O2 N5 S

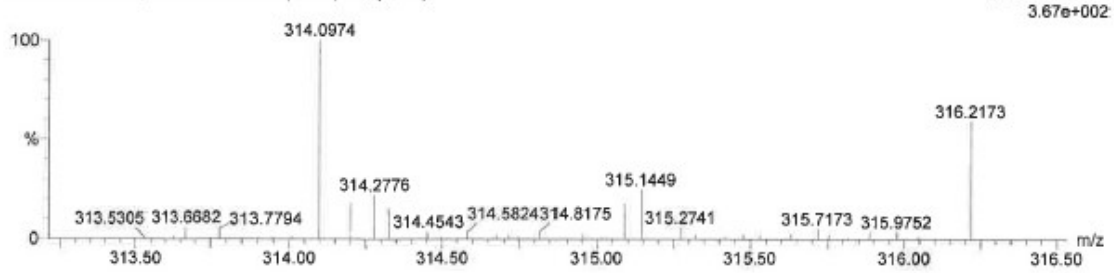
Compound **116**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
977 formula(e) evaluated with 3 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-50 H: 3-70 N: 0-10 O: 0-11 Na: 0-1 S: 0-2
Tau2GFL n-1 R-MeN
PK Hendris Tau2GFL n-1 R-MeN 60 (1.434) Cm (60:62)

1: TOF MS ES+
3.67e+002



Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
314.0974	314.0970	0.4	1.3	19.5	146.9	0.3	C24 H12 N
	314.0979	-0.5	-1.6	11.5	148.9	2.3	C19 H17 N Na S
	314.0963	1.1	3.5	10.5	148.6	2.0	C16 H16 N3 O2 S

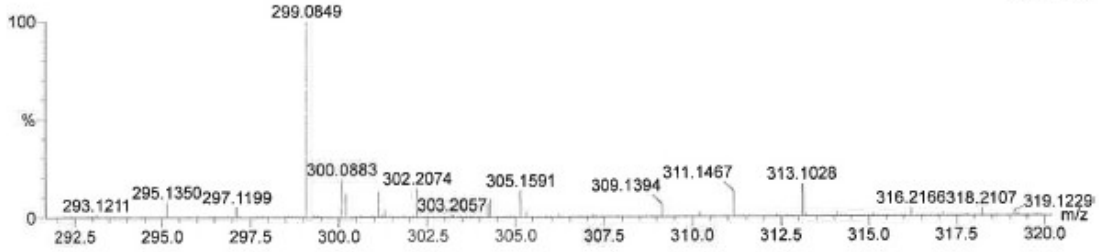
Compound **117**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
873 formula(e) evaluated with 3 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-50 H: 3-70 N: 0-10 O: 0-11 Na: 0-1 S: 0-2
Tau2GFL n-1 R-H
PK Hendris Tau2GFL n-1 R-H 58 (1.399) Cm (58:59)

1: TOF MS ES+
1.57e+003



Minimum:				-1.5						
Maximum:		55.0	5.0	120.0						
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula			
299.0849	299.0854	-0.5	-1.7	10.5	146.1	1.1	C16 S	H15	N2	O2
	299.0861	-1.2	-4.0	19.5	145.9	0.9	C24	H11		
	299.0837	1.2	4.0	16.5	146.3	1.3	C22	H12	Na	

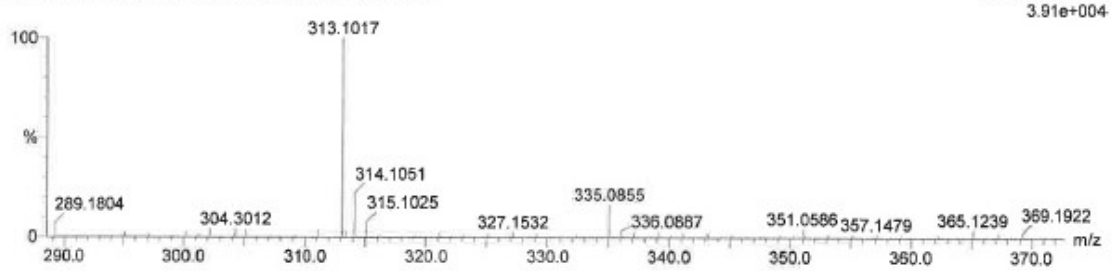
Compound **118**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
973 formula(e) evaluated with 3 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-50 H: 3-70 N: 0-10 O: 0-11 Na: 0-1 S: 0-2
Tau2GFL n-1 Rr2-Me
PK Hendris Tau2GFL n-1 Rr2-Me 45 (1.079) Cm (45:46)

1: TOF MS ES+
3.91e+004



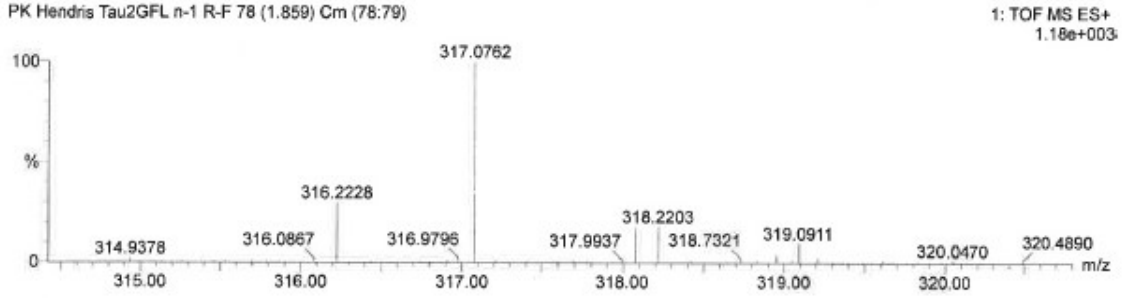
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
313.1017	313.1017	0.0	0.0	19.5	198.7	13.4	C25 H13
	313.1011	0.6	1.9	10.5	186.6	1.2	C17 H17 N2 O2 S
	313.1027	-1.0	-3.2	11.5	185.7	0.3	C20 H18 Na S

Compound **119**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

Monoisotopic Mass, Even Electron Ions
1855 formula(e) evaluated with 5 results within limits (all results (up to 1000) for each mass)
Elements Used:
C: 15-50 H: 3-70 N: 0-10 O: 0-11 F: 0-1 Na: 0-1 S: 0-2
Tau2GFL n-1 R-F
PK Hendris Tau2GFL n-1 R-F 78 (1.859) Cm (78:79)



Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
317.0762	317.0760	0.2	0.6	10.5	115.0	0.8	C16 H14 N2 O2 F S
	317.0767	-0.5	-1.6	19.5	116.7	2.5	C24 H10 F
	317.0774	-1.2	-3.8	10.5	116.3	2.1	C15 H13 N2 O6
	317.0749	1.3	4.1	14.5	116.1	1.9	C19 H13 N2 O S
	317.0776	-1.4	-4.4	11.5	115.9	1.7	C19 H15 F Na S

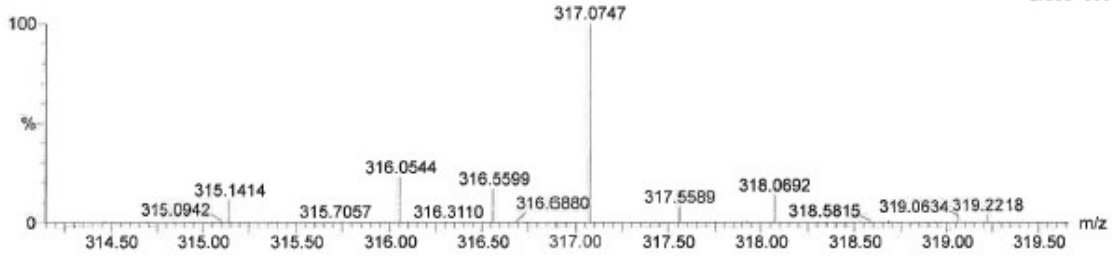
Compound **120**

Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 PPM / DBE: min = -1.5, max = 120.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

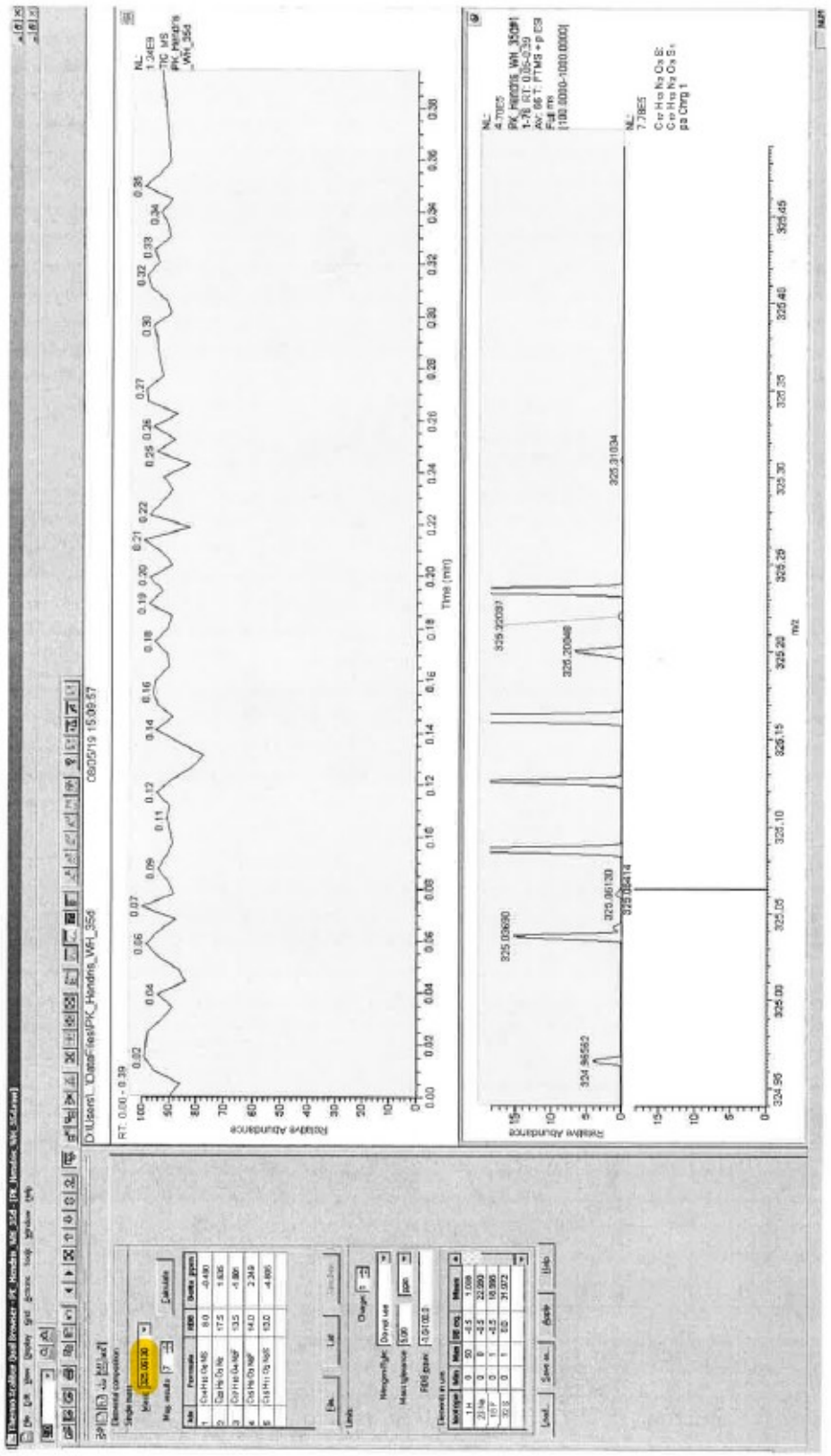
Monoisotopic Mass, Even Electron Ions
4107 formula(e) evaluated with 12 results within limits (up to 15 closest results for each mass)
Elements Used:
C: 12-55 H: 3-70 N: 0-10 O: 0-15 F: 0-3 Na: 0-1 S: 0-2
Tau2G-FL-05
PK Hendris Tau2G-FL-05 29 (0.708) Cm (28:30)

1: TOF MS ES+
2.35e+003



Minimum:				-1.5			
Maximum:		55.0	5.0	120.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
317.0747	317.0749	-0.2	-0.6	7.5	134.1	1.5	C13 H12 N2 O4 F3
	317.0749	-0.2	-0.6	14.5	138.5	5.8	C19 H13 N2 O S
	317.0750	-0.3	-0.9	7.5	133.2	0.6	C13 H14 N2 O6 Na
	317.0742	0.5	1.6	16.5	138.8	6.2	C22 H11 F Na
	317.0754	-0.7	-2.2	12.5	137.8	5.1	C19 H12 O F2 Na
	317.0738	0.9	2.8	9.5	135.4	2.8	C12 H9 N6 F3 Na
	317.0738	0.9	2.8	11.5	136.0	3.4	C16 H11 N2 O3 F2
	317.0736	1.1	3.5	7.5	136.5	3.9	C14 H15 N2 O2 F Na S
	317.0758	-1.1	-3.5	6.5	139.6	7.0	C14 H18 N2 O Na S2
	317.0760	-1.3	-4.1	10.5	137.8	5.2	C16 H14 N2 O2 F S
	317.0733	1.4	4.4	11.5	135.6	3.0	C12 H10 N8 F S
	317.0763	-1.6	-5.0	12.5	136.4	3.8	C14 H8 N6 F3

Compound **127**

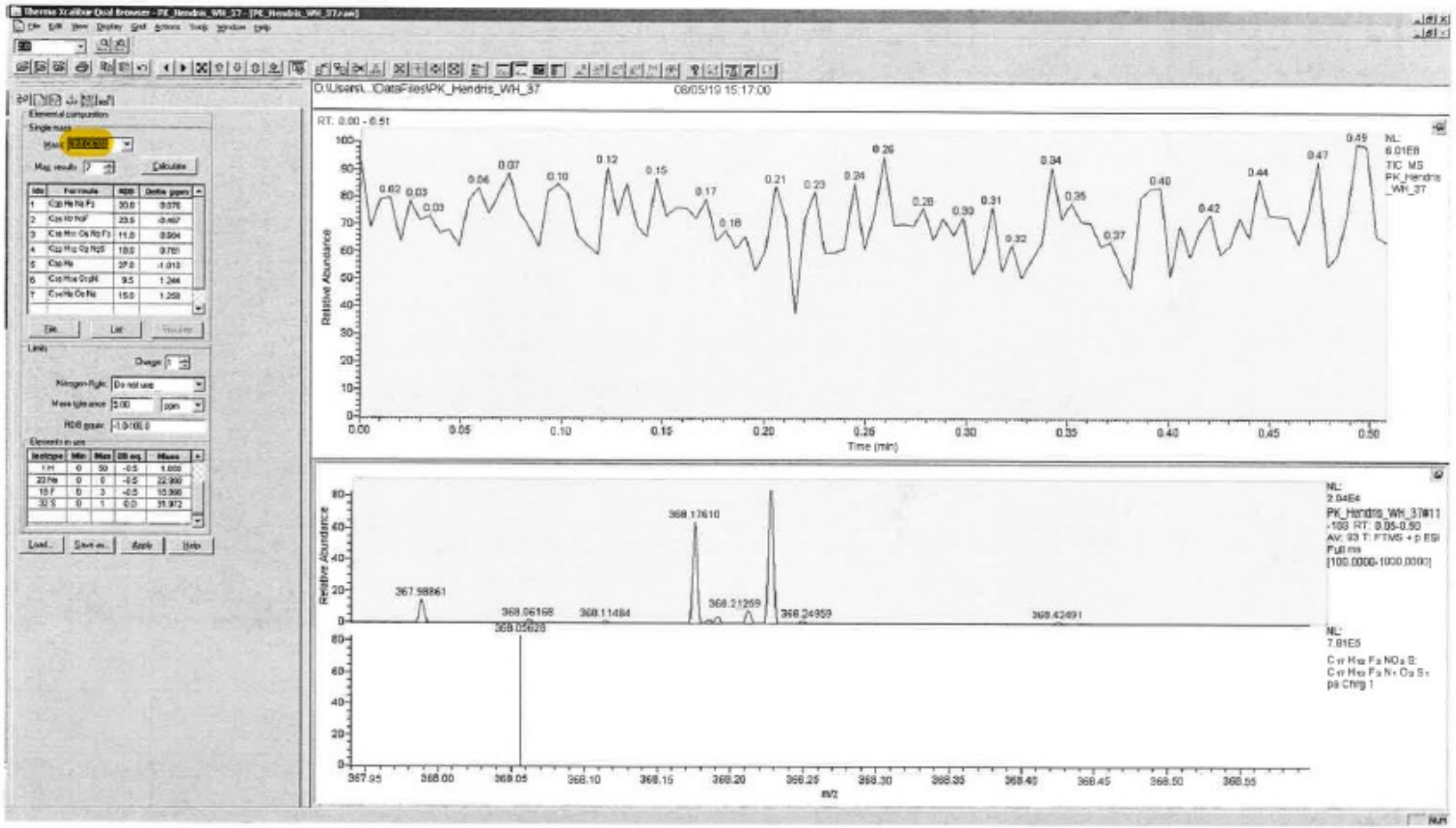


Compound **128**

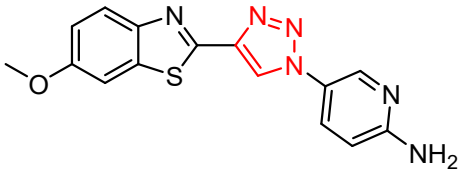
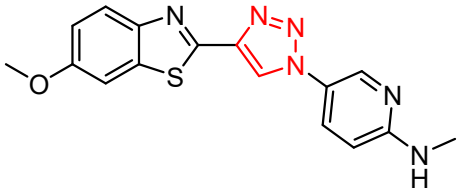
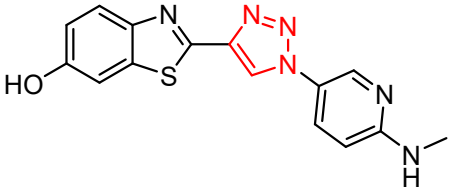
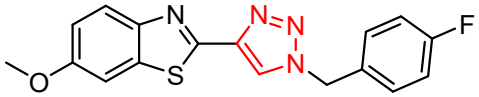
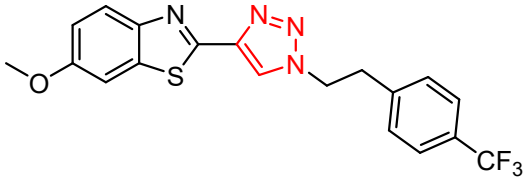
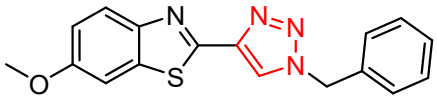
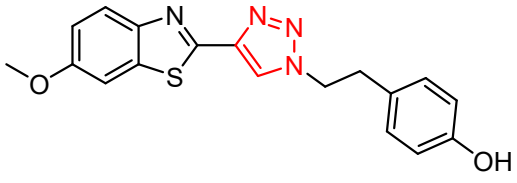
SPECTRUM - simulation :

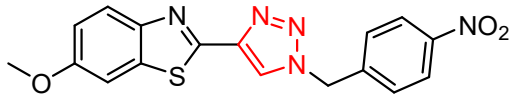
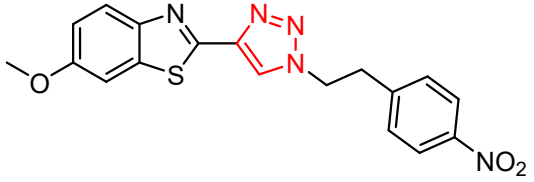
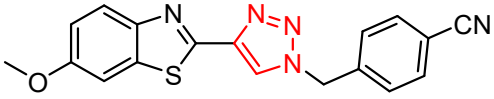
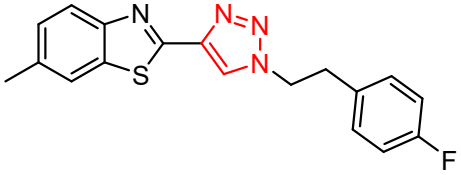
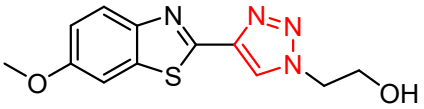
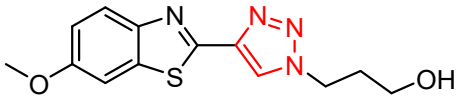
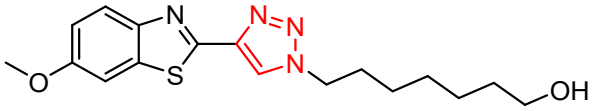
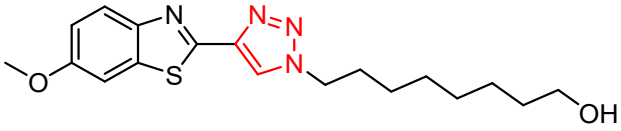
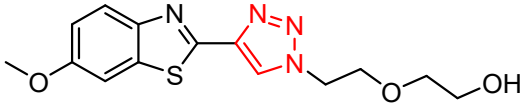
m/z	Theo. Mass	Delta (mmu)	RDB equiv.	Composition
318.05937	318.05947	-0.10	10.5	C16 H13 O3 N F S
	318.05878	0.59	20.0	C22 H7 N2 F
	318.05833	1.04	14.5	C19 H12 O2 N S
	318.05813	1.24	11.0	C14 H11 O2 N4 F S
	318.06082	-1.45	16.0	C14 H6 O2 N8
	318.06083	-1.46	10.5	C15 H12 O7 N

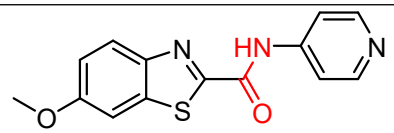
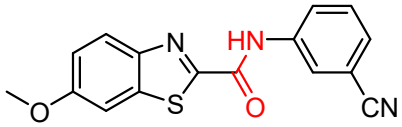
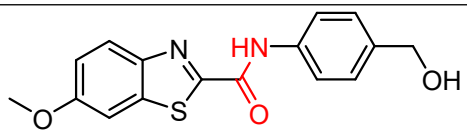
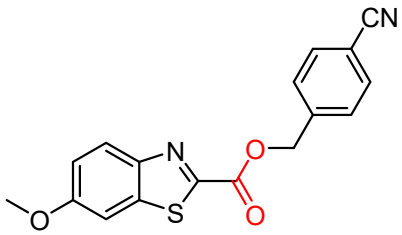
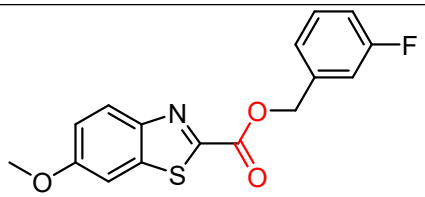
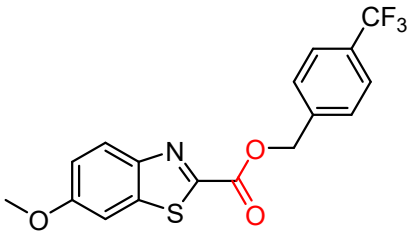
Compound **129**


O:\Users\...\DataFiles\PK_Hendris_WH_37
08/05/19 15:17:00
RT: 0.00 - 0.51
Relative Abundance
Time (min)
NL:
6.01E8
TIC MS
PK_Hendris
_WH_37
368.17610
367.98861
368.06168
368.11484
368.21259
368.24959
368.42491
368.05628
NL:
2.04E4
PK_Hendris_WH_37#11
-103 RT: 0.05-0.50
AV: 93 T: FTMS + p ESI
Full ms
[100.0000-1000.0000]
NL:
7.81E5
m/z

6. Physicochemical properties of several ligand candidates

Structure	clogP[a]	HBA[a]	HBD[a]	PSA[a]	logBB[b]
 **30**	2.35	7	2	91.76	-0.862
 **31**	2.73	7	1	77.76	-0.597
 **32**	2.19	7	2	88.76	-0.842
 **64**	3.87	5	0	52.84	-0.005
 **67**	4.82	5	0	52.84	0,.090
 **69**	3.71	5	0	52.84	-0.008
 **70**	3.44	6	1	73.07	-0,420

 **71**	3.67	8	0	98.67	-0.763
 **72**	3.88	8	0	98.67	-0.732
 **73**	3.46	6	0	76.64	-0,469
 **75**	4.47	4	0	43.61	0.173
 **89**	1.48	6	1	73.07	-0.717
 **90**	1.75	6	1	73.07	-0.674
 **91**	3.54	6	1	73.07	-0.404
 **92**	4.05	6	1	73.07	-0.327
 **93**	1.37	7	1	82.31	-0,871

 **110**	1.74	5	1	64.12	-0,546
 **111**	2.76	5	1	75.02	-0.552
 **115**	2.36	5	2	71.45	-0.560
 **127**	3.32	5	0	72.22	-0.425
 **128**	3.70	4	0	48.43	-0.015
 **129**	4.46	4	0	48.43	0.100
Required[c]	≤5	≤7	≤3	≤90	>-1

[a]Calculated using Cheminformatics (http://www.molinspiration.com/).

[b]LogBB = −0.0148 × TPSA + 0.152 × cLogP + 0.139.[14]

[c]Parameters required to fulfill physiochemical properties (drug-like molecules) according to Lipinski's Rules.[15]

6. References

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