Supporting Information:

Discovery of a potent adenine-benzyltriazolo-pleuromutilin conjugate with pronounced antibacterial activity against MRSA

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General methods

Commercially available solvents and starting materials were used unless otherwise stated. TLC was performed using silica gel 60 F254 plates and visualized at 254 nm or by staining with PMA, ninhydrin or KMnO4 stains. For Flash Chromatography purification, silica gel 60 (0.040−0.063 mm, Merck) was used. ^{1}H and ^{13}C spectra were recorded at 400 and 101 MHz respectively, on a Bruker Avance III 400 at 300 K. RPLC analysis was performed using a Gemini C18 column (5 µm, 4.6 mm × 150 mm); flow, 1 mL/min.; 10% MeCN in water (0−1 min.), 10−100% MeCN in water (1−10 min.), 100% MeCN (11−15 min.), both solvents with 0.1% trifluoro acetic acid as modifier, UV detection at 254 nm.

General Procedures

General Procedure 1: TMS deprotection with TBAF

The trimethylsilyl protected acetylene analogue (1 eq.) was dissolved in THF (~1 M) under argon, after which tetra-n-butylammonium fluoride (TBAF) in tetrahydrofuran (1 M, 1.2–1.6 eq.) was added. The solution was stirred at room temperature for 1 h. before it was concentrated *in vacuo*. The resulting residue was dissolved in dichloromethane, washed with brine (3 x 10 mL), dried over $MgSO_4$ and evaporated *in vacuo*. The residue was purified by Flash Chromatography (MeOH:DCM or EtOAc:PE) to yield the deprotected alkyne.

General Procedure 2: TMS deprotection with K_2CO_3/MeOH

The trimethylsilyl protected acetylene analogue (1 eq.) was dissolved in MeOH (140 mM) after which K_2CO_3 was added (1 eq.). The suspension was stirred for 1–24 h. before it was concentrated *in vacuo.* The residue was diluted with water and extracted with Et_2O (3 x). The combined organics phases were washed with brine, dried over $MgSO_4$ and evaporated *in vacuo*. The residue was purified by Flash chromatography in EtOAc:PE unless otherwise stated to yield the deprotected acetylene as an oil or solid.

General Procedure 3: Bromination of benzyl alcohols

The appropriate benzyl alcohol (1 eq.) and 1,8-Diazabicyclo(5.4.0)undec-7-ene (DBU, 1.3 eq.) were dissolved in anhydrous dichloromethane (1 M). The vessel was purged with argon and cooled to 0 ^{o}C before phosphorous tribromide (1.1 eq.) was added dropwise. The mixture was stirred overnight, during which it reached room temperature. The reaction mixture was quenched with ice water, before extraction with dichloromethane (3 x). The combined organic layers were washed with 5% H_2SO_4 (2 x), sat. $NaHCO_3$ (2 x) and brine (2 x) before being dried over $MgSO_4$. The combined organic phases were evaporated *in vacuo*. Purification was either not necessary or by Flash Chromatography to yield the pure benzyl bromide.

General Procedure 4: N-alkylation of secondary amines

To a small, dry microwave vial, the appropriate benzylbromide was dissolved in anhydrous THF (250 mM) before the desired amine (4 eq.) was added. The vessel was purged with argon, sealed and stirred at 55 °C for 1–2 h. The mixture was cooled to ambient temperature, diluted with water and acidified with 5% H_2SO_4 before extraction with DCM. The aqueous phase was basified with conc. NH_4OH and then extracted with DCM (5 x). The combined organic phases were concentrated to afford the desired benzyl amines as oils.

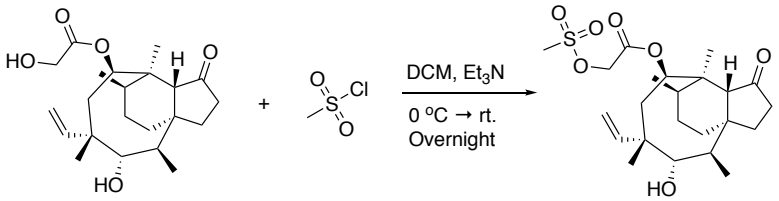
General Procedure 5: Suzuki cross-coupling

A round bottom flask was vac-filled with argon, before the benzylbromide (1 eq.), the appropriate boronic acid (1 eq.), tetrakis(triphenylphosphine)palladium(0) (0.01 eq.), and tetrahydrofuran (1 M) were added. The mixture was stirred for 5 min. at room temperature, vac-filled with argon again and then 1.5 mL of 2 M aqueous Na_2CO_3 solution was added. The reaction mixture was stirred at 60 °C overnight, before being cooled to room temperature. The mixture was extracted with diethyl ether (3 x 5 mL) and the organic layer was dried over $MgSO_4$ and evaporated *in vacuo*. The resulting residue was purified by Flash chromatography (EtOAc:PE, 0 → 5% → 10%) to afford the product as an oil.

General Procedure 6: TMS deprotection with MeOH/DCM and K_2CO_3

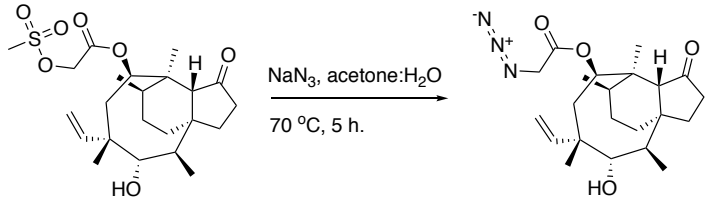
The trimethylsilyl protected acetylene analogue (1 eq.) was dissolved in 6.0 mL of 2:1 MeOH/DCM (v/v), after which K_2CO_3 was added (0.17 eq.). The suspension was stirred for 2 h at room temperature. The reaction was then quenched with water (6.0 mL) and extracted with diethyl ether (3 x 6 ml). The combined organics were washed with brine (6 ml), dried over $MgSO_4$ and evaporated *in vacuo*. The resulting residue was purified by Flash chromatography (EtOAc:PE, 0 → 5% → 10%) to afford the product as an oil or solid;

22-*O*-Mesylpleuromutilin (**8**)



A large dry microwave-vial was charged with (+)-pleuromutilin (**1**) (2.00 g, 5.28 mmol) and vac-filled three times with argon before anhydrous dichloromethane (10.0 mL) and anhydrous triethylamine (0.89 mL, 6.35 mmol) was added. The mixture was cooled to 0 °C followed by dropwise addition of methanesulfonyl chloride (0.41 mL, 5.28 mmol) after which the vial was capped. The mixture was allowed to reach room temperature and stirred overnight resulting in consumption of **1**. Saturated ammonium chloride (1.5 mL) was added to quench the reaction and the mixture was separated. The aqueous layer was washed with diethyl ether (3 x 10 mL). The organic layers were combined and washed with brine, dried over Na_2SO_4 and evaporated *in vacuo*. The residue was purified by Flash chromatography (EtOAc:PE, 5% → 10% → 20% 50%) to give 1.49 g of **8** (62%, 3.27 mmol); ^{1}H NMR (400 MHz, DMSO) δ 6.14 (dd, *J* = 17.8, 11.2 Hz, 1H), 5.62 (d, *J* = 8.3 Hz, 1H), 5.15–5.03 (m, 2H), 4.89–4.72 (m, 2H), 4.56 (d, *J* = 5.9 Hz, 1H), 3.47–3.39 (m, 1H), 3.24 (s, 3H), 2.47–2.40 (m, 1H), 2.27–2.01 (m, 4H), 1.72–1.57 (m, 2H), 1.56–1.22 (m, 7H), 1.07 (s, 3H), 0.83 (d, *J* = 7.0 Hz, 3H), 0.63 (d, *J* = 6.9 Hz, 3H); ^{13}C NMR (101 MHz, DMSO) δ 217.0, 170.3, 165.4, 140.7, 115.3, 72.6, 70.4, 65.8, 59.7, 57.2, 44.9, 44.2, 43.2, 41.5, 37.6, 36.5, 36.2, 34.0, 30.1, 28.6, 26.6, 24.4, 20.7, 15.9, 14.4, 14.1, 11.5; HRMS (ESI): m/z calculated for $C_{23}H_{36}NaO_7S$ ($M+Na^+$) 479.2074 found 479.2078, Ref: Chen, J. Mulin acetate comprising substituted squaric acid, and application thereof. CN103204787A, 2012.[34]

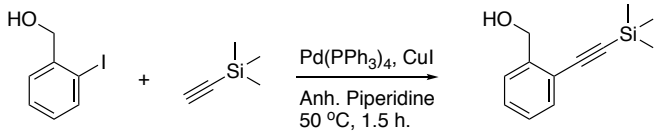
22-Azido-22-deoxypleuromutilin (**9**)



Compound **8** (1.43 g, 3.13 mmol) was dissolved in acetone (14.0 mL) to which a solution of NaN_3 (254 mg, 3.91 mmol) in water (5.3 mL) was slowly added. The mixture was refluxed at 70 °C for 5 h. before cooling to room temperature and concentration *in vacuo*. The residue was dissolved in dichloromethane (50 mL) and washed with water (15 mL), brine (15 mL) and dried over Na_2SO_4. The organic layer was evaporated *in vacuo* before purification by Flash chromatography (EtOAc:PE, 5% → 10% → 30%) to yield 1.035 g of **9** (82%, 2.56 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 6.49 (dd, *J* = 17.4, 11.0 Hz, 1H), 5.86 (d, *J* = 8.5 Hz, 1H), 5.37 (dd, *J* = 11.0, 1.5 Hz, 1H), 5.22 (dd, *J* = 17.4, 1.6 Hz, 1H), 3.77 (s, 2H), 3.36 (dd, *J* = 10.7, 6.6 Hz, 1H), 2.34 (p, *J* = 7.1 Hz, 1H), 2.30–2.16 (m, 2H), 2.16–2.08 (m, 2H), 1.78 (dq, *J* = 14.5, 3.1 Hz, 1H), 1.73–1.60 (m, 2H), 1.57 (s, 1H), 1.56–1.48 (m, 1H), 1.47 (s, 3H), 1.44 (d, *J* = 2.2 Hz, 1H), 1.40 (dq, *J* = 11.1, 3.9 Hz, 1H), 1.33 (d, *J* = 16.1 Hz, 1H), 1.18 (s, 3H), 1.17–1.09 (m, 1H), 0.89 (d, *J* = 7.0 Hz, 3H), 0.73 (d, *J* = 7.0 Hz, 3H); ^{13}C NMR ($CDCl_3$, 101 MHz) δ 216.7, 167.2, 138.8, 117.5,

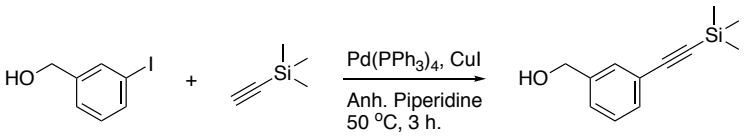
74.6, 70.3, 58.2, 51.2, 45.5, 44.9, 44.0, 41.9, 36.7, 36.1, 34.4, 30.4, 26.9, 26.4, 24.9, 16.7, 14.9, 11.5; HRMS (ESI): m/z calculated for $C_{22}H_{33}N_3NO_4$ ($M+Na^+$) 426.2363 found 426.2345, Ref: Lolk et al. A Click Chemistry Approach to Pleuromutilin Conjugates with Nucleosides or Acyclic Nucleoside Derivatives and Their Binding to the Bacterial Ribosome. *J. Med. Chem.* **2008,** *51*, 4957–4967.[33]

2-(Trimethylsilyl-ethynyl)benzyl alcohol (**48**)



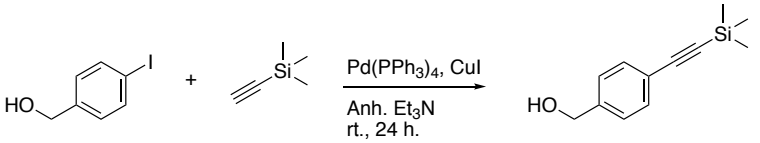
A round bottom flask was charged with tetrakis(triphenylphosphine)palladium(0) (397 mg, 0.344 mmol) and copper(I) iodide (135.2 mg, 0.687 mmol). The vial was vac-filled with argon before anhydrous piperidine (40.0 mL), 2-iodobenzyl alcohol **45** (2.00 g, 8.54 mmol) and trimethylsilylacetylene (1.46 mL, 10.3 mmol) were added. The reaction mixture was stirred at 50 °C for 1.5 h., before being cooled to room temperature. and diluted with Et_2O (40 mL). The mixture was washed with sat. NH_4Cl (40 mL), 2 M HCl (40 mL) and H_2O (40 mL) and dried over Na_2SO_4. The organic layer was evaporated *in vacuo* and the residue was purified by Flash Chromatography (EtOAc:PE, 0 → 25%) to yield 1.35 g of **48** (78%, 6.61 mmol); ^{1}H-NMR (400 MHz, $CDCl_3$) δ 7.46 (dd, *J* = 7.6, 1.4 Hz, 2H), 7.40 (dd, *J* = 7.6, 1.5 Hz, 1H), 7.32 (td, *J* = 7.6, 1.4 Hz, 1H), 7.22 (td, *J* = 7.5, 1.4 Hz, 1H), 4.80 (d, *J* = 5.9 Hz, 2H), 2.42 (d, *J* = 12.6 Hz, 1H), 0.25 (s, 9H); ^{13}CNMR (101 MHz, $CDCl_3$) δ 143.2, 132.5, 129.0, 127.4, 127.2, 121.2, 102.7, 99.6, 64.0, 0.3; HRMS (ESI): m/z calculated for $C_{12}H_{17}OSi$ ($M+H^+$) 205.1036 found 205.1049

3-(Trimethylsilyl-ethynyl)benzyl alcohol (**49**)



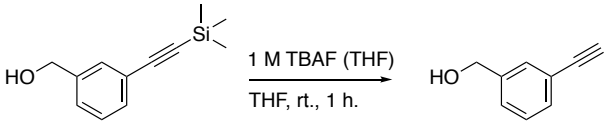
A large microwave vial was charged with tetrakis(triphenylphosphine)palladium(0) (182 mg, 0.157 mmol) and copper(I) iodide (120 mg, 0.629 mmol). The vial was vac-filled with argon (3 x) before anhydrous piperidine (25 mL), 3-iodobenzyl alcohol **46** (0.95 mL, 7.47 mmol) and trimethylsilylacetylene (1.18 mL, 8.26 mmol) was added. The reaction mixture was stirred at 50 °C for 3 h. before being cooled to room temperature and diluted with Et_2O (70 mL). The mixture was washed with sat. NH_4Cl (40 mL), 2 M HCl (50 mL) and H_2O (50 mL) and dried over Na_2SO_4. The organic phases were evaporated *in vacuo* and the residue was purified by Flash Chromatography (EtOAc:PE, 0–50%) to yield 1.30 g of **49** (85%, 6.37 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 (m, 1H), 7.41–7.37 (m, 1H), 7.33–7.28 (m, 2H), 4.67 (d, *J* = 5.9 Hz, 2H), 1.71 (t, *J* = 6.0 Hz, 1H), 0.25 (d, *J* = 0.4 Hz, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 141.0, 131.2, 130.5, 128.5, 127.0, 123.5, 104.9, 94.4, 64.9; HRMS (ESI): m/z calculated for $C_{12}H_{16}NaOSi$ ($M+Na^+$) 227.0863 found 227.0870.

4-(Trimethylsilyl-ethynyl)benzyl alcohol (**50**)



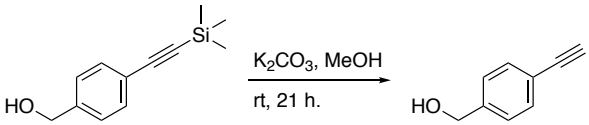
A round bottom flask was charged with 4-iodobenzyl alcohol **47** (5.00 g, 21.4 mmol), copper(I) iodide (40.7 mg, 0.214 mmol) and tetrakis(triphenylphosphine)palladium(0) (494 mg, 0.427 mmol). The vial was vac-filled with argon (3 x) before anhydrous triethylamine (43 mL) and trimethylsilylacetylene (3.65 mL, 25.6 mmol) were added. The reaction mixture was stirred at room temperature for 24 h. The reaction mixture was filtered over Celite and evaporated *in vacuo*. The residue was purified by Flash Chromatography (MeOH:DCM, 2%) to yield 4.33 g of **50** (21.2 mmol, 99%); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.50–7.40 (m, 2H), 7.31–7.27 (m, 2H), 4.68 (d, J = 5.9 Hz, 2H), 1.75 (t, J = 6.0 Hz, 1H), 0.25 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 141.2, 132.2, 126.7, 122.4, 104.9, 94.2, 65.0; HRMS (ESI): m/z calculated for $C_{12}H_{16}NaOSi$ ($M+Na^{+}$) 227.0863 found 227.0872.

3-(Ethynyl)benzyl alcohol (**51**)



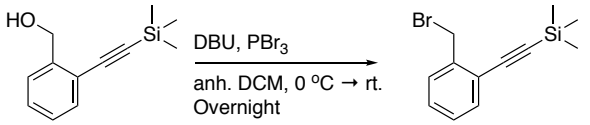
General Procedure 1 was applied with the trimethylsilyl acetylene **49** (540 mg, 2.64 mmol), anhydrous THF (3 mL) and 1 M TBAF in THF (3.2 mL, 3.2 mmol). The mixture was stirred at room temperature for 1 h. Purification by Flash Chromatography (EtOAc:PE, 25%) yielded 230 mg of **51** (65%, 1.72 mmol); ^{1}H NMR: (400 MHz, $CDCl_3$): δ 7.46 (s, 1H), 7.40 (dt, J = 6.4 Hz, 2.0 Hz, 1H), 7.25-7.33 (m, 2H), 4.61 (d, J = 5.0 Hz, 2H), 3.08 (s, 1H), 2.32 (br s, 1H); ^{13}C NMR: (101 MHz, $CDCl_3$): δ 141.2, 131.4, 130.6, 128.7, 127.5, 122.4, 83.6, 77.4, 64.7; EI MS m/z calculated for C_9H_8O (M+) 132.0 found 132.0.

4-(Ethynyl)benzyl alcohol (**52**)



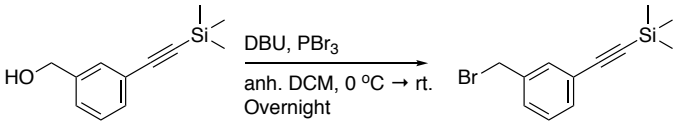
General Procedure 2 was applied with the trimethylsilyl acetylene **50** (1.50 g, 7.34 mmol) dissolved in MeOH (52 mL) after which K_2CO_3 was added (1.01 g, 7.34 mmol). The suspension was stirred for 21 h. at room temperature before it was concentrated *in vacuo*. The resulting residue was purified by Flash Chromatography (EtOAc:PE, 5–20%) to afford 782 mg of **52** (81%, 5.92 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49 (d, J = 8.2 Hz, 2H), 7.32 (d, J = 8.5 Hz, 2H), 4.70 (s, 2H), 3.07 (s, 1H), 1.76 (br s, 1H).; ^{13}C NMR (101 MHz, $CDCl_3$) δ 141.6, 132.3, 126.7, 121.4, 83.5, 77.2, 64.9; EI MS m/z calculated for C_9H_8O (M+) 132.0 found 132.0.

2-(Trimethylsilyl-ethynyl)benzyl bromide (**53**)



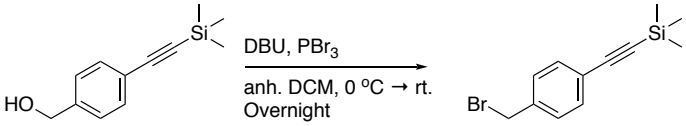
General Procedure 3 was applied with compound **48** (500 mg, 2.45 mmol) and 1,8-diazabicyclo(5.4.0)undec-7-ene (DBU, 0.48 mL, 3.18 mmol), anhydrous dichloromethane (2.5 mL) and phosphorous tribromide (0.26 mL, 2.7 mmol). Extraction and Flash Chromatography (EtOAc:PE, 0 → 20%) afforded 501 mg of the bromide **53** (77%, 1.87 mmol); ^{1}H-NMR (400 MHz, $CDCl_3$) δ 7.48–7.39 (m, 2H) 7.30 (td, *J* = 7.6, 1.6 Hz, 1H), 7.23 (dd, *J* = 7.5, 1.4 Hz, 1H), 4.67 (s, 2H), 0.29 (s, 9H); ^{13}C NMR (101 MHz, CDC_{l3}) δ 143.2, 132.5, 129.0, 127.4, 121.2, 102.7, 99.6, 64.0, 0.3; HRMS (ESI): m/z calculated for $C_{12}H_{16}BrSi$ ($M+H^+$) 267.0199 found 267.0169

3-(Trimethylsilyl-ethynyl)benzyl bromide (**54**)



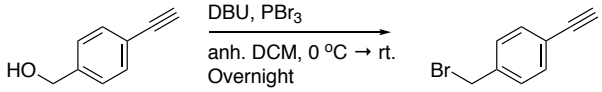
General Procedure 3 was applied with compound **49** (1.20 g, 5.87 mmol) and 1,8-diazabicyclo(5.4.0)undec-7-ene (DBU, 1.14 mL, 7.23 mmol), anhydrous dichloromethane (5.9 mL) and phosphorous tribromide (0.61 mL, 6.46 mmol). After extraction, no further purification was necessary yielding 1.30g of **54** (83%, 4.87 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.50 (t, *J* = 1.5 Hz, 1H), 7.39 (dt, *J* = 7.5, 1.5 Hz, 1H), 7.34 (dt, *J* = 7.7, 1.5 Hz, 1H), 7.29 (d, *J* = 7.6 Hz, 1H), 4.44 (s, 2H), 0.25 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 138.0, 132.6, 131.9, 129.2, 128.8, 123.8, 104.4, 95.0, 32.7; MS (EI) m/z calculated for $C_{12}H_{14}Si$ (M+ -HBr) 187.1 found 187.2

4-(Trimethylsilyl-ethynyl)benzyl bromide (**55**)



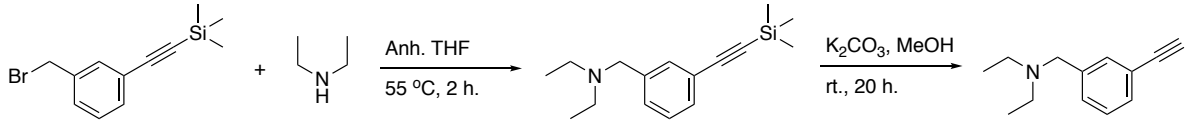
General Procedure 3 was applied with compound **50** (750 mg, 3.67 mmol) and 1,8-diazabicyclo(5.4.0)undec-7-ene (DBU, 0.72 mL, 4.77 mmol), anhydrous dichloromethane (3.7 mL) and phosphorous tribromide (0.39 mL, 4.05 mmol). Extraction and Flash Chromatography (EtOAc:PE, 0 → 20%) afforded 612 mg of the bromide **55** (62%, 2.29 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54–7.51 (m, 2H), 7.43–7.38 (m, 2H), 4.55 (s, 2H), 0.35 (d, *J* = 0.7 Hz, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 138.1, 132.4, 129.0, 123.4, 104.5, 95.3, 32.9, 0.3; HRMS (EI): m/z calculated for $C_{12}H_{15}BrSi$ (M+) 266.0 found 266.0

4-(Ethynyl)benzyl bromide (**56**)



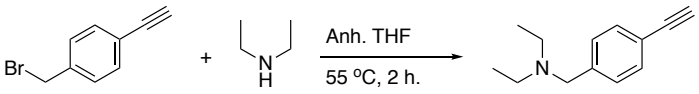
General Procedure 3 was applied with compound **52** (735 mg, 5.56 mmol) and 1,8-diazabicyclo(5.4.0)undec-7-ene (DBU, 1.10 g, 7.23 mmol), dichloromethane (5.6 mL) and phosphorous tribromide (0.58 mL, 6.12 mmol). The reaction was stirred for 19 h. After extraction, no further purification was necessary yielding 938 mg of **56** (87%, 4.81 mmol).; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.49–7.44 (m, 2H), 7.37–7.32 (m, 2H), 4.47 (s, 2H), 3.10 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 138.4, 132.5, 129.0, 122.3, 83.1, 78.0, 32.7; EI MS m/z calculated for C_9H_7Br (M+) 194.0 found 193.9.

N-Ethyl-*N*-(3-(ethynylbenzyl)ethanamine (**57**)



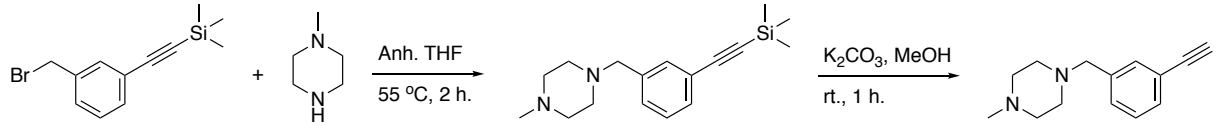
In accordance with General Procedure 4, **54** (200 mg, 0.748 mmol) was dissolved in anhydrous THF (3.0 mL) and diethylamine (0.31 mL, 2.99 mmol) after which it was stirred for 2 h. at 55 °C. Extraction yielded 174 mg of **57a** (90%, 0.671 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.44 (td, *J* = 1.7, 0.7 Hz, 1H), 7.33 (dt, *J* = 7.4, 1.6 Hz, 1H), 7.32–7.27 (m, 1H), 7.23 (td, *J* = 7.6, 0.6 Hz, 1H), 3.51 (s, 2H), 2.51 (q, *J* = 7.1 Hz, 4H), 1.03 (t, *J* = 7.1 Hz, 6H), 0.25 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 140.3, 132.3, 130.4, 129.2, 128.0, 122.9, 105.4, 93.7, 57.3, 46.8, 11.7, 0.0; HRMS (ESI) not recorded. General Procedure 2 was applied with the trimethylsilyl acetylene **57a** (160 mg, 0.617 mmol) MeOH (4.4 mL) and K_2CO_3 (85 mg, 0.617 mmol). The suspension was stirred for 20 h. at room temperature before it was concentrated *in vacuo*. Extraction yielded 96 mg of **57** (83%, 0.512 mmol) as a yellow oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 (dt, *J* = 1.7, 0.9 Hz, 1H), 7.36 (dt, *J* = 7.5, 1.5 Hz, 1H), 7.33 (dt, *J* = 7.9, 1.5 Hz, 1H), 7.28–7.23 (m, 1H), 3.53 (s, 2H), 3.05 (s, 1H), 2.51 (q, *J* = 7.1 Hz, 4H), 1.03 (t, *J* = 7.1 Hz, 6H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 140.5, 132.5, 130.5, 129.4, 128.1, 121.9, 83.9, 76.8, 57.2, 46.8, 11.8; HRMS (ESI): m/z calculated for $C_{13}H_{18}N$ ($M+H^+$) 188.1434 found 188.1430.

N-Ethyl-*N*-(4-ethynylbenzyl)ethanamine (**58**)



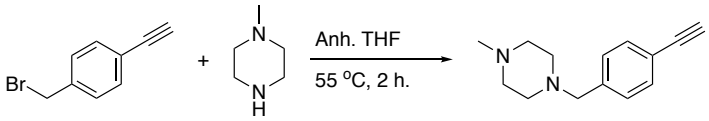
In accordance with General Procedure 4, **56** (125 mg, 0.641 mmol) was dissolved in anhydrous THF (2.6 mL) and diethylamine (0.27 mL, 2.56 mmol) after which it was stirred for 2 h. at 55 °C. Extraction yielded 119 mg of **58** (99%, 0.635 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.46–7.41 (m, 2H), 7.32–7.28 (m, 2H), 3.56 (s, 2H), 3.04 (s, 1H), 2.51 (q, *J* = 7.1 Hz, 4H), 1.03 (t, *J* = 7.1 Hz, 6H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 141.2, 132.0, 128.8, 128.7, 127.1, 120.4, 83.8, 76.7, 57.4, 46.9, 11.8; HRMS (ESI): m/z calculated for $C_{13}H_{18}N$ ($M+H^+$) 188.1434 found 188.1325.

1-(3-ethynylbenzyl)-4-methylpiperazine (**59**)



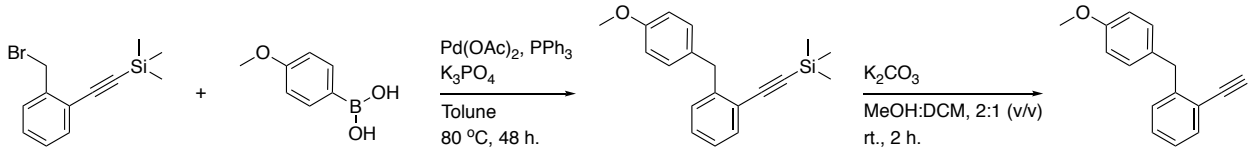
In accordance with General Procedure 4, **54** (200 mg, 0.748 mmol) was dissolved in anhydrous THF (3.0 mL) and 1-methylpiperazine (0.33 mL, 2.99 mmol) after which it was stirred for 2 h. at 55 °C. Extraction yielded 195 mg of **59a** (91%, 0.680 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.43 (dt, *J* = 1.7, 0.8 Hz, 1H), 7.35 (dt, *J* = 7.2, 1.7 Hz, 1H), 7.30–7.26 (m, 1H), 7.26–7.21 (m, 1H), 3.46 (s, 2H), 2.45 (s, 8H), 2.29 (s, 3H), 0.25 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 138.5, 132.6, 130.7, 129.4, 128.1, 123.0, 105.2, 94.0, 62.7, 55.2, 53.2, 46.1, 0.0; HRMS (ESI): m/z calculated for $C_{17}H_{28}N_2Si$ ($M+H^+$) 287.1938 found 287.1947. General Procedure 2 was applied with the trimethylsilyl acetylene **59a** (185 mg, 0.646 mmol) dissolved in MeOH (4.6 mL) after which K_2CO_3 was added (89 mg, 0.646). The suspension was stirred for 1 h. at room temperature before it was concentrated *in vacuo.* Extraction yielded 134 mg of **59** (97%, 0.626 mmol) as a yellow oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.47 (td, *J* = 1.7, 0.7 Hz, 1H), 7.38 (dt, *J* = 7.4, 1.6 Hz, 1H), 7.32 (dt, *J* = 7.8, 1.6 Hz, 1H), 7.31–7.22 (m, 2H), 3.48 (s, 2H), 3.06 (s, 1H), 2.46 (s, 8H), 2.28 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 138.7, 132.7, 130.8, 129.7, 128.2, 122.0, 83.8, 77.0, 62.6, 55.1, 53.1, 46.1; HRMS (ESI): m/z calculated for $C_{14}H_{19}N_2$ ($M+H^+$) 215.1543 found 215.1538.

1-(4-Ethynylbenzyl)-4-methylpiperazine (**60**)



In accordance with General Procedure 4, **56** (136 mg, 0.697 mmol) was dissolved in anhydrous THF (3.0 mL) and 1-methylpiperazine (0.31 mL, 2.78 mmol) after which it was stirred for 1 h. at 55 °C. Extraction yielded 136 mg of **60** (90%, 0.635 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.44 (d, *J* = 8.2 Hz, 2H), 7.28 (d, *J* = 8.4 Hz, 2H), 3.50 (s, 2H), 3.05 (s, 1H), 2.45 (s, 8H), 2.28 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 139.4, 132.0, 129.0, 120.7, 83.7, 76.9, 62.7, 55.2, 53.1, 46.0; HRMS (ESI): m/z calculated for $C_{14}H_{19}N_2$ ($M+H^+$) 215.1543 found 215.1534.

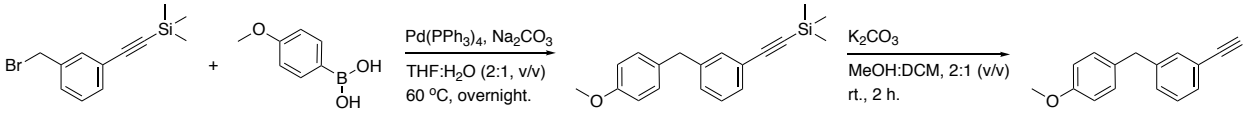
2-(4-Methoxybenzyl)phenylacetylene (**61**)



A round bottom flask was vac-filled with argon, before palladium(II) acetate (2.2 mg, 0.010 mmol), triphenylphosphine (5.3 mg, 0.020 mmol), 4-methoxyphenylboronic acid (228 mg, 1.50 mmol) and K_3PO_4 (272 mg, 1.28 mmol) were added. The flask was vac-filled with argon again and then the benzylbromide **53** (267 mg, 1.00 mmol) in 6.0 mL toluene was added. The reaction mixture was stirred at 80 °C for 48 h., before being cooled to room temperature and extracted with diethyl ether (6 ml). The organic phases were washed with aqueous NaOH (2 mL), brine (2 x 2 mL), dried over $MgSO_4$ and evaporated *in vacuo.* The residue was purified by Flash

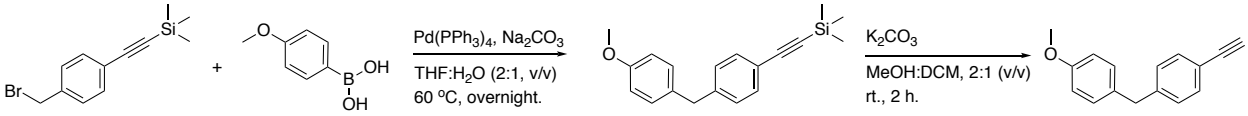
chromatography (EtOAc:PE, 0 → 5%) to yield 40 mg of **61a** (14%, 0.136 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48–7.43 (m, 1H), 7.22 (td, *J* = 7.5, 1.5 Hz, 1H), 7.19–7.09 (m, 4H), 6.82 (d, *J* = 8.7 Hz, 2H), 4.09 (s, 2H), 3.78 (s, 3H), 0.24 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 0.1, 39.3, 55.3, 98.4, 104.1, 113.8, 122.7, 125.9, 128.7, 129.1, 130.0, 132.6, 132.8, 144.0, 158.0; HRMS (ESI): m/z calculated for $C_{19}H_{23}OSi$ ($M+H^+$) 295.1518 found 295.1438. General Procedure 6 was applied with the trimethylsilyl acetylene **61a** (87 mg, 0.30 mmol) and K_2CO_3 (6.9 g, 0.050 mmol). Flash Chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 34.0 mg of **61** (52%, 0.153 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34 (dd, *J* = 7.7, 1.5 Hz, 1H), 7.12–7.06 (m, 1H), 7.02–6.94 (m, 4H), 6.69–6.64 (m, 2H), 3.97 (s, 2H), 3.61 (s, 3H), 3.11 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 39.1, 55.2, 81.1, 82.6, 113.9, 121.7, 126.0, 129.0, 129.3, 129.9, 132.6, 132.9, 144.2, 158.0; HRMS (ESI) m/z calculated for $C_{16}H_{15}O$ ($M+H^+$) 223.1123 found 225.0858

3-(4-Methoxybenzyl)phenylacetylene (**62**)



General Procedure 5 was applied with the bromide **54** (267 mg, 1.00 mmol) and 4-methoxyphenylboronic acid (152 mg, 1.00 mmol). Flash chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 176 mg of **62a** (60%, 0.584 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.29 (m, 2H), 7.23–7.16 (m, 1H), 7.13–7.03 (m, 3H), 6.84–6.78 (m, 2H), 3.86 (s, 2H), 3.76 (s, 3H), 0.23 (d, *J* = 0.8 Hz, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 0.3, 40.8, 55.3, 93.9, 105.3, 114.0, 123.2, 128.3, 129.2, 129.7, 129.9, 132.3, 132.7, 141.6, 158.1; HRMS (ESI): m/z calculated for $C_{19}H_{23}OSi$ ($M+H^+$) 295.1518 found 295.1499. General Procedure 6 was applied with the trimethylsilyl acetylene **62a** (176 mg, 0.598 mmol) and K_2CO_3 (13.8 g, 0.100 mmol). Flash Chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 114 mg of 62 (86%, 0.513 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 (dd, *J* = 6.7, 1.5 Hz, 2H), 7.23–7.18 (m, 1H), 7.14 (dt, *J* = 6.9, 1.2 Hz, 1H), 7.10–7.04 (m, 2H), 6.82 (d, *J* = 8.7 Hz, 2H), 3.87 (s, 2H), 3.76 (s, 3H), 3.02 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 40.8, 55.3, 77.0, 83.9, 114.0, 122.2, 128.5, 129.5, 129.9, 132.5, 132.6, 141.9, 158.2; HRMS (ESI) m/z calculated for $C_{16}H_{15}O$ ($M+H^+$) 223.1123 found 221.1109

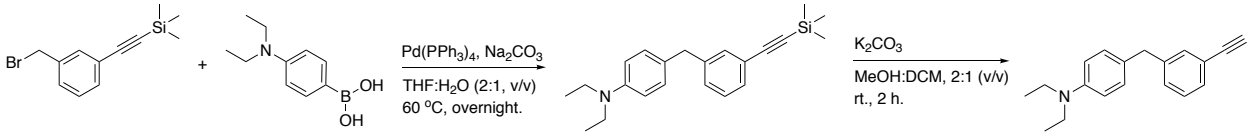
1-Ethynyl-4-(4-methoxybenzyl)benzene (**63**)



General Procedure 5 was applied with the bromide **55** (267 mg, 1.00 mmol) and 4-methoxyphenylboronic acid (152 mg, 1.00 mmol). Flash chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 158 mg of **63a** (54%, 0.537 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39–7.35 (m, 2H), 7.11–7.07 (m, 2H), 7.07–7.04 (m, 2H), 6.84–6.79 (m, 2H), 3.90 (s, 2H), 3.77 (s, 3H), 0.23 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 0.1, 40.9, 55.3, 93.6, 105.2, 113.9, 120.8, 125.9, 128.7, 129.8, 132.1, 142.2, 158.1; HRMS (ESI): m/z calculated for $C_{19}H_{23}OSi$ ($M+H^+$) 295.1518 found 295.1428. General Procedure 6 was applied with the trimethylsilyl acetylene **63a** (157 mg, 0.533 mmol) and K_2CO_3 (13.8 g,

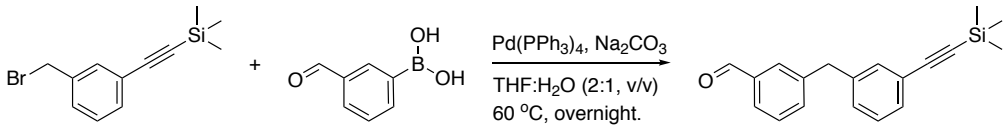
0.100 mmol). Flash Chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 90.0 mg of **63** (76%, 0.414 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.43–7.37 (m, 2H), 7.15–7.10 (m, 2H), 7.09–7.05 (m, 2H), 6.83 (d, *J* = 8.6 Hz, 2H), 3.91 (s, 2H), 3.77 (s, 3H), 3.02 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 40.9, 55.3, 76.7, 83.2, 113.9, 119.7, 128.7, 128.8, 129.9, 132.5, 142.6, 158.1; HRMS (EI) m/z calculated for $C_{16}H_{14}O$ (M) 222.1 found 221.1

N,N-Diethyl-4-(3-ethynylbenzyl)aniline (**64**)



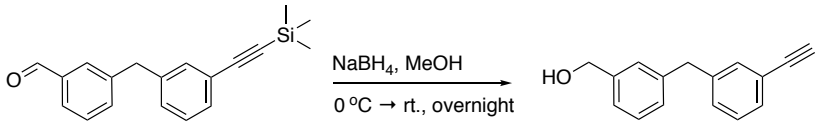
General Procedure 5 was applied with the bromide **54** (267 mg, 1.00 mmol) and 4-diethylaminophenyl boronic acid (193 mg, 1.00 mmol). Flash chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 215 mg of **64a** (64%, 0.641 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.32 (dt, *J* = 1.7, 0.9 Hz, 1H), 7.28 (dt, *J* = 7.4, 1.6 Hz, 1H), 7.19 (td, *J* = 7.6, 0.6 Hz, 1H), 7.13 (dt, *J* = 7.7, 1.6 Hz, 1H), 7.02–6.97 (m, 2H), 6.61 (d, *J* = 8.7 Hz, 2H), 3.82 (s, 2H), 3.31 (q, *J* = 7.1 Hz, 4H), 1.13 (t, *J* = 7.0 Hz, 6H), 0.23 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 146.4, 142.2, 132.4, 129.7, 129.5, 129.2, 128.2, 127.4, 123.0, 112.2, 105.5, 93.7, 44.4, 40.6, 12.6, 0.1; HRMS (ESI): m/z calculated for $C_{22}H_{30}NSi$ ($M+H^+$) 336.2148 found 336.2141. General Procedure 6 was applied with the trimethylsilyl acetylene **64a** (200 mg, 0.596 mmol) and K_2CO_3 (13.8 g, 0.100 mmol). Flash Chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 103 mg of **64** (66%, 0.391 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36–7.27 (m, 2H), 7.23–7.15 (m, 2H), 7.03–6.96 (m, 2H), 6.64–6.57 (m, 2H), 3.83 (s, 2H), 3.30 (q, *J* = 7.1 Hz, 4H), 3.01 (s, 1H), 1.13 (t, *J* = 7.1 Hz, 6H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 12.7, 40.7, 44.4, 76.8, 84.0, 112.2, 122.0, 127.3, 128.4, 129.5, 129.7, 129.8, 132.6, 142.5, 146.5; HRMS (ESI) m/z calculated for $C_{19}H_{22}N$ ($M+H^+$) 264.1752 found 264.1736

3-(3-((Trimethylsilyl)ethynyl)benzyl)benzaldehyde (**65**)



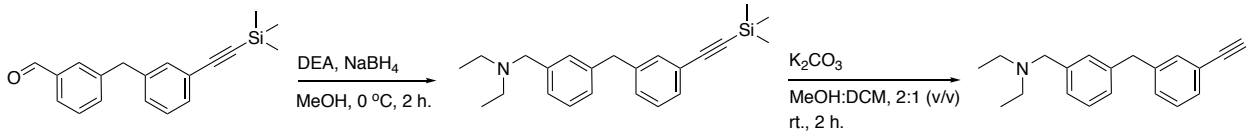
General Procedure 5 was applied with the bromide **54** (267 mg, 1.00 mmol) and 3-formylphenyl boronic acid (150 mg, 1.00 mmol). Flash chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 161 mg of **65** (55%, 0.551 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.97 (s, 1H), 7.72 (dt, *J* = 6.6, 2.0 Hz, 1H), 7.68 (d, *J* = 1.9 Hz, 1H), 7.47–7.42 (m, 2H), 7.35–7.30 (m, 2H), 7.23 (t, *J* = 7.6 Hz, 1H), 7.13 (dt, *J* = 7.8, 1.5 Hz, 1H), 4.00 (s, 2H), 0.24 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 192.3, 141.8, 140.2, 136.8, 135.0, 132.4, 130.2, 129.9, 129.2, 128.6, 128.0, 123.5, 105.0, 94.4, 41.4, 0.3; HRMS (ESI): m/z calculated for $C_{19}H_{21}OSi$ ($M+H^+$) 293.1362 found 293.1347

(3-(3-Ethynylbenzyl)phenyl)methanol (**66**)



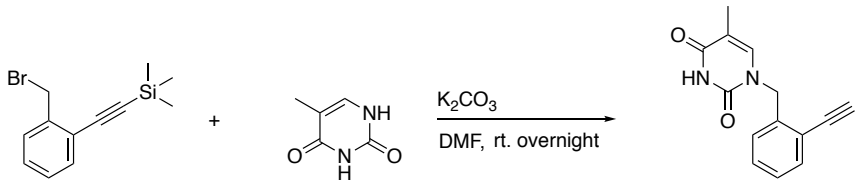
A round bottom flask was charged with compound **65** (124 mg, 0.424 mmol) and 3.0 mL of anhydrous methanol was added. The solution was then bubbled with argon and $NaBH_4$ (16 mg, 0.43 mmol) was subsequently added to the solution portion wise. The mixture was stirred at 0 °C for 1 h., followed by overnight stirring at room temperature. After the reaction was complete, it was quenched with ice water and concentrated *in vacuo*. The residue was dissolved in a 1:1 mixture of EtOAc and H_2O (10.0 mL) and the pH was neutralized with a 0.1 M solution of HCl. The aqueous and organic phases were separated, and the aqueous phase was extracted with EtOAc (2 x 10 ml). The combined organic phases were dried over $NaSO_4$ and evaporated *in vacuo*. The resulting residue was purified by Flash chromatography (EtOAc:PE, 0 → 10% → 20% → 40%) to yield 70.0 mg of the compound **66** (73%, 0.315 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36–7.15 (m, 7H), 7.13–7.08 (m, 1H), 4.65 (s, 2H), 3.95 (s, 2H), 3.04 (s, 1H), 1.65 (br s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 41.6, 65.3, 77.1, 83.7, 122.2, 125.0, 127.5, 128.3, 128.5, 128.8, 129.5, 130.0, 132.6, 140.9, 141.2; HRMS (ESI) m/z calculated for $C_{16}H_{14}ONa$ ($M+Na^+$) 245.0942 found 245.0946

N-Ethyl-N-(3-(3-ethynylbenzyl)benzyl)ethanamine (**67**)



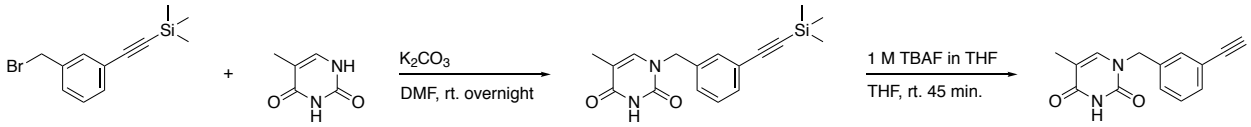
A round bottom flask was vac-filled with argon, before compound **65** (100 mg, 0.342 mmol), diethylamine (1.42 mL, 1.36 mmol) and 2.0 ml MeOH were added. The mixture was stirred for 1 h. at room temperature, before being cooled to -5 °C. Then $NaBH_4$ (16.7 mg, 0.441 mmol) was added in portions and the mixture was stirred for 1 h. at 0 °C. The reaction mixture was concentrated *in vacuo* and the residue was dissolved in EtOAc (5 mL). The solution was washed with brine (3 x 5 ml), dried over $MgSO_4$ and evaporated *in vacuo*. The residue was purified by Flash chromatography (MeOH:DCM, 0% → 1% → 2% → 5%) to yield 47 mg of the compound **67a** (36%, 0.134 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.23–7.20 (m, 1H), 7.20–7.16 (m, 1H), 7.13 (dd, J = 8.1, 1.7 Hz, 2H), 7.11–7.08 (m, 2H), 7.03 (m, 2H), 4.54 (s, 2H), 3.85 (s, 2H), 3.47 (s, 1H), 2.44 (q, J = 7.1 Hz, 4H), 0.96 (t, J = 7.1 Hz, 6H), 0.17 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 141.3, 140.1, 132.4, 129.9, 129.3, 128.7, 128.2, 127.5, 124.9, 105.2, 94.1, 77.0, 65.1, 57.4, 46.6, 41.6, 11.5, 0.1; HRMS (ESI) m/z calculated for $C_{23}H_{32}NSi$ ($M+H^+$) 350.2304 found 350.2283. General Procedure 6 was applied with the trimethylsilyl acetylene **67a** (100 mg, 0.286 mmol) and K_2CO_3 (6.9 g, 0.050 mmol). Flash Chromatography (EtOAc:PE, 0 → 5% → 10%). Yield: 50 mg of **67** (66%, 0.180 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34–7.30 (m, 2H), 7.26–7.14 (m, 5H), 7.04–7.00 (m, 1H), 3.94 (s, 2H), 3.53 (s, 2H), 3.03 (s, 1H), 2.51 (q, J = 7.1 Hz, 4H), 1.03 (t, J = 7.1 Hz, 6H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 11.7, 41.6, 46.8, 57.5, 76.9, 83.2, 122.1, 126.9, 127.3, 128.3, 128.4, 129.5, 129.9, 132.6, 140.3, 141.6; HRMS (ESI) m/z calculated for $C_{20}H_{24}N$ ($M+H^+$) 278.1909 found 278.1917

N1-(2-Ethynyl)benzyl thymine (**68**)



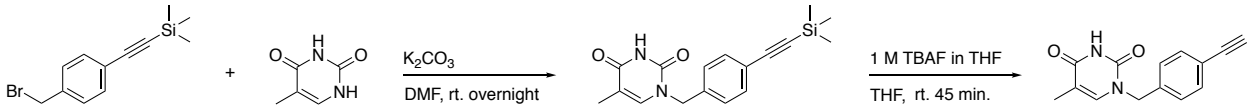
A round bottom flask was vac-filled with argon, before thymine (210 mg, 1.67 mmol), the benzylbromide **53** (373 mg, 1.40 mmol) were added and dissolved in 15.0 mL anhydrous dimethylformamide. Then K_2CO_3 (710 mg, 5.20 mmol) was added, and the reaction mixture was stirred at room temperature overnight, before it was concentrated *in vacuo*. The resulting residue was dissolved in 15 mL dichloromethane, washed with brine and dried over $MgSO_4$. The organic solution was evaporated *in vacuo* and the residue was purified by Flash chromatography (MeOH:DCM, 0 → 2%) to yield 165 mg of **68** (47%, 0.688 mmol); ^{1}H-NMR (400 MHz, $CDCl_3$) δ 9.00 (s, 1H), 7.55 (d, *J* = 7.6 Hz, 1H), 7.38–7.37 (m, 2H), 7.33–7.31 (m, 1H), 7.14 (d, *J* = 1.2 Hz, 1H), 5.10 (s, 2H), 3.40 (s, 1H), 1.88 (d, *J* = 1.2 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.1, 151.3, 140.2, 137.9, 133.4, 129.7, 129.2, 128.9, 128.3, 121.6, 111.2 82.8, 81.5, 49.1, 12.5; HRMS (ESI) m/z calculated for $C_{14}H_{11}N_2O_2$ (M+) 240.1 found 240.3

N1-(3-Ethynyl)benzyl thymine (**69**)



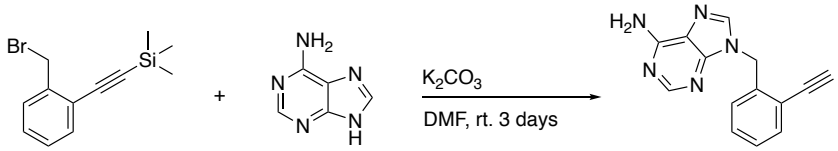
A round bottom flask was vac-filled with argon, before thymine (151 mg, 1.20 mmol), the bromide **54** (267 mg, 1.00 mmol) were added and dissolved in 10.0 mL anhydrous dimethylformamide. Then K_2CO_3 (484 mg, 5.14 mmol) was added. The reaction mixture was stirred at room temperature overnight, before it was concentrated *in vacuo*. The resulting residue was dissolved in 15 mL dichloromethane, washed with brine (2 x 15 mL) and dried over $MgSO_4$. Then it was evaporated *in vacuo* and the resulting residue was purified by Flash chromatography (MeOH:DCM, 0% → 1% → 2%) to yield 123 mg of **69a** (39%, 0.394 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.98 (s, 1H), 7.47–7.42 (m, 1H), 7.38 (dt, *J* = 1.8, 0.9 Hz, 1H), 7.31 (td, *J* = 7.6, 0.6 Hz, 1H), 7.26–7.23 (m, 1H), 6.95 (q, *J* = 1.2 Hz, 1H), 4.85 (s, 2H), 1.89 (d, *J* = 1.3 Hz, 3H), 0.25 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.0, 151.3, 139.6, 135.8, 132.1, 131.4, 129.2, 128.2, 124.2, 111.6, 104.3, 95.5, 50.7, 12.5, 0.1; HRMS (ESI) m/z calculated for $C_{17}H_{21}N_2O_2Si$ ($M+H^+$) 313.1372 found 313.1350. General Procedure 1 was applied with the trimethylsilyl acetylene **69a** (110 mg, 0.352 mmol), anhydrous THF (3 mL) and 1 M TBAF in THF (0.55 mL, 0.55 mmol). The mixture was stirred at room temperature for 1 h. Purification by Flash chromatography (MeOH:DCM, 0% → 1% → 2%) yielded 68.0 mg of the alkyne **69** (80%, 0.283 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 9.25 (s, 1H), 7.46 (dt, *J* = 7.5, 1.5 Hz, 1H), 7.41 (td, *J* = 1.7, 0.7 Hz, 1H), 7.34 (td, *J* = 7.6, 0.7 Hz, 1H), 7.32–7.27 (m, 1H), 6.97 (q, *J* = 1.2 Hz, 1H), 4.87 (s, 2H), 3.12 (s, 1H), 1.89 (d, *J* = 1.3 Hz, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.0, 151.1, 139.5, 135.9, 132.1, 131.4, 129.2, 128.4, 123.1, 111.5, 82.9, 78.1, 50.6, 12.4; HRMS (ESI) m/z calculated for $C_{14}H_{12}N_2NaO_2$ ($M+Na^+$) 263.0796 found 263.0771

N1-(4-Ethynyl)benzyl thymine (**70**)



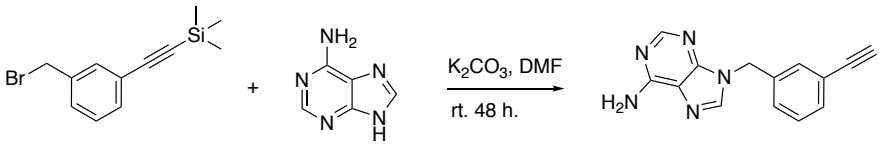
A round bottom flask was vac-filled with argon, before thymine (151 mg, 1.20 mmol), the benzylbromide **55** (267 mg, 1.00 mmol) were added and dissolved in 10.0 mL anhydrous dimethylformamide. Then K_2CO_3 (484 mg, 3.50 mmol) was added, and the reaction mixture was stirred at room temperature overnight, before it was concentrated *in vacuo*. The residue was dissolved in 15.0 mL dichloromethane, washed with brine (2 x 15 mL), dried over $MgSO_4$ and evaporated *in vacuo.* The resulting residue was purified by Flash chromatography (MeOH:DCM, 0% → 1% → 2%) to yield 142 mg of **70a** (45%, 0.454 mmol); ^{1}H-NMR (400 MHz, $CDCl_3$) δ 9.14 (s, 1H), 7.45–7.47 (d, 2H), 7.21–7.23 (d, 2H), 6.92–6.94 (q, 1H), 4.88 (s, 2H), 1.88 (s, 3H), 0.24 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 164.1, 151.2, 139.6, 135.8, 132.7, 127.9, 123.6, 111.6, 104.3, 95.4, 50.8, 12.4, 0.1; HRMS (ESI) m/z calculated for $C_{17}H_{21}N_2O_2Si$ ($M+H^+$) 313.1372 found 313.1369. General Procedure 1 was applied with the trimethylsilyl acetylene **70a** (138 mg, 0.442 mmol), anhydrous THF (2.0 mL) and 1 M TBAF in THF (0.69 mL, 0.69 mmol). The mixture was stirred at room temperature for 1 h. Purification by Flash chromatography (MeOH:DCM, 0% → 1% → 2%) yielded 82.0 mg of the alkyne **70** (78%, 0.341 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.85 (s, 1H), 7.50 (d, J = 8.3 Hz, 2H), 7.25 (d, J = 8.3 Hz, 2H), 6.96 (d, J = 1.3 Hz, 1H), 4.89 (s, 2H), 3.11 (s, 1H), 1.89 (d, J = 1.3 Hz, 3H); ^{13}C NMR δ 12.3, 50.7, 78.1, 82.9, 111.5, 123.5, 127.9, 132.8, 136.1, 139.5, 151.0, 163.8; HRMS (ESI) m/z calculated for $C_{14}H_{13}N_2O_2$ ($M+H^+$) 241.0977 found 241.0993

9-(2-Ethynylbenzyl)-9*H*-purin-6-amine (**71**)



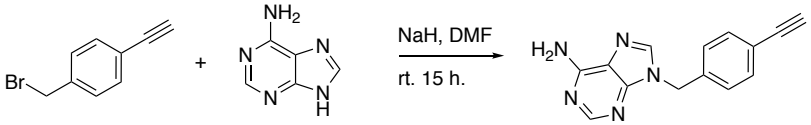
In a dry flask, adenine (872 mg, 6.45 mmol) and K_2CO_3 (2.72 g, 19.7 mmol) were dissolved in anhydrous DMF (105 mL) and the solution was stirred for 20 min. before **53** (1.32 g, 4.96 mmol) was added. The reaction mixture was stirred at room temperature overnight before it was cooled and evaporated *in vacuo*. The residue was diluted with water (100 mL) and extracted with EtOAc (3 x 50 mL). The organic layers were washed with brine, dried over Na_2SO_4 and evaporated *in vacuo.* The residue was purified by Flash Chromatography (MeOH:DCM, 5–10%) to yield 652 mg of **71** (53%, 2.62 mmol); ^{1}H NMR (400 MHz, DMSO) δ 8.18 (s, 1H), 8.15 (s, 1H), 7.58–7.54 (m, 1H), 7.38–7.34 (m, 1H), 7.34–7.32 (m, 1H), 7.31 (s, 2H), 6.96 (dd, J = 7.1, 2.0 Hz, 1H), 5.52 (s, 2H), 4.59 (s, 1H); ^{13}C NMR (DMSO, 101 MHz) δ 156.0, 152.6, 149.6, 140.9, 138.5, 132.5, 129.3, 127.8, 127.2, 120.3, 118.6, 86.3, 80.7, 44.8; HRMS (ESI): m/z calculated for $C_{14}H_{12}N_5$ ($M+H^+$) 250.1087 found 250.1084.

9-(3-Ethynylbenzyl)-9*H*-purin-6-amine (**72**)



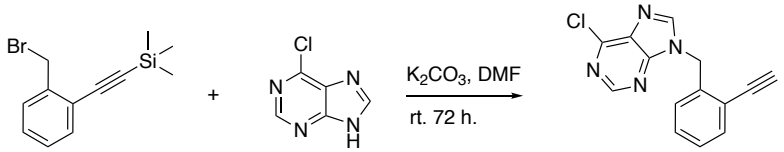
In a dry flask, adenine (254 mg, 1.89 mmol) and K_2CO_3 (579 mg, 4.19 mmol) were dissolved in anhydrous DMF (10 mL) and stirred for 15 min. before **54** (280 mg, 1.05 mmol) was added. The reaction mixture was stirred at room temperature overnight before it was cooled and evaporated *in vacuo*. The residue was diluted with water (25 mL) and extracted with EtOAc (3 x 30 mL). The organic layers were washed with brine (13 mL), dried over Na_2SO_4 and evaporated *in vacuo*. The residue was purified by Flash Chromatography (MeOH:DCM, 5%) to yield 47 mg of **72** (18%, 0.189 mmol); ^{1}H-NMR: (400 MHz, DMSO) δ 8.28 (s, 1H), 8.15 (s, 1H), 7.43 (d, *J* = 1.5 Hz, 1H), 7.39 (m, 1H), 7.37–7.31 (m, 2H), 7.27 (s, 2H), 5.37 (s, 2H), 4.21 (s, 1H); ^{13}C NMR (101 MHz, DMSO) δ 156.0, 152.7, 149.4, 140.8, 137.7, 131.0, 130.7, 129.1, 128.2, 122.0, 118.7, 83.1, 81.1, 45.7; HRMS (ESI): m/z calculated for $C_{14}H_{12}N_5$ ($M+H^+$) 250.1087 found 250.1088

9-(4-Ethynylbenzyl)-9*H*-purin-6-amine (**73**)



In a small, dry microwave vial, adenine (73 mg, 0.539 mmol) was suspended in anhydrous DMF (2.6 mL) before addition of NaH (60% in paraffin oil, 26 mg, 0.648 mmol). The vial was purged with argon and the suspension stirred for 30 min. before **56** (100 mg, 0.513 mmol) was added. The mixture was stirred for additional 15 h. before the solvent was removed *in vacuo*. The residue was re-dissolved in MeOH and evaporated onto Celite 545 and purified by Flash Chromatography (MeOH:DCM, 1–5%) to yield 62 mg of **73** (49%, 0.249 mmol); ^{1}H NMR (400 MHz, DMSO) δ 8.26 (s, 1H), 8.14 (s, 1H), 7.45 (d, *J* = 8.2 Hz, 2H), 7.30 (d, *J* = 8.3 Hz, 2H), 7.25 (s, 2H), 5.39 (s, 2H), 4.18 (s, 1H); ^{13}C NMR (101 MHz, DMSO) δ 155.9, 152.6, 149.4, 140.7, 137.9, 131.9, 127.7, 121.0, 118.6, 83.0, 80.9, 45.7; HRMS (ESI): m/z calculated for $C_{14}H_{12}N_5$ ($M+H^+$) 250.1087 found 250.1090.

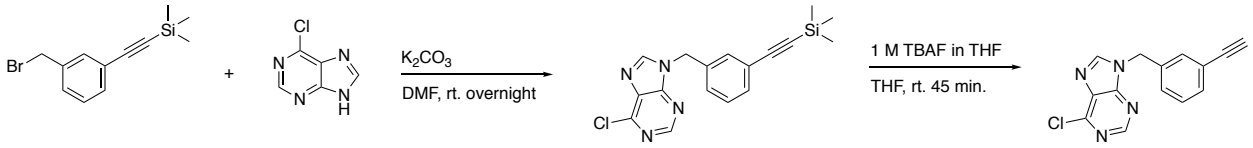
6-Chloro-9-(2-ethynylbenzyl)-9*H*-purine (**74**)



In a dry flask, 6-chloropurine (208 mg, 1.34 mmol) and K_2CO_3 (784 mg, 5.66 mmol) were dissolved in anhydrous DMF (19 mL) and the mixture was stirred for 15 min. before **53** (280 mg, 1.05 mmol) was added. The reaction was stirred at 40 °C for 72 h. before it was cooled and evaporated *in vacuo*. The residue was diluted with water (25 mL) and extracted with EtOAc (3 x 30 mL). The organic layers were washed with brine (13 mL), dried over Na_2SO_4 and evaporated *in vacuo*. The residue was purified by Flash Chromatography (MeOH:DCM, 5%) to yield 113 mg of **74**

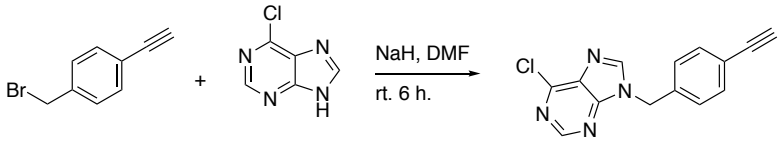
(34%, 0.357 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 8.77 (s, 1H), 8.23 (s 1H), 7.59-7.56 (m, 1H), 7.38-7.31 (m, 3H) 5.62 (s, 2H), 3.41 (s, 1H); ^{13}C NMR: (101 MHz, $CDCl_3$) δ 152.2, 152.1, 151.2, 145.4, 136.7, 133.7, 131.6, 129.8, 129.4, 129.0, 121.8, 83.5, 81.1, 46.4; MS (EI): m/z calculated for $C_{14}H_9N_4$ (M+) 268.1 found 268.1

6-Chloro-9-(3-ethynylbenzyl)-9*H*-purine (**75**)



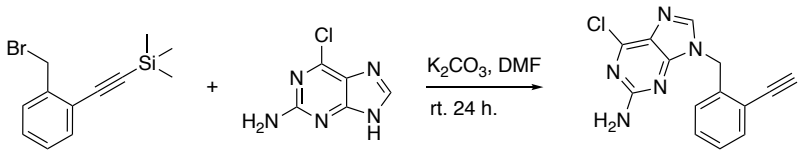
To a dry flask, 6-chloropurine (225 mg, 1.34 mmol) and K_2CO_3 (583 mg, 4.24 mmol) were dissolved in anhydrous DMF (15 mL) and the mixture was stirred for 15 min. before **54** (280 mg, 1.05 mmol) was added. The mixture was stirred at room temperature overnight evaporated *in vacuo*. The residue was dissolved in EtOAc (20 mL), washed with brine (3 x 10 mL), dried over $MgSO_4$ and evaporated *in vacuo.* The resulting residue was deprotected via General Procedure 1: anhydrous THF (3.0 mL) and 1 M TBAF in THF (1.45 mL, 1.45 mmol). The mixture was stirred at room temperature for 1 h. Purification by Flash chromatography (MeOH:DCM, 0% → 2%) yielded 125 mg of the alkyne **70** (38%, 0.460 mmol); ^{1}H NMR (400 MHz, DMSO) δ 8.63–8.58 (m, 1H), 8.56–8.51 (m, 1H), 7.20–7.07 (m, 4H), 5.28 (s, 2H), 3.96 (s, 1H); ^{13}C NMR (DMSO, 101 MHz) δ 151.8, 151.7, 149.2, 147.4, 136.6, 131.3, 130.9, 129.2, 128.4, 126.5, 122.1, 82.9, 81.2, 46.6; HRMS (ESI): m/z calculated for $C_{14}H_{10}ClN_4$ ($M+H^+$) 269.0589 found 269.0586

6-Chloro-9-(4-ethynylbenzyl)-9*H*-purine (**76**)



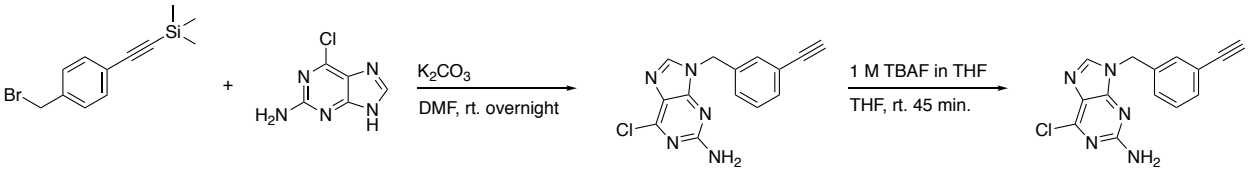
In a small, dry microwave vial, 6-chloro-9*H*-purine (167 mg, 1.08 mmol) was suspended in anhydrous DMF (5.1 mL) before the addition of NaH (60% in paraffin oil, 52 mg, 1.30 mmol). The vial was purged with argon and the suspension stirred for 30 min. before **56** (200 mg, 1.03 mmol) was added. The mixture was stirred for 6 h. before the solvent was removed *in vacuo*. The residue was re-dissolved in MeOH and evaporated onto Celite 545 and purified by Flash Chromatography (MeOH:DCM, 1–3%) to yield 150 mg of **76** (52%, 0.558 mmol); ^{1}H NMR (400 MHz, DMSO) δ 8.85 (s, 1H), 8.79 (s, 1H), 7.46 (d, J = 8.3 Hz, 2H), 7.35 (d, J = 8.4 Hz, 2H), 5.56 (s, 2H), 4.20 (s, 1H); ^{13}C NMR (101 MHz, DMSO) δ 151.8, 151.7, 149.2, 147.5, 136.8, 132.1, 130.9, 127.9, 121.4, 83.0, 81.2, 46.7; HRMS (ESI): m/z calculated for $C_{14}H_{10}ClN_4$ ($M+H^+$) 269.0589 found 269.0584

6-Chloro-9-(2-ethynylbenzyl)-9*H*-purin-2-amine (**77**)



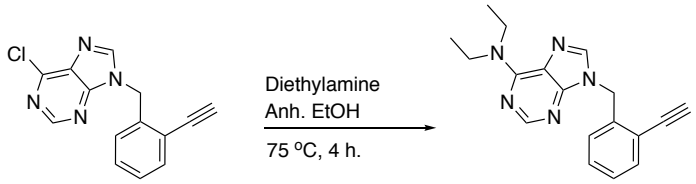
In a dry flask, 2-amino-6-chloropurine (270 mg, 1.59 mmol) and K_2CO_3 (642 mg, 4.65 mmol) were dissolved in anhydrous DMF (22 mL) and the mixture was stirred for 15 min. before **53** (353 mg, 1.33 mmol) was added. The reaction mixture was stirred at 40 ºC for 24 h. before it was cooled and evaporated *in vacuo*. The residue was diluted with water (25 mL) and extracted with EtOAc (3 x 30 mL). The organic layers were washed with brine (13 mL), dried over Na_2SO_4 and evaporated *in vacuo.* The residue was purified by Flash Chromatography (MeOH:DCM, 0–4%) to yield 215 mg of **77** (57%, 0.758 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 7.84 (s, 1H), 7.58-7.54 (m, 1H), 7.33-7.29 (m, 2H), 7.23-7.20 (m 1H), 5.42 (s, 2H), 5.19 (s, 2H) 3.41 (s, 1H); ^{13}C NMR: (101 MHz, $CDCl_3$) δ 159.3, 154.1, 151.6, 142.6, 137.4, 133.5, 129.7, 128.7, 128.7, 125.3, 121.6, 83.3, 81.2, 45.6; MS (EI): m/z calculated for $C_{14}H_{11}ClN_5$ ($M+H^+$) 284.1 found 284.0

6-Chloro-9-(3-ethynylbenzyl)-9*H*-purin-2-amine (**78**)



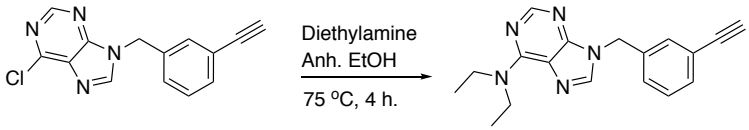
In a dry flask, 2-amino-6-chloropurine (270 mg, 1.59 mmol) and K_2CO_3 (642 mg, 4.65 mmol) were dissolved in anhydrous DMF (22 mL) and stirred for 15 min. before **54** (353 mg, 1.33 mmol) was added. The reaction was stirred at 40 ºC for 24 h. before it was cooled and evaporated *in vacuo*. The residue was diluted with water (25 mL) and extracted with EtOAc (3 x 30 mL). The organic layers were washed with brine (3 x 10 mL), dried over $MgSO_4$ and evaporated *in vacuo.* The residue was deprotected via General Procedure 1: anhydrous THF (3.0 mL) and 1 M TBAF in THF (1.45 mL, 1.45 mmol). The mixture was stirred at room temperature for 1 h. Purification by Flash Chromatography (MeOH:DCM, 0–3%) yielded 173 mg of **78** (53%, 0.610 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 8.25 (s, 1H), 7.41 (dt, *J* = 8.3 Hz, 1.4, 1H), 7.38 (s, 1H), 7.36 (t, *J* = 7.5 Hz, 1H), 7.29 (dt, *J* = 7.5 Hz, 1.4 Hz, 6.95 (br s, 2H), 5.29 (s, 2H), 4.21 (s, 1H); ^{13}C NMR: (101 MHz, $CDCl_3$) δ 159.9, 154.0, 149.5, 143.1, 137.2, 131.0, 130.3, 129.2, 127.8, 123.3, 122.1, 83.0, 81.2, 45.6; MS (EI): m/z calculated for $C_{14}H_{11}ClN_5$ (M+) 283.1 found 283.0.

N,N-Diethyl-9-(2-ethynylbenzyl)-9*H*-purin-6-amine (**79**)



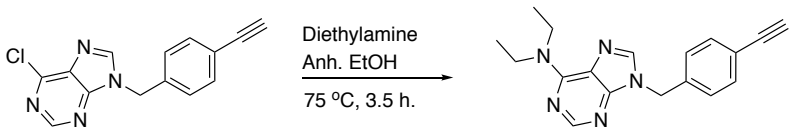
To a dry round bottom flask, the chloro-purine **74** (97 mg, 0.361 mmol) was suspended in anhydrous ethanol (4.0 mL) under argon after which diethylamine (0.15 mL, 1.44 mmol) was added. The suspension was refluxed at 75 °C for 4 h. before it was concentrated *in vacuo* and the residue was purified by Flash chromatography (MeOH:DCM, 0–1%) to yield 110 mg of **79** (100%, 0.361 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 8.37 (s, 1H), 7.84 (s, 1H), 7.57-7.54 (m, 1H), 7.32-7.21 (m, 3H), 5.54 (s, 2H), 3.99 (br s, 4H), 3.41 (s, 1H) 1.30 (t, *J* = 8 Hz, 6H); ^{13}C NMR: (101 MHz, $CDCl_3$) δ 154.0, 152.9, 150.9, 138.5, 138.4, 133.3, 129.7, 128.7, 128.3, 121.4, 119.5, 83.0, 81.4, 45.3, 43.2, 13.7; MS (EI): m/z calculated for $C_{18}H_{19}N_5$ (M+) 305.2 found 305.0

N,N-Diethyl-9-(3-ethynylbenzyl)-9*H*-purin-6-amine (**80**)



To a dry round bottom flask, the chloro-purine **75** (143 mg, 0.534 mmol) was suspended in anhydrous ethanol (5.0 mL) under argon after which diethylamine (0.22 mL, 2.13 mmol) was added. The suspension was refluxed at 75 °C for 4 h. before it was concentrated *in vacuo* and the residue was purified by Flash chromatography (MeOH:DCM, 0–2%) to yield 151 mg of **79** (93%, 0.496 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 8.29 (s, 1H), 8.22 (s, 1H), 7.45-7.43 (m, 1H), 7.41-7.34 (m, 3H), 5.37 (s, 2H), 4.20 (s, 1H), 3.88 (br s, 4H) 1.19 (t, *J* = 6.9 Hz, 6H); ^{13}C NMR: (101 MHz, $CDCl_3$) δ 154.0, 152.9, 150.9, 138.5, 138.4, 133.3, 129.7, 128.7, 128.3, 121.4, 119.5, 83.0, 81.4, 45.3, 43.2, 13.7; MS (EI): m/z calculated for $C_{18}H_{19}N_5$ (M+) 305.2 found 305.0

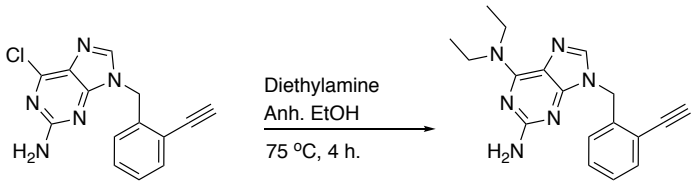
N,N-Diethyl-9-(4-ethynylbenzyl)-9*H*-purin-6-amine (**81**)



In a small, dry microwave vial, the chloro-purine **76** (45 mg, 0.167 mmol) was suspended in anhydrous ethanol (1.9 mL) after which diethylamine (0.07 mL, 0.670 mmol) was added. The vial was sealed and stirred at 75 °C for 3.5 h. The reaction mixture was concentrated and the resulting residue was purified by Flash chromatography (0–3% MeOH:DCM) to yield: 51 mg of **81** (100%, 0.167 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.36 (s, 1H), 7.70 (s, 1H), 7.55 (d, *J* = 8.4 Hz, 0H), 7.45 (d, *J* = 8.3 Hz, 2H), 7.22 (d, *J* = 8.3 Hz, 2H), 5.35 (s, 2H), 3.99 (s, 4H), 3.08 (s, 1H), 1.30 (t, *J* = 7.0 Hz, 6H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 153.9, 152.9, 150.7, 137.9, 136.7, 132.7, 127.9, 127.5,

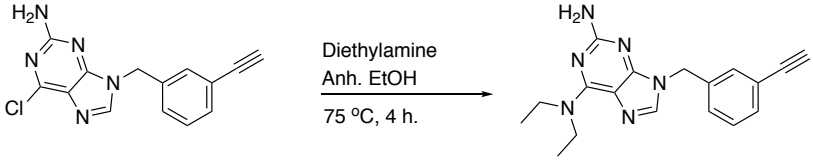
122.1, 119.5, 83.0, 77.8, 46.6, 43.1, 43.0, 13.5; HRMS (ESI): m/z calculated for $C_{18}H_{20}N_5$ ($M+H^+$) 306.1713 found 306.1707

N^6,N^6-Diethyl-9-(2-ethynylbenzyl)-9*H*-purine-2,6-diamine (**82**)



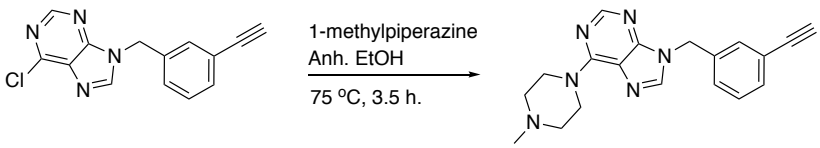
To a dry round bottom flask, the chloro-purine **77** (143 mg, 0.504 mmol) was suspended in anhydrous ethanol (5.6 mL) under argon after which diethylamine (0.21 mL, 2.02 mmol) was added. The suspension was refluxed at 75 °C for 4 h. The reaction mixture was concentrated and the resulting residue was purified by Flash chromatography (MeOH:DCM, 2–8%) to yield 144 mg of **82** (91%, 0.459 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 7.56-7.54 (s, 1H), 7.54-7.51 (m, 1H) 7.30-7.22 (m, 2H), 7.16-7.12 (m, 1H), 5.39 (s, 2H), 4.62 (s, 2H), 3.39 (s, 1H) 1.30-1.20 (t, J = 8 Hz, 6H). ^{13}C NMR: (101 MHz, $CDCl_3$) ; MS (EI): m/z calculated for $C_{18}H_{20}N_6$ (M+) 320.2 found 320.1

N^6,N^6-Diethyl-9-(3-ethynylbenzyl)-9*H*-purine-2,6-diamine (**83**)



To a dry round bottom flask, the chloro-purine **78** (142 mg, 0.501 mmol) was suspended in anhydrous ethanol (5.0 mL) under argon after which diethylamine (0.21 mL, 2.00 mmol) was added. The suspension was refluxed at 75 °C for 4 hours. The reaction mixture was concentrated and the resulting residue was purified by Flash chromatography (MeOH:DCM, 0–2.5%) to yield 118 mg of **83** (73%, 0.370 mmol); ^{1}H-NMR: (400 MHz, $CDCl_3$) δ 7.42 (s, 1H), 7.40 (dt, J = 7.6 Hz, 1.4 Hz, 1H), 7.37 (t, J = 1.5 Hz, 1H), 7.27 (t, J = 7.6 Hz, 1H), 7.21 (dt, J = 7.8 Hz, 1.8 Hz, 1H), 5.17 (s, 2H), 4.61 (br s, 2H), 3.92 (s, 4H), 3.06 (s, 1H), 1.25 (t, J = 7.0 Hz, 6H,); ^{13}C NMR: (101 MHz, $CDCl_3$) δ 159.7, 154.4, 153.1, 138.9, 136.3, 133.1, 129.6, 128.3, 127.9, 121.2, 114.6, 82.9, 81.4, 44.8, 42.7, 13.7; HRMS (ESI): m/z calculated for $C_{18}H_{21}N_6$ ($M+H^+$) 321.1830 found 321.1759.

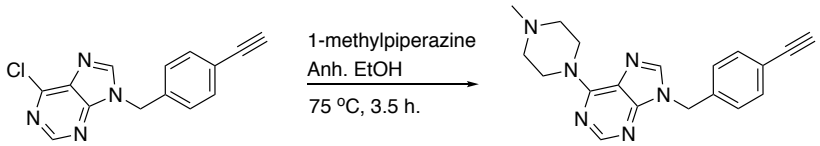
9-(3-Ethynylbenzyl)-6-(4-methylpiperazin-1-yl)-9*H*-purine (**84**)



To a dry round bottom flask, the chloro-purine **75** (130 mg, 0.486 mmol) was suspended in anhydrous ethanol (4.9 mL) under argon after which 1-methylpiperazine (0.22 mL, 1.94 mmol) was added. The suspension was refluxed at 75 °C for 4 h. The reaction mixture was concentrated and the resulting residue was purified by Flash chromatography (MeOH:DCM, 1–2%) to yield 125 mg of **84** which was used without further purification; ^{1}H NMR

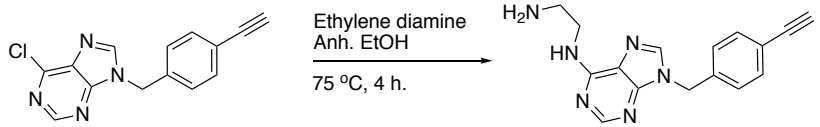
(400 MHz, DMSO) δ 8.36 (s, 1H), 8.26 (s, 1H), 7.45–7.34 (m, 4H), 5.40 (s, 2H), 4.23 (m, 5H), 2.48 (br s, 4H), 2.25 (s, 3H); ^{13}C NMR (101 MHz, DMSO) δ 45.4, 45.7, 54.3, 57.7, 81.1, 82.9, 118.9, 121.9, 128.2, 129.0, 130.6, 130.9, 137.5, 139.9, 150.5, 151.9, 153.1; HRMS (ESI) m/z calculated for $C_{20}H_{23}N_5$ ($M+H^+$) 333.1953 found 333.1830

9-(4-Ethynylbenzyl)-6-(4-methylpiperazin-1-yl)-9*H*-purine (**85**)



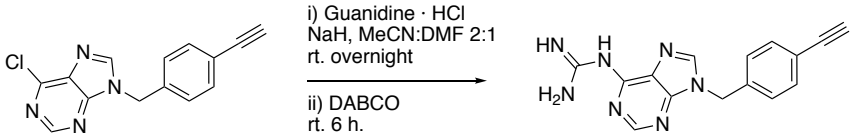
In a small, dry microwave vial, the chloro-purine **76** (45 mg, 0.167 mmol) was suspended in anhydrous ethanol (1.9 mL) after which 1-methylpiperazine (0.08 mL, 0.720 mmol) was added. The vial was sealed and the mixture was stirred at 75 °C for 3.5 h. The reaction mixture was concentrated and the residue was purified by Flash chromatography (MeOH:DCM, 0–3%) to yield 55 mg of **85** (99%, 0.166 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 8.37 (s, 1H), 7.70 (s, 1H), 7.45 (d, *J* = 8.3 Hz, 2H), 7.20 (d, *J* = 8.4 Hz, 2H), 5.36 (s, 2H), 4.34 (s, 4H), 3.08 (s, 1H), 2.55 (t, *J* = 5.1 Hz, 4H), 2.35 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 153.0, 151.7, 150.0, 137.0, 135.5, 131.7, 126.5, 121.2, 118.8, 81.9, 76.9, 54.1, 52.4, 45.7, 45.2, 44.0; HRMS (ESI): m/z calculated for $C_{19}H_{21}N_6$ ($M+H^+$) 333.1822 found 333.1834

N^1-(9-(4-Ethynylbenzyl)-9*H*-purin-6-yl)ethane-1,2-diamine (**86**)



In a small, dry microwave vial, chloro-purin **76** (90 mg, 0.335 mmol) was suspended in anhydrous ethanol (3.72 mL) after which ethylene diamine (0.09 mL, 1.34 mmol) was added. The vial was sealed and stirred at 75 °C for 3.5 h. The reaction mixture was concentrated and the resulting residue was used without further purification (Ethylene diamine still present) Yield: 113 mg (117%); ^{1}H NMR (400 MHz, DMSO) δ 8.29 (s, 1H), 8.22 (s, 1H), 7.79 (s, 1H), 7.45 (d, *J* = 8.3 Hz, 2H), 7.30 (d, *J* = 8.3 Hz, 2H), 5.41 (s, 2H), 4.18 (s, 1H), 3.57 (s, 2H), 2.86 (t, *J* = 6.4 Hz, 2H), 2.71 (s, 4H); ^{13}C NMR (101 MHz, DMSO) δ 154.6, 152.5, 140.6, 137.8, 131.9, 127.7, 127.6, 127.3, 121.0, 119.0, 117.2, 83.0, 80.9, 45.8, 40.8; HRMS (ESI): m/z calculated for $C_{16}H_{17}N_6$ ($M+H^+$) 293.1509 found 293.1509

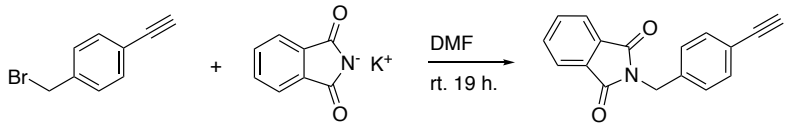
1-(9-(4-Ethynylbenzyl)-9*H*-purin-6-yl)guanidine (**87**)



To a suspension of NaH (60% in paraffin oil, 49 mg, 2.05 mmol) in 2:1 MeCN:DMF (6.2 mL), guanidine hydrochloride (196 mg, 2.05 mmol) was added. The mixture was purged with argon and stirred at room temperature overnight after which it was added directly to a flask containing **76** and DABCO (42 mg, 0.375 mmol). The

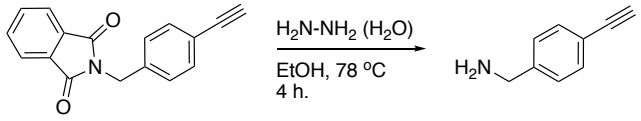
suspension was stirred at room temperature for 6 h. before the solvent was removed *in vacuo*. The residue was purified by Flash Chromatography (MeOH:DCM, 2–20%) to yield 103 mg of **87** (95%, 0.353 mmol); ^{1}H NMR (400 MHz, DMSO) δ 8.67 (s, 1H), 8.60 (s, 1H), 8.47 (br s, 3H), 7.46 (d, *J* = 8.2 Hz, 2H), 7.36–7.32 (m, 2H), 7.09 (br s, 1H), 5.53 (s, 2H), 4.20 (s, 1H); ^{13}C NMR (101 MHz, DMSO) δ 156.11, 151.34, 150.97, 150.70, 144.38, 137.11, 131.96, 127.82, 121.48, 121.24, 82.90, 81.08, 46.23; HRMS (ESI): m/z calculated for $C_{15}H_{14}N_7$ ($M+H^+$) 292.1305 found 292.1302.

2-(4-Ethynylbenzyl)isoindoline-1,3-dione (**88**)



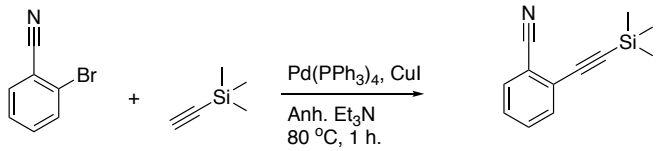
In a small, dry microwave vial, a solution of **56** (200 mg, 1.03 mmol) in anhydrous DMF (0.51 mL) was carefully added potassium phthalimide (218 mg, 1.03 mmol). The vial was sealed and the mixture stirred at room temperature for 19 h. after which it was diluted with H_2O (10 mL) followed by extraction with DCM (5 x 10 mL). The combined organic layers were washed with brine (10 mL), dried over Na_2SO_4 and evaporated *in vacuo*. The residue was purified by Flash Chromatography (EtOAc:PE, 5–20%) to afford 215 mg of the title compound **88 (**80%, 0.824 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.85 (dd, *J* = 5.5, 3.1 Hz, 2H), 7.75–7.69 (m, 2H), 7.46–7.41 (m, 2H), 7.41–7.36 (m, 2H), 4.84 (s, 2H), 3.05 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 167.9, 137.0, 134.1, 132.4, 132.1, 128.5, 123.4, 121.7, 83.3, 77.5, 41.3; HRMS (ESI): m/z calculated for $C_{17}H_{12}NO_2$ ($M+H^+$) 262.0863 found 262.0966.

4-(Ethynyl)benzyl amine (**89**)



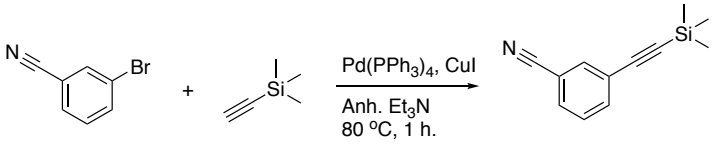
In a small microwave vial, the phthalimide **88** (165 mg, 0.632 mmol) was dissolved in EtOH (3.26 mL) after which hydrazine hydrate (50–60% w/w, 0.075 mL, 1.33 mmol) was added dropwise. The vial was sealed and stirred at 78 °C for 4 h. before cooling to room temperature. The reaction mixture was filtered and washed with EtOAc. The combined filtrates were evaporated *in vacuo* to afford 72 mg (91%, 0.354 mmol) of **89** which was used without further purification: ^{1}H NMR (400 MHz, DMSO) δ 7.43–7.39 (m, 2H), 7.37–7.33 (m, 2H), 4.10 (s, 1H), 3.73 (s, 2H), 3.15 (br s, 3H); ^{13}C NMR (101 MHz, DMSO) δ 144.9, 131.4, 127.2, 119.4, 83.6, 80.0, 45.1; EI MS m/z calculated for $C_9H_{10}N$ (M+) 131.1 found 131.0.

2-((Trimethylsilyl)ethynyl)benzonitrile (**92**)



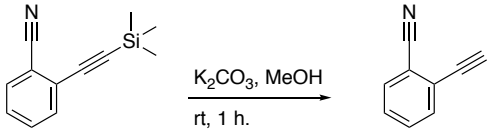
To a large, dry microwave vial, 2-bromobenzonitrile **90** (1.00 g, 5.49 mmol), copper(I) iodide (55.8 mg, 0.440 mmol), tetrakis(triphenylphosphine)palladium(0) (254 mg, 0.219 mmol) were added. The vial was vac-filled with argon (3x) before anhydrous Et_3N (13.7 mL) and trimethylsilyl acetylene (1.56 mL, 11.0 mmol) were added under the exclusion of oxygen. The vial was sealed and the mixture stirred at 80 °C for 1 h. before being cooled to room temperature. The reaction mixture was diluted with Et_2O (20 mL) and washed with sat. NH_4Cl (20 mL), 2 M HCl (20 mL) and H_2O (20 mL). The combined organic layers were dried over $MgSO_4$ and evaporated *in vacuo*. The residue was purified by Flash Chromatography (EtOAc:PE, 0–5%) to yield 1.10 g of **92** (100%, 5.49 mmol) as white crystals; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 (ddd, *J* = 7.7, 1.3, 0.7 Hz, 1H), 7.56 (ddd, *J* = 7.9, 1.7, 0.7 Hz, 1H), 7.52 (td, *J* = 7.5, 1.3 Hz, 1H), 7.40 (ddd, *J* = 7.8, 7.2, 1.7 Hz, 1H), 0.30 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 132.9, 132.8, 132.5, 128.8, 127.3, 117.6, 116.2, 102.6, 100.9, 0.0; HRMS (ESI): m/z calculated for $C_{12}H_{14}NNaSi$ ($M+Na^+$) 222.0709 found 222.0714

2-((Trimethylsilyl)ethynyl)benzonitrile (**93**)



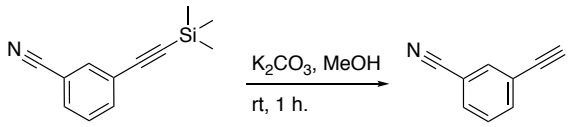
To a large, dry microwave vial, 3-bromobenzonitrile **91** (1.00 g, 5.49 mmol), copper(I) iodide (55.8 mg, 0.440 mmol), tetrakis(triphenylphosphine)palladium(0) (254 mg, 0.219 mmol) were added. The vial was vac-filled with argon (3x) before anhydrous Et_3N (13.7 mL) and trimethylsilyl acetylene (1.56 mL, 11.0 mmol) was added under the exclusion of oxygen. The vial was sealed and the mixture was stirred at 80 °C for 1 h. before being cooled to room temperature. The reaction mixture was diluted with Et_2O (20 mL) and washed with sat. NH_4Cl (20 mL), 2 M HCl (20 mL) and H_2O (20 mL). The combined organic layers were dried over $MgSO_4$ and evaporated *in vacuo*. The resulting residue was purified by Flash Chromatography (EtOAc:PE, 0–5%) to yield 1.08 g of **93** (98%, 5.39 mmol) as white crystals; ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.74 (td, *J* = 1.7, 0.6 Hz, 1H), 7.69–7.64 (m, 1H), 7.61–7.57 (m, 1H), 7.42 (td, *J* = 7.8, 0.6 Hz, 1H), 0.26 (s, 9H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 136.2, 135.6, 131.9, 129.4, 125.1, 118.2, 113.1, 102.5, 97.7; EI MS m/z calculated for $C_{12}H_{13}NSi$ (M+) 199.1 found 199.1.

2-Ethynylbenzonitrile (**94**)



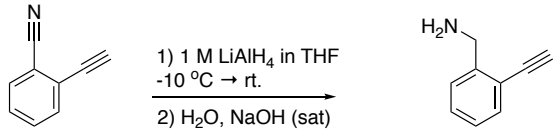
General Procedure 2 was applied with the trimethylsilyl protected acetylene **92** (1.10 g, 5.49 mmol) dissolved in MeOH (40 mL) after which K_2CO_3 was added (759 mg, 5.49 mmol). The suspension was stirred for 1 h. at room temperature before it was concentrated *in vacuo*. The residue was purified by Flash Chromatography (EtOAc:PE, 0–10%) to yield 570 mg of **94** (81%, 4.48 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.67 (ddd, *J* = 7.7, 1.4, 0.6 Hz, 1H), 7.64–7.60 (m, 1H), 7.57 (td, *J* = 7.7, 1.3 Hz, 1H), 7.46 (td, *J* = 7.6, 1.5 Hz, 1H), 3.48 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 133.0, 132.7, 132.4, 129.0, 126.0, 117.2, 116.0, 83.8, 79.6; EI MS m/z calculated for C_9H_5N (M+) 127.0 found 127.0.

3-Ethynylbenzonitrile (**95**)



General Procedure 2 was applied with the trimethylsilyl protected acetylene **93** (1.05 g, 5.27 mmol) dissolved in MeOH (38 mL) after which K_2CO_3 was added (728 mg, 5.27 mmol). The suspension was stirred for 1 h. at room temperature before it was concentrated *in vacuo*. The residue was purified by Flash Chromatography (EtOAc:PE, 0–10%) to yield 512 mg of **95** (77%, 4.03 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.77 (d, *J* = 1.7 Hz, 1H), 7.70 (dt, *J* = 7.9, 1.4 Hz, 1H), 7.63 (dt, *J* = 7.8, 1.4 Hz, 1H), 7.45 (td, *J* = 7.8, 0.7 Hz, 1H), 3.19 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 136.2, 135.5, 132.0, 129.3, 123.8, 117.9, 113.0, 81.2, 79.8; EI MS m/z calculated for $C_{12}H_{13}NSi$ (M+) 127.0 found 127.0.

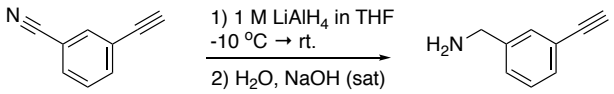
2-(Ethynyl)benzyl amine (**96**)



In a dry microwave vial, a solution of **94** (150 mg, 1.18 mmol) in anhydrous THF (0.47 mL) was added dropwise to a 1 M solution of $LiAlH_4$ in THF (2.48 mL). The mixture was stirred at -10 °C for 1 h. followed by 1 h. at room temperature. The reaction was quenched by careful addition of H_2O (0.2 mL) and sat. aq. NaOH (0.2 mL). The resultant slurry was stirred for 0.5 h. before it was added brine (1 mL) and extracted with Et_2O (3 x 3 mL). The combined organic layers were dried over Na_2SO_4, filtered over Celite and concentrated *in vacuo* to yield 130 mg of **96** (84%, 0.991 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.50 (d, *J* = 7.4 Hz, 1H), 7.36–7.32 (m, 2H), 7.22 (m, 1H), 3.98 (s, 2H), 3.32 (s, 1H), 1.64 (s, 3H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 146.1, 133.1, 129.3, 127.4, 126.8, 120.7, 81.7, 81.6, 45.5; MS (EI) m/z calculated for C_9H_9N (M+) 131.1 found 131.1. Ref: Formation of indoles,

dihydroisoquinolines, and dihydroquinolines by ruthenium-catalyzed heterocyclizations By Varela-Fernandez, Alejandro et al. Synthesis, 44(21), 3285-3295; 2012[36]

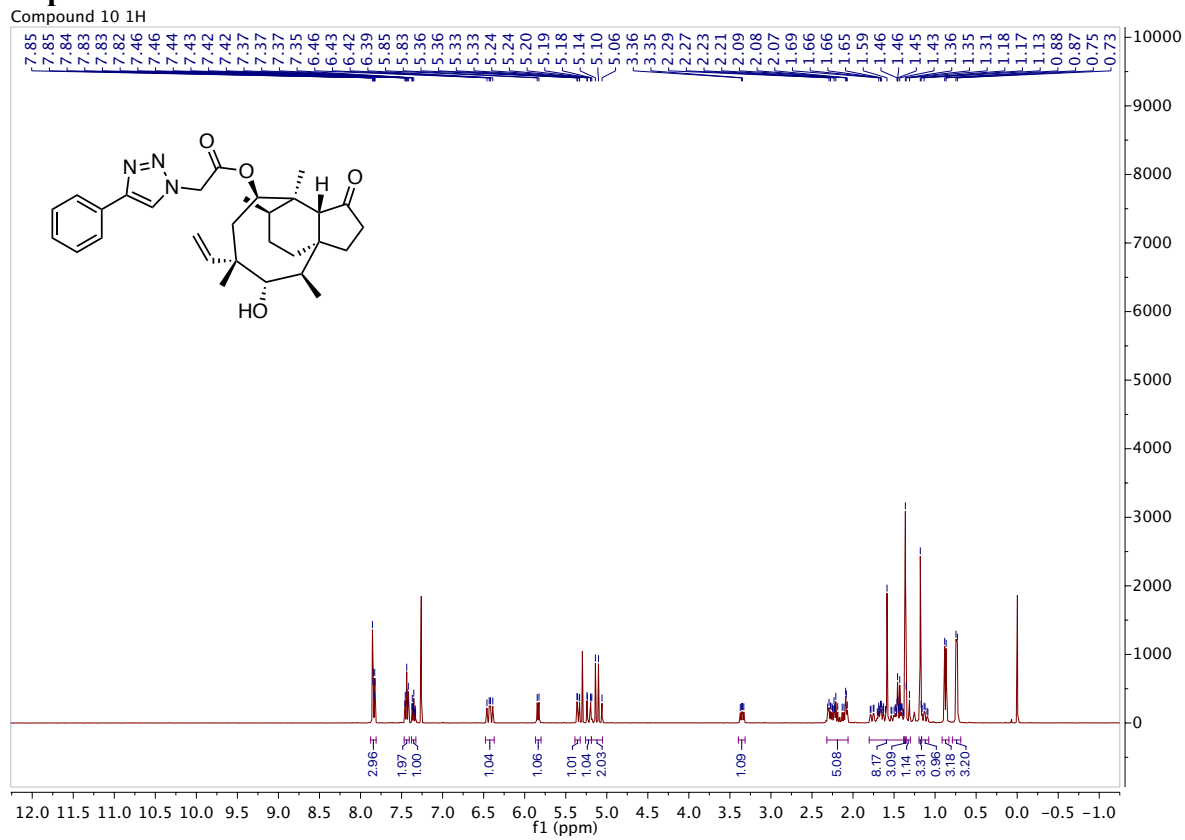
(3-Ethynylphenyl)methanamine (**97**)

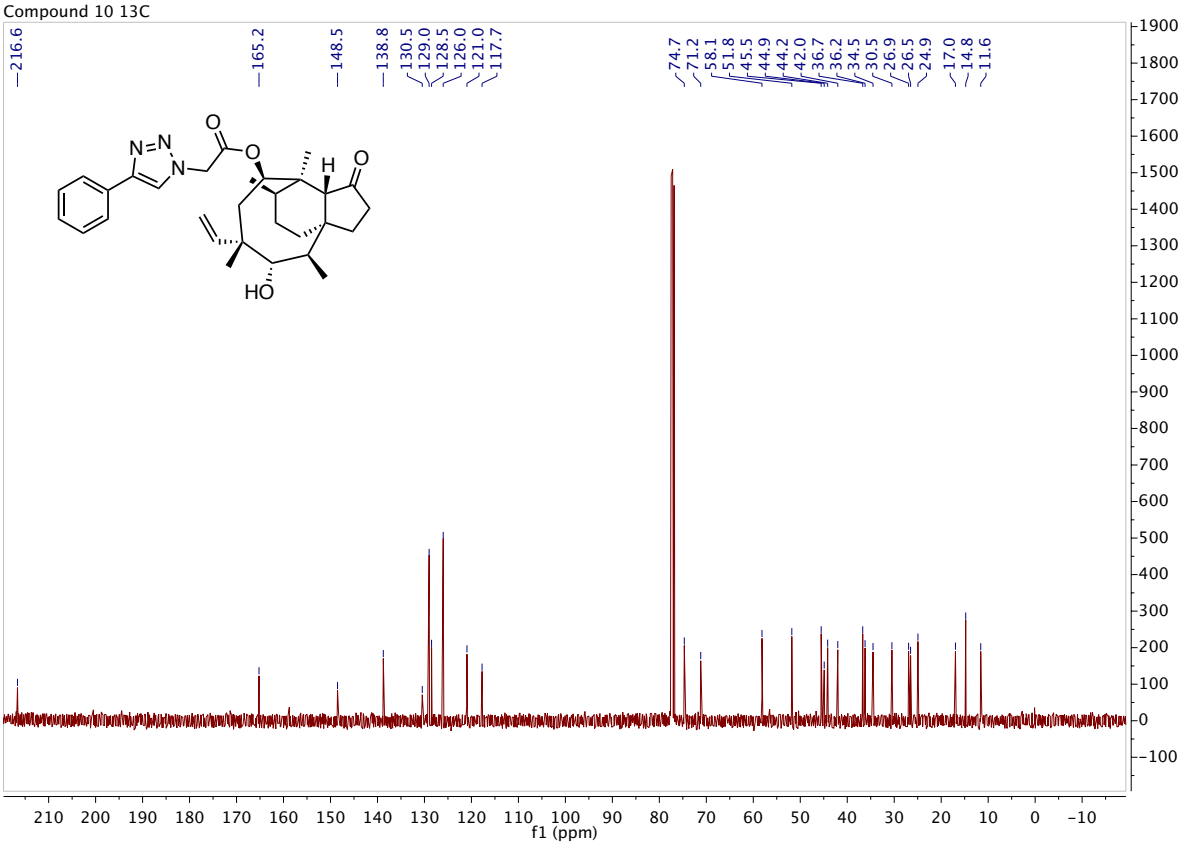


In a dry microwave vial, a solution of **93** (200 mg, 1.57 mmol) in anhydrous THF (0.63 mL) was added dropwise to a 1 M solution of $LiAlH_4$ in THF (3.30 mL). The mixture was stirred at -10 °C for 1 h. followed by 1 h. at room temperature. The reaction was quenched by careful addition of H_2O (0.2 mL) and sat. aq. NaOH (0.2 mL). The resultant slurry was stirred for 0.5 h. before it was separated in brine (1 mL) and extracted with Et_2O (3 x 3 mL). The combined organic layers were dried over Na_2SO_4, filtered over Celite and concentrated *in vacuo* to yield 167 mg of **97** (81%, 1.27 mmol); ^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48–7.44 (m, 1H), 7.40–7.36 (m, 1H), 7.30 (dd, *J* = 6.2, 0.8 Hz, 2H), 3.86 (s, 2H), 3.07 (s, 1H); ^{13}C NMR (101 MHz, $CDCl_3$) δ 143.5, 130.8, 130.6, 128.5, 127.6, 122.3, 83.6, 77.2, 77.0, 46.1; EI MS m/z calculated for C_9H_9N (M+) 131.1 found 131.1.

^{1}H NMR and ^{13}C NMR for compound 10–44

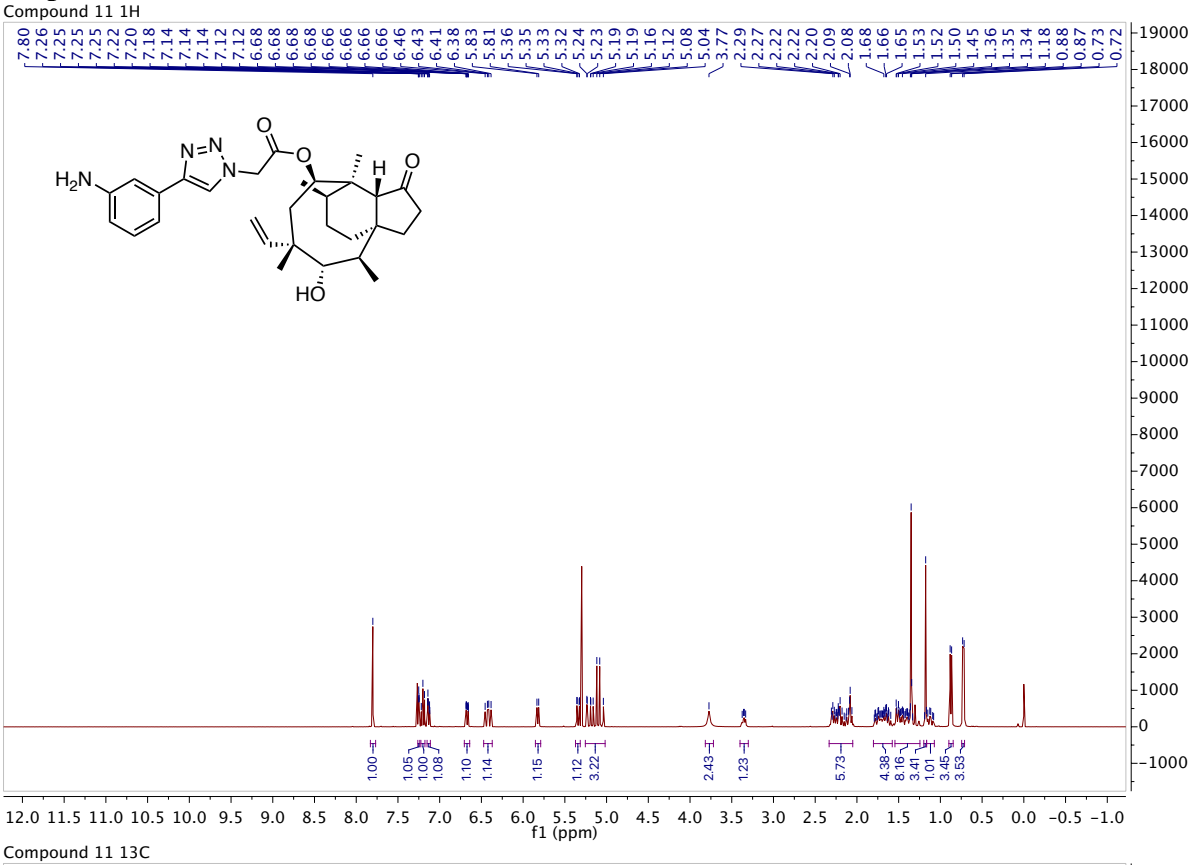
Compound 10



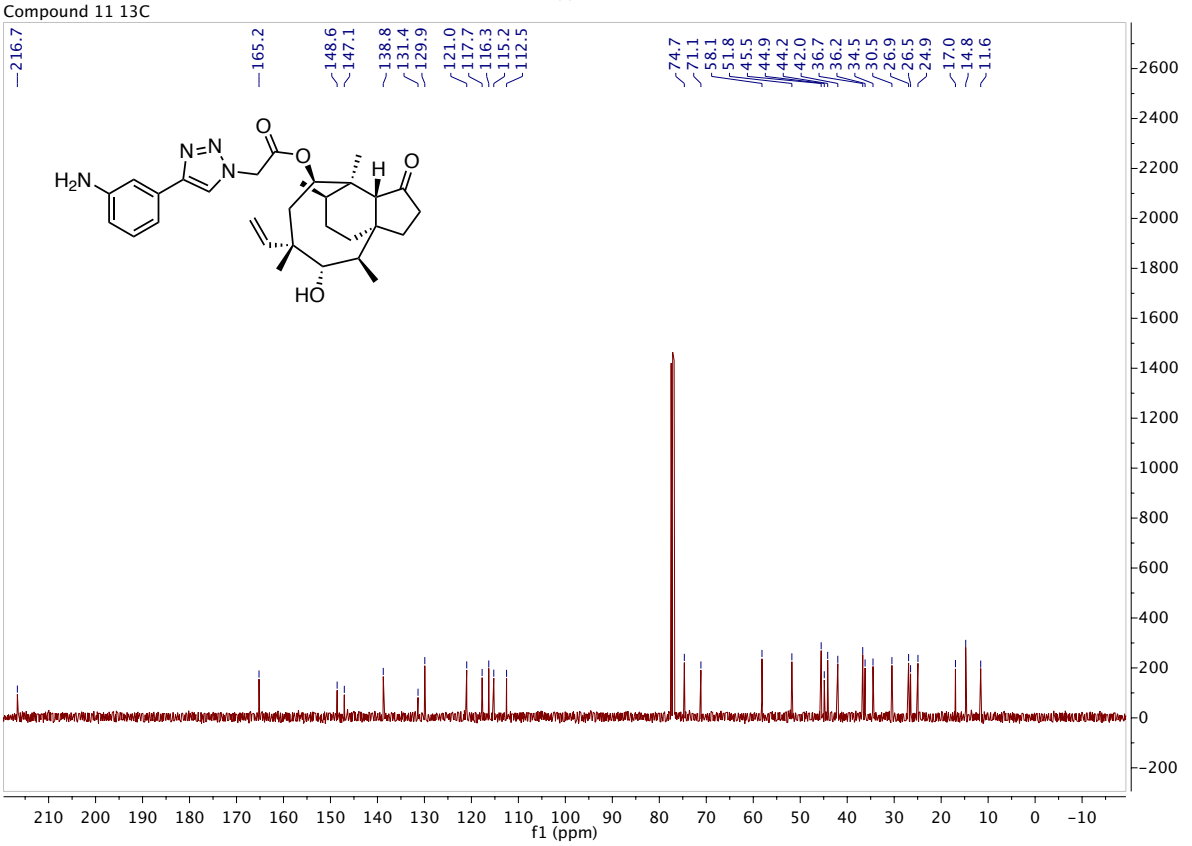


Compound 11

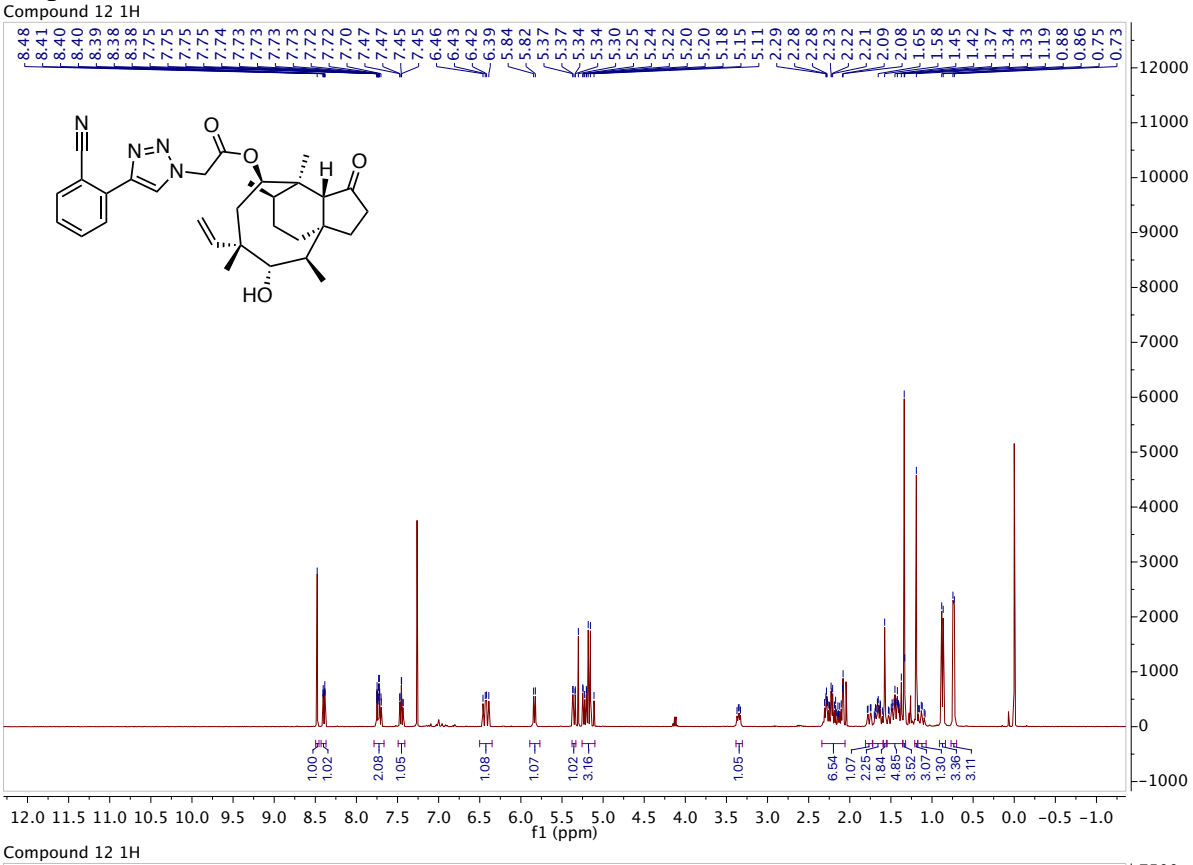
Compound 11 1H

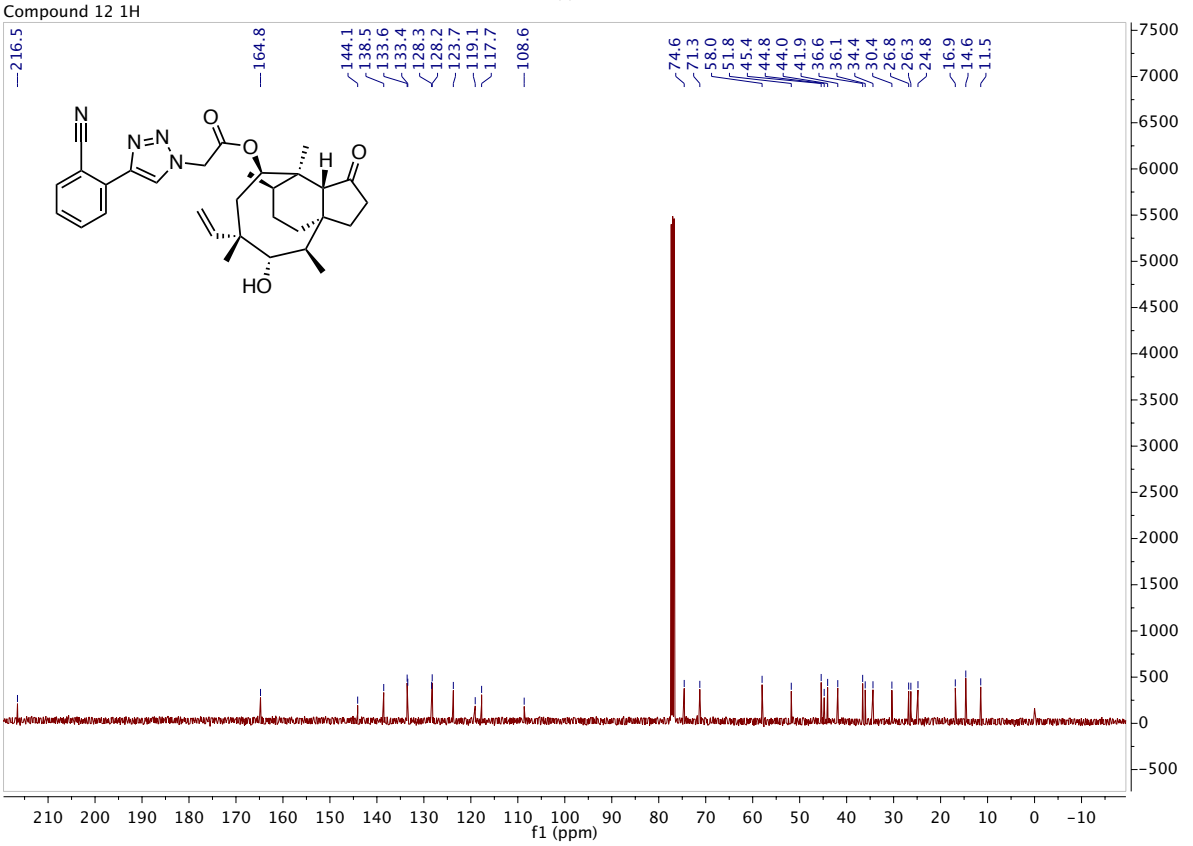


Compound 11 13C

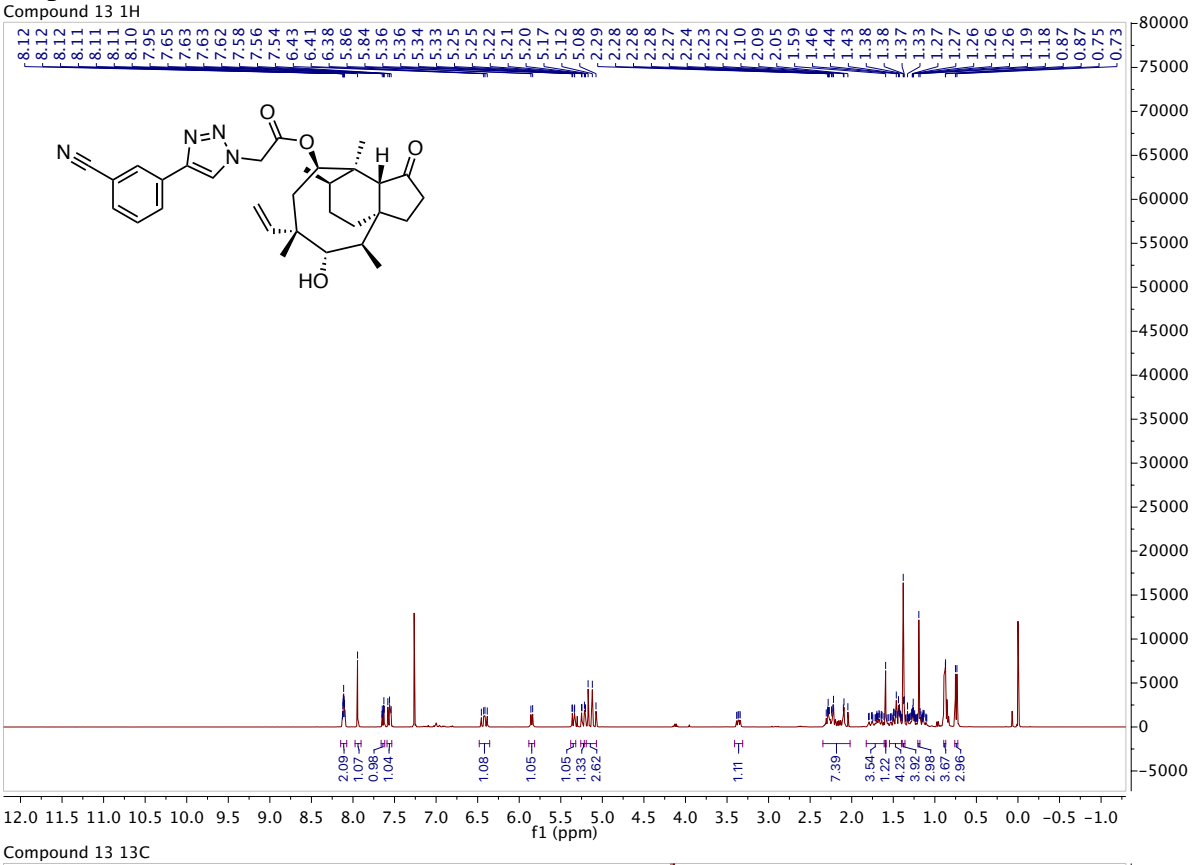


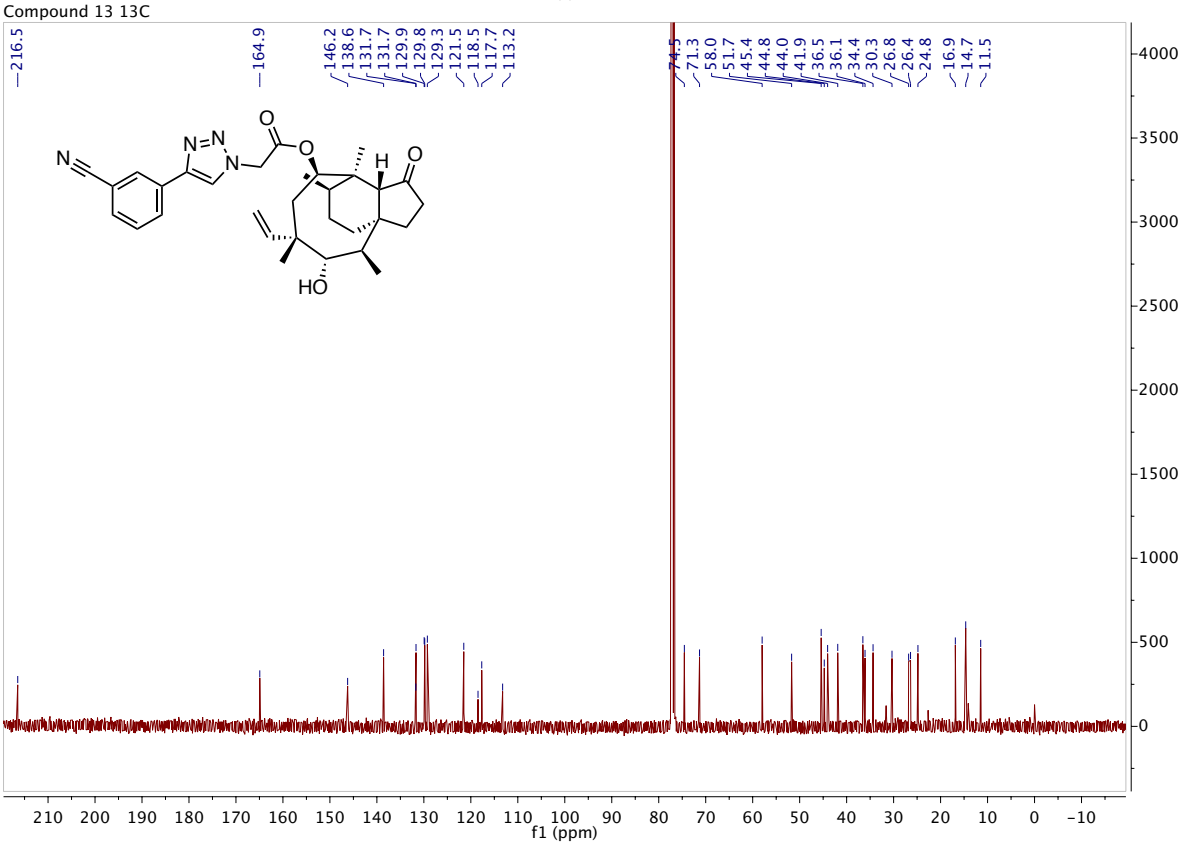
Compound 12





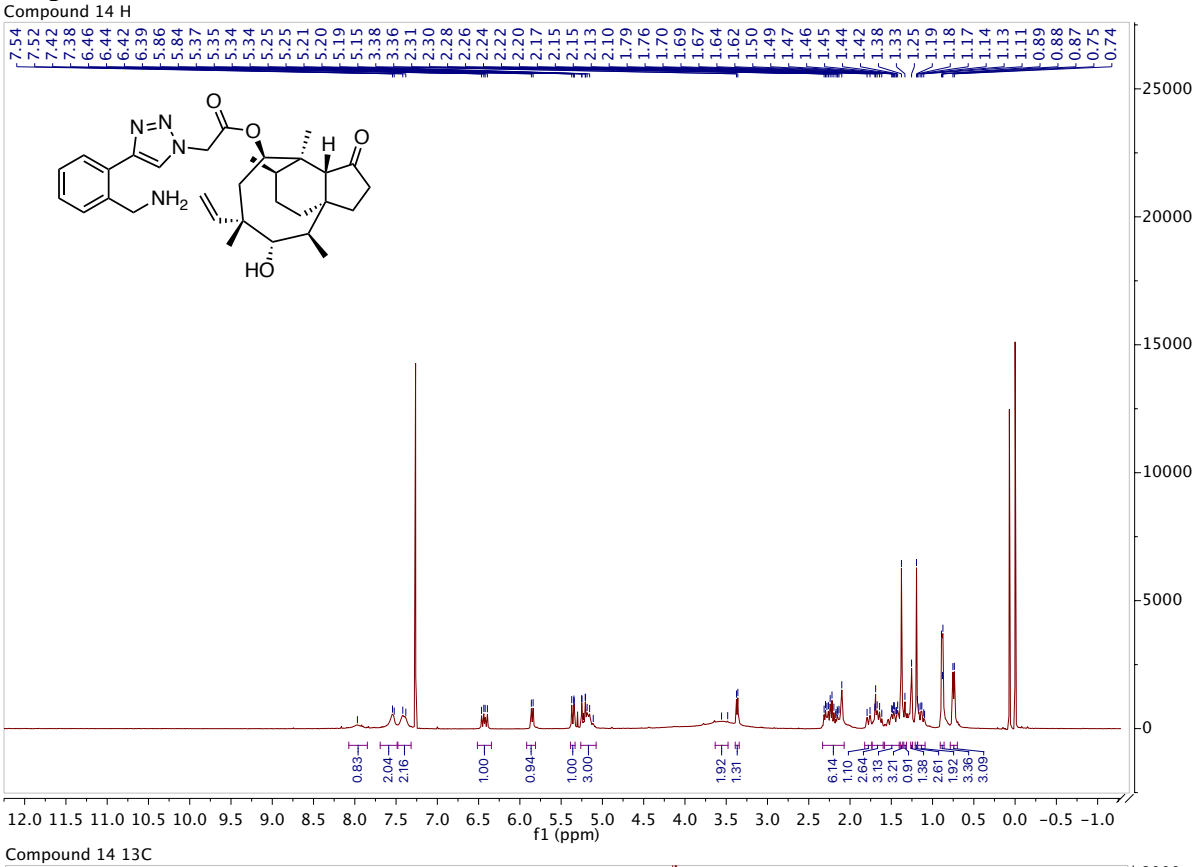
Compound 13



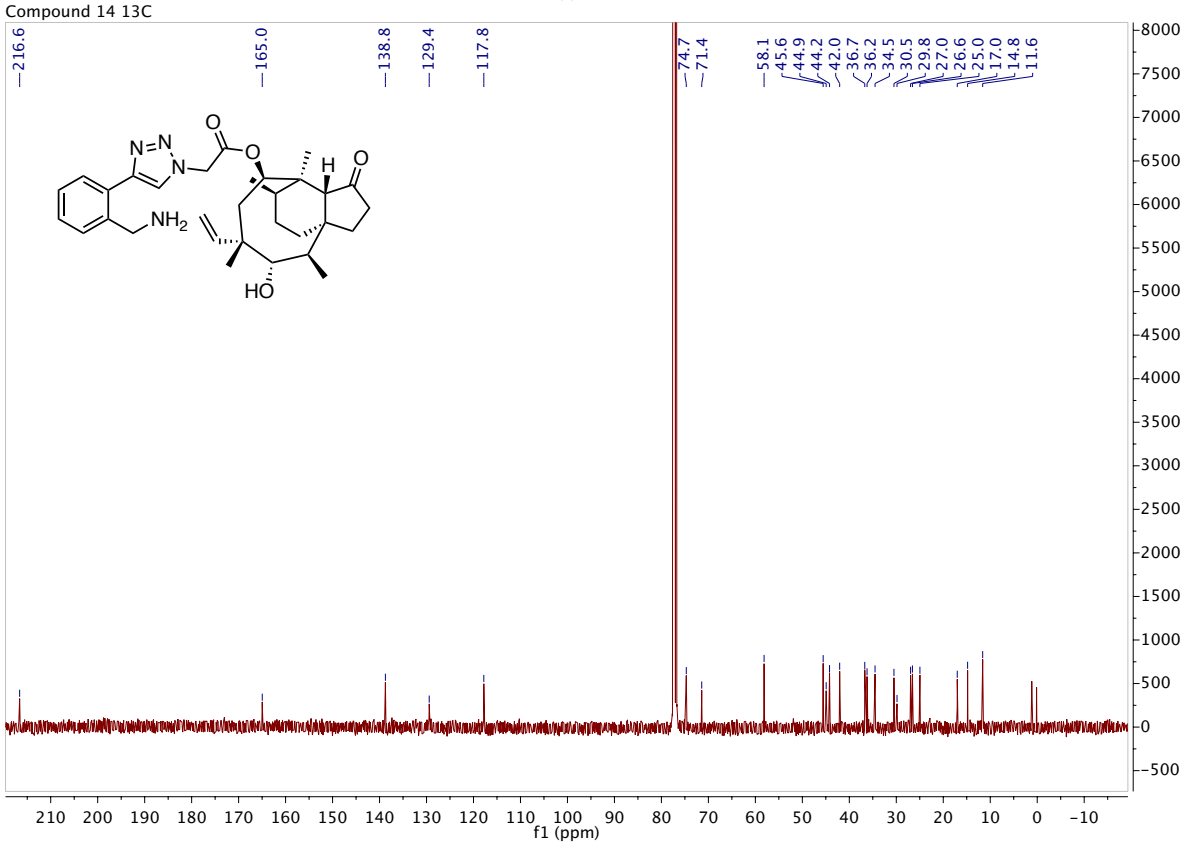


Compound 14

Compound 14 H

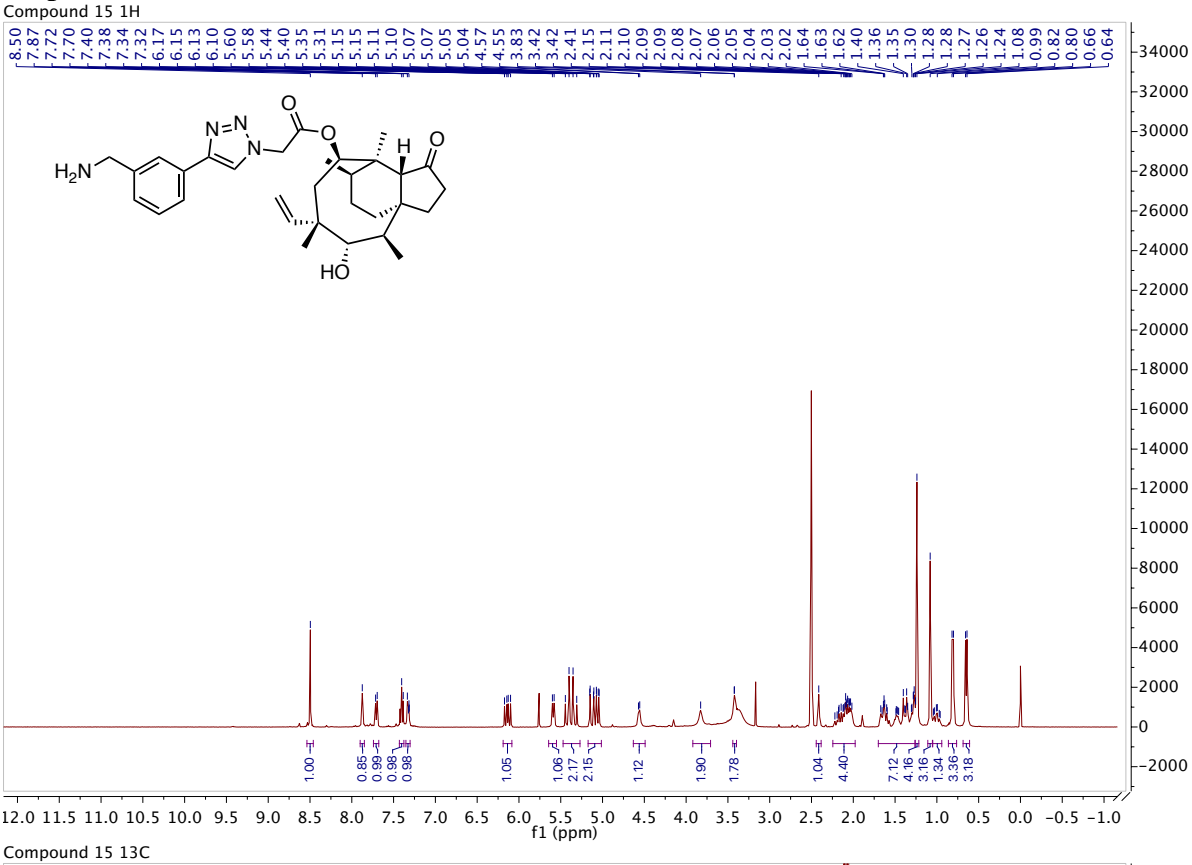


Compound 14 13C

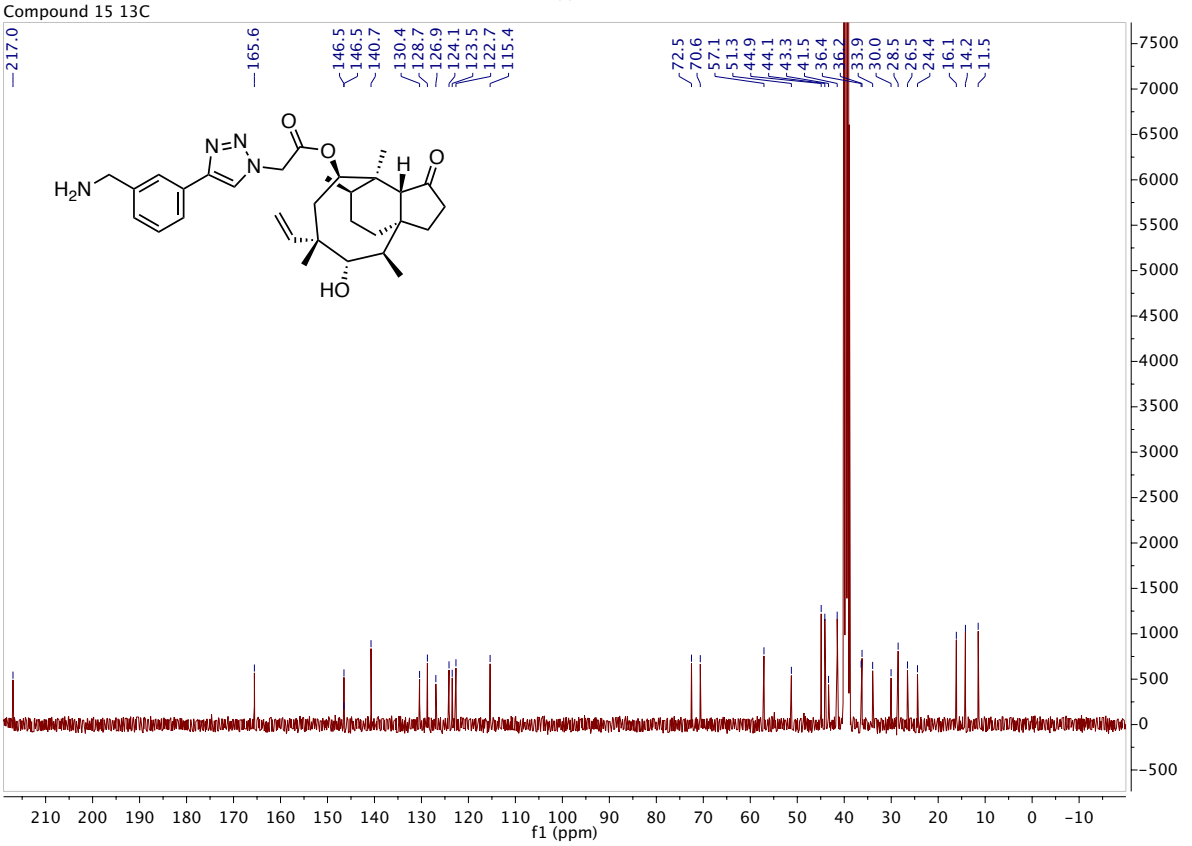


Compound 15

Compound 15 1H

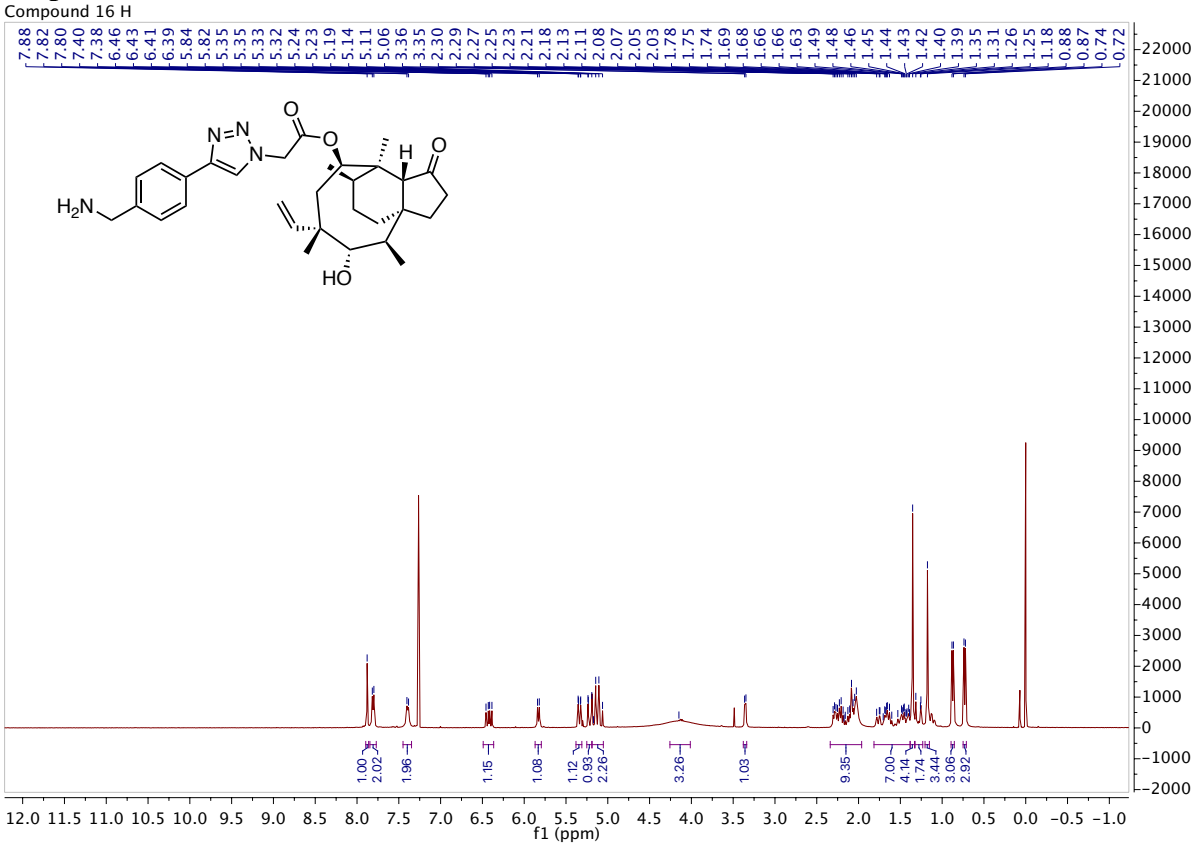


Compound 15 13C

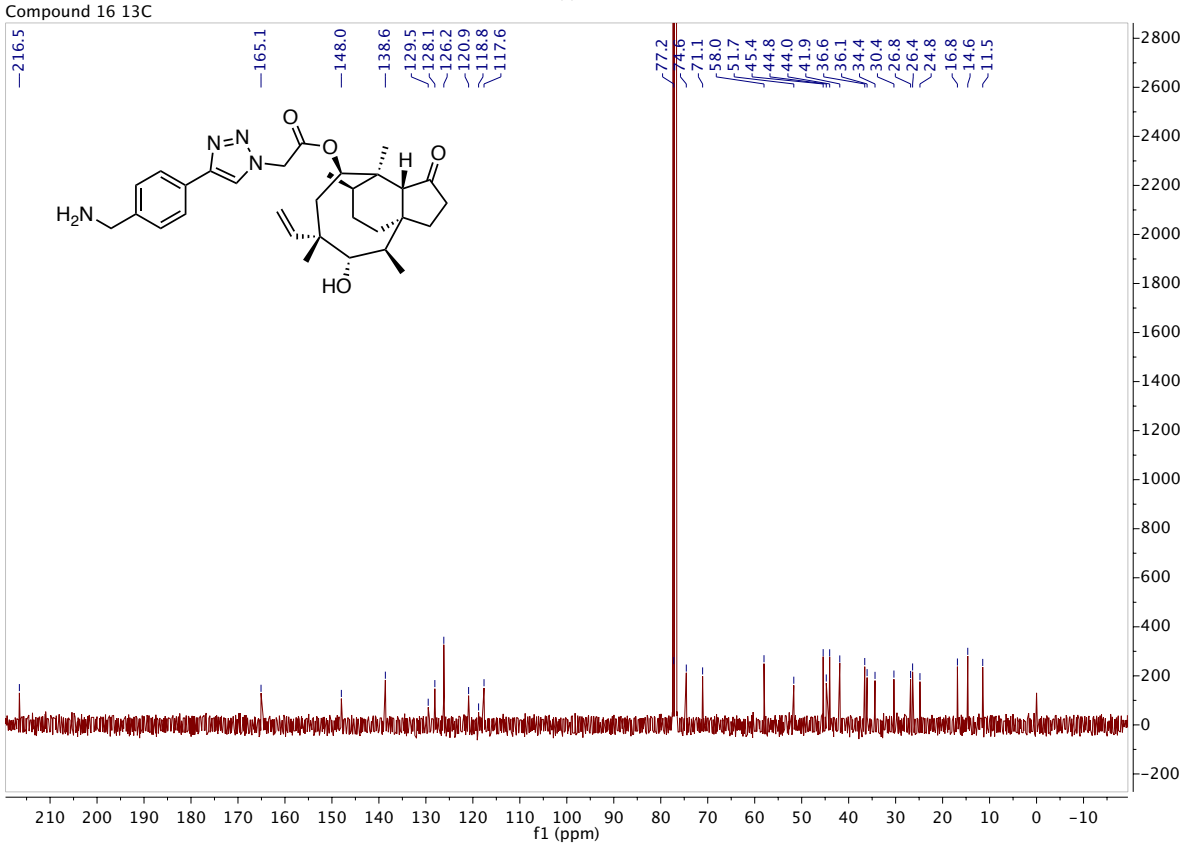


Compound 16

Compound 16 H

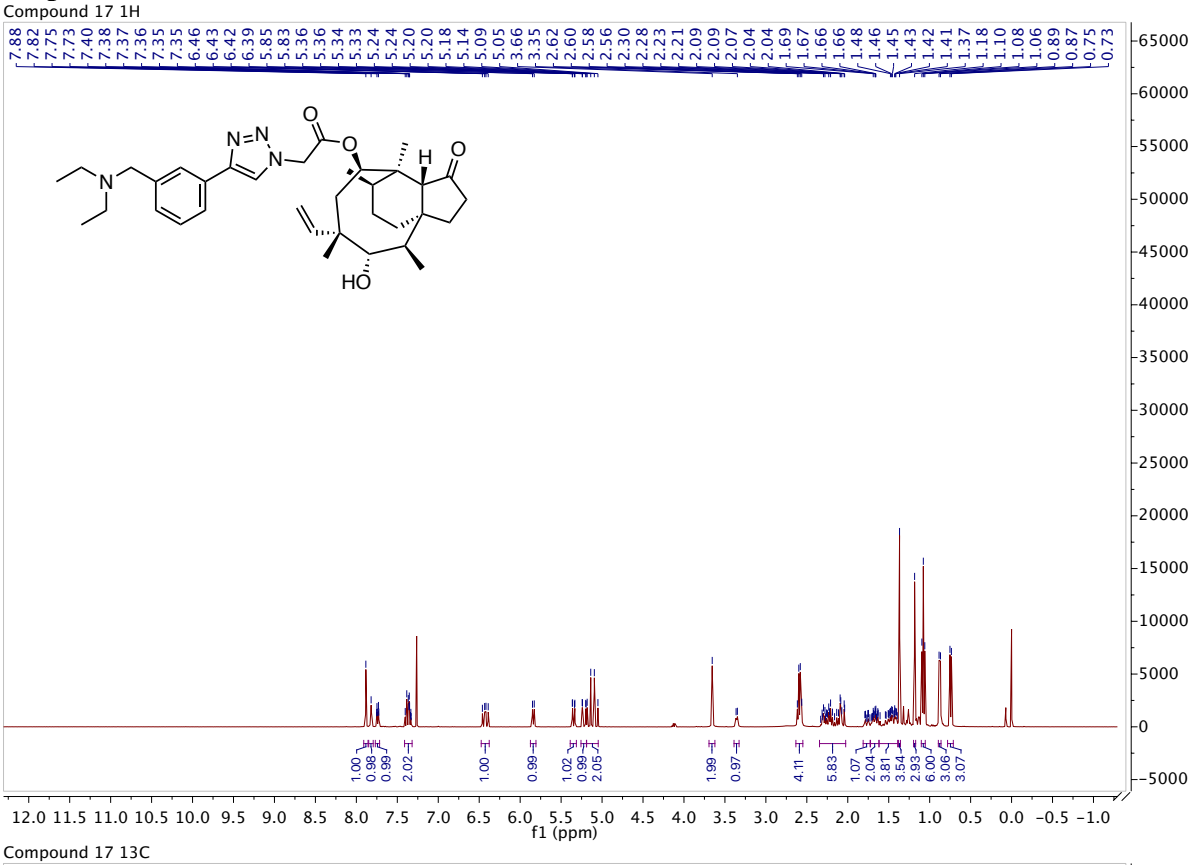


Compound 16 13C

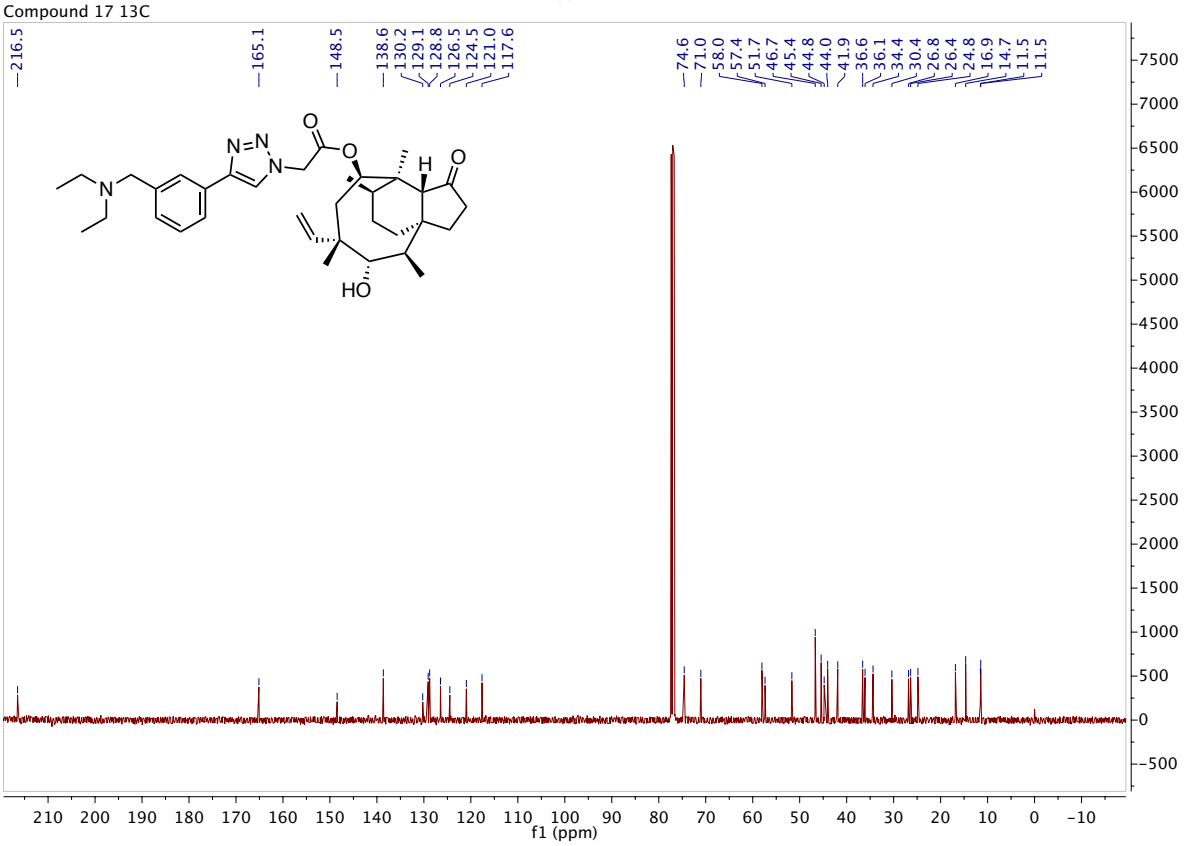


Compound 17

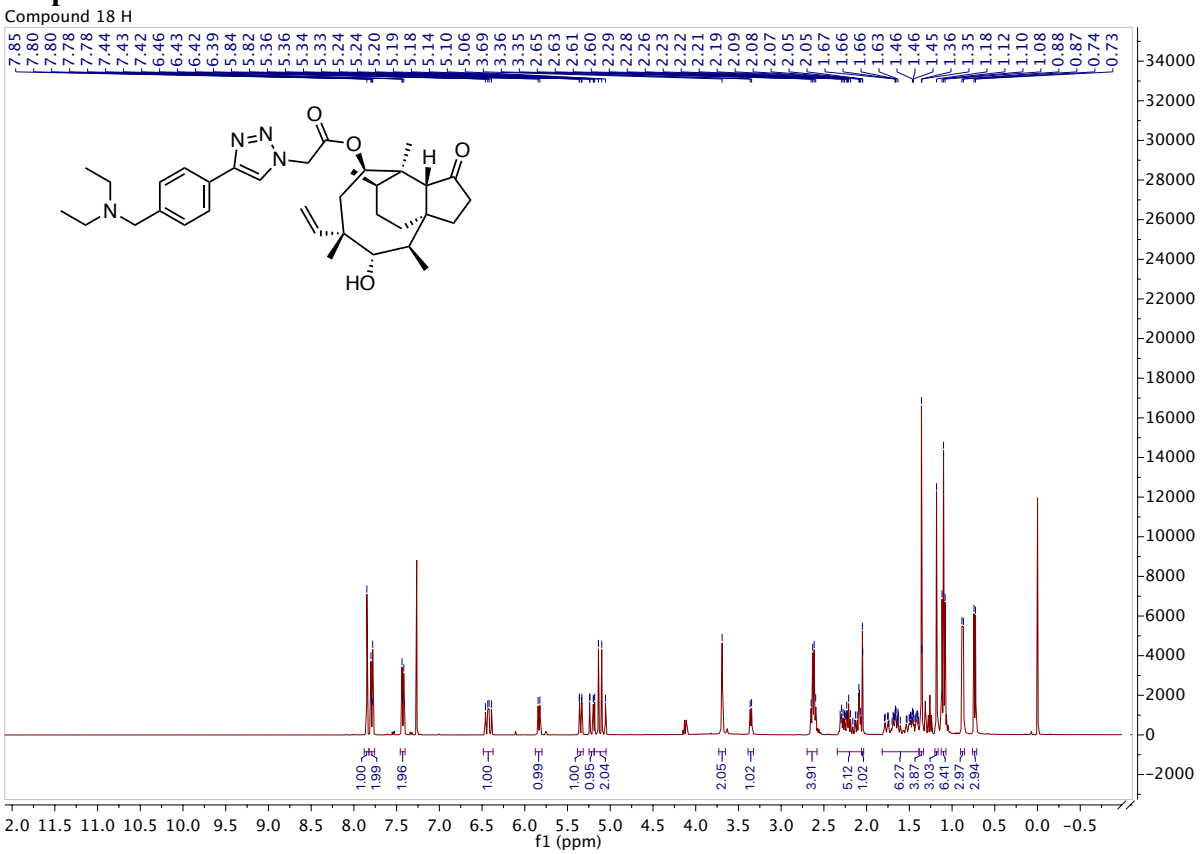
Compound 17 1H

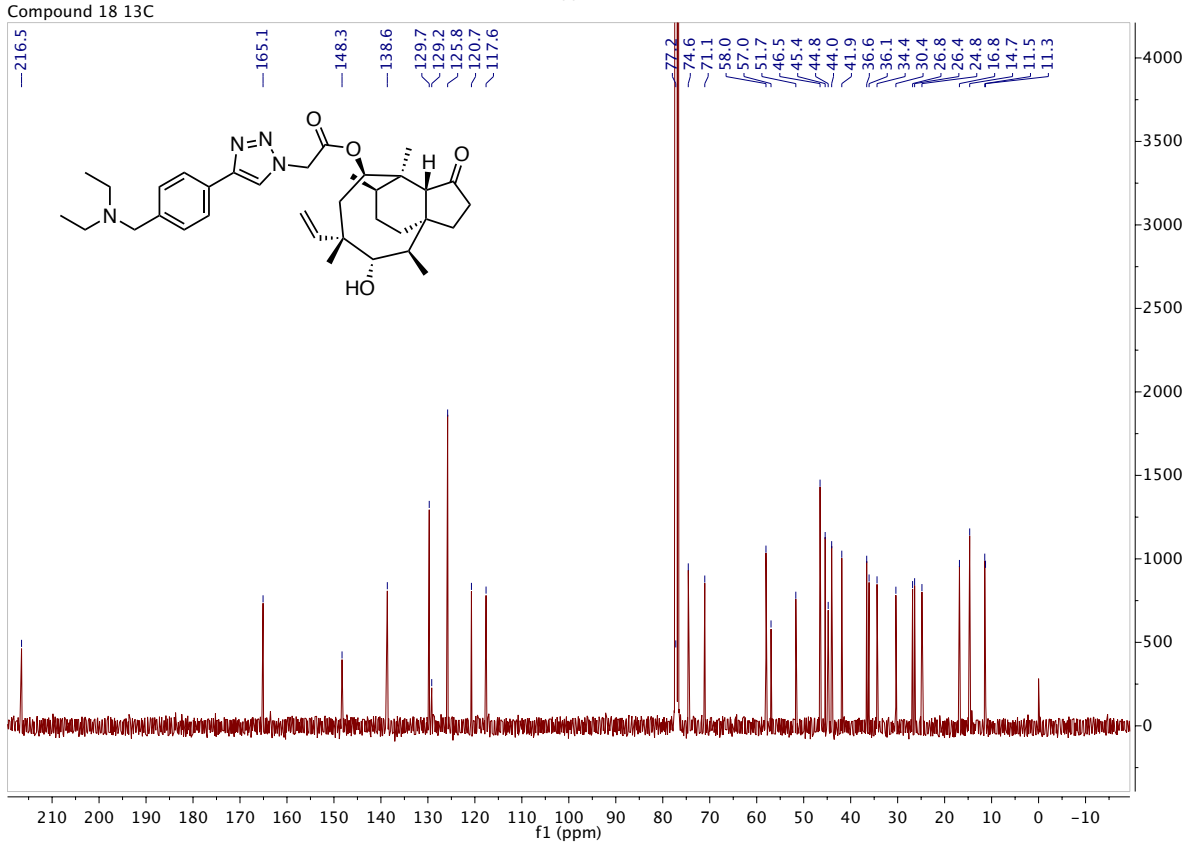


Compound 17 13C



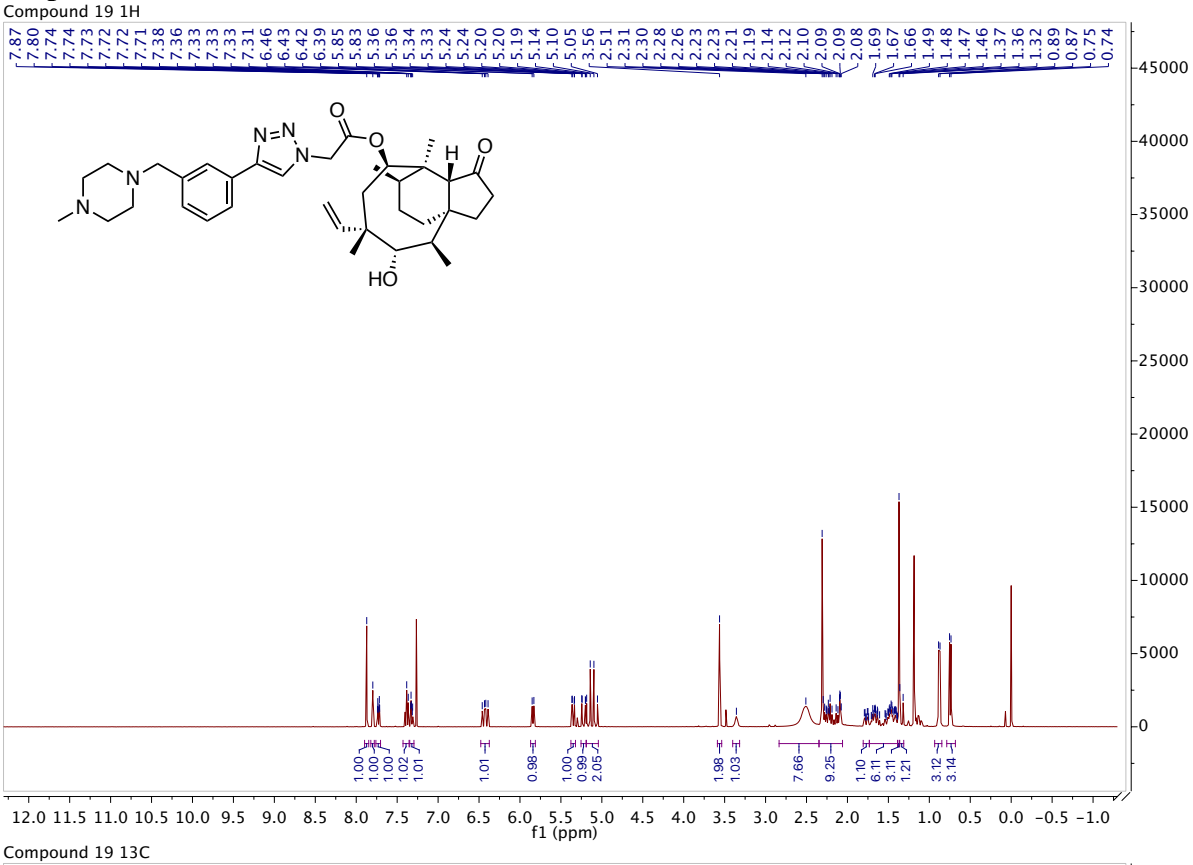
Compound 18



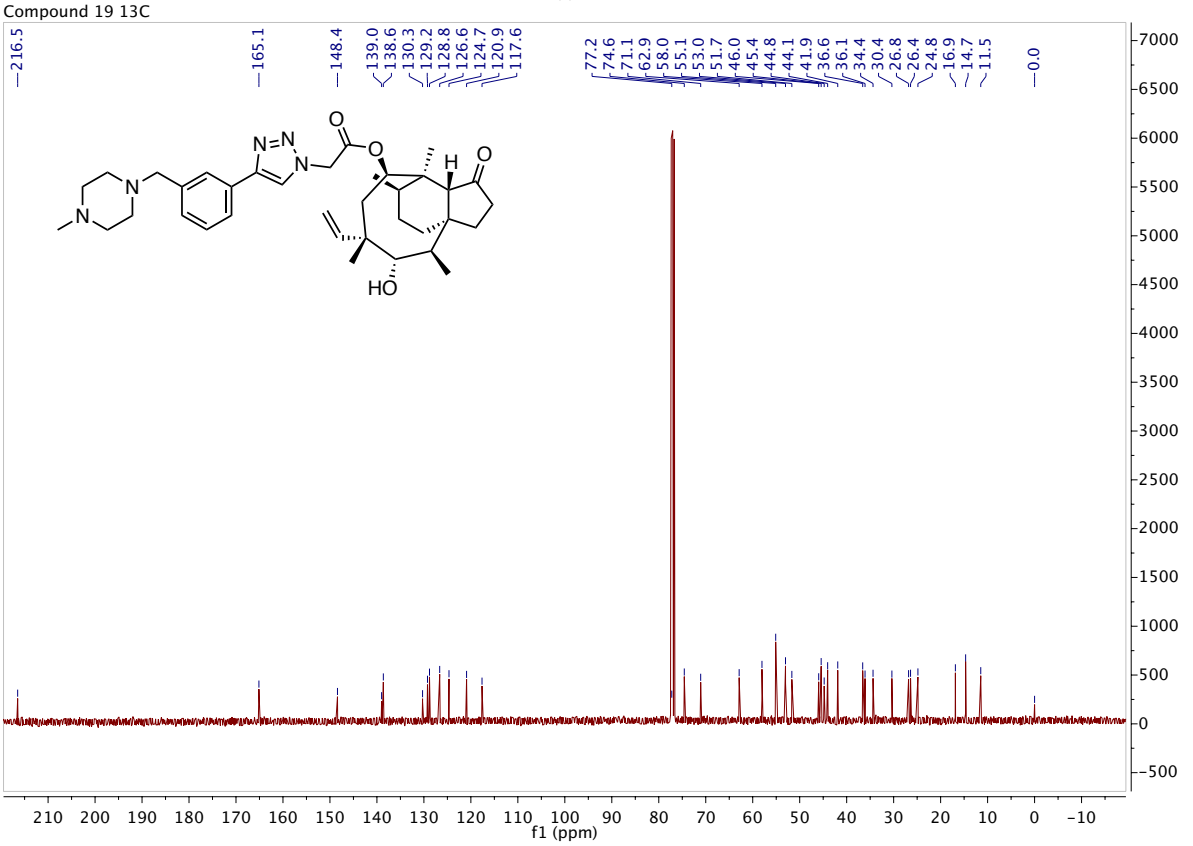


Compound 19

Compound 19 1H

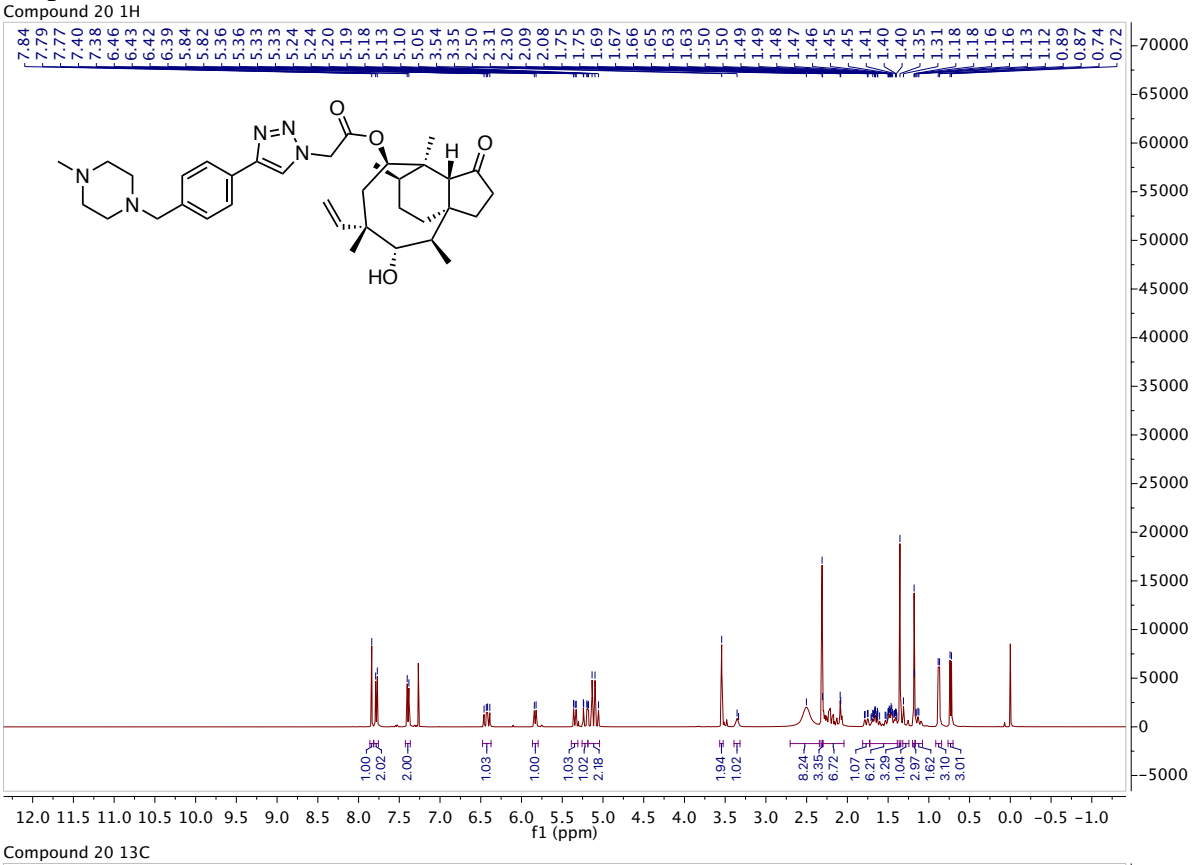


Compound 19 13C

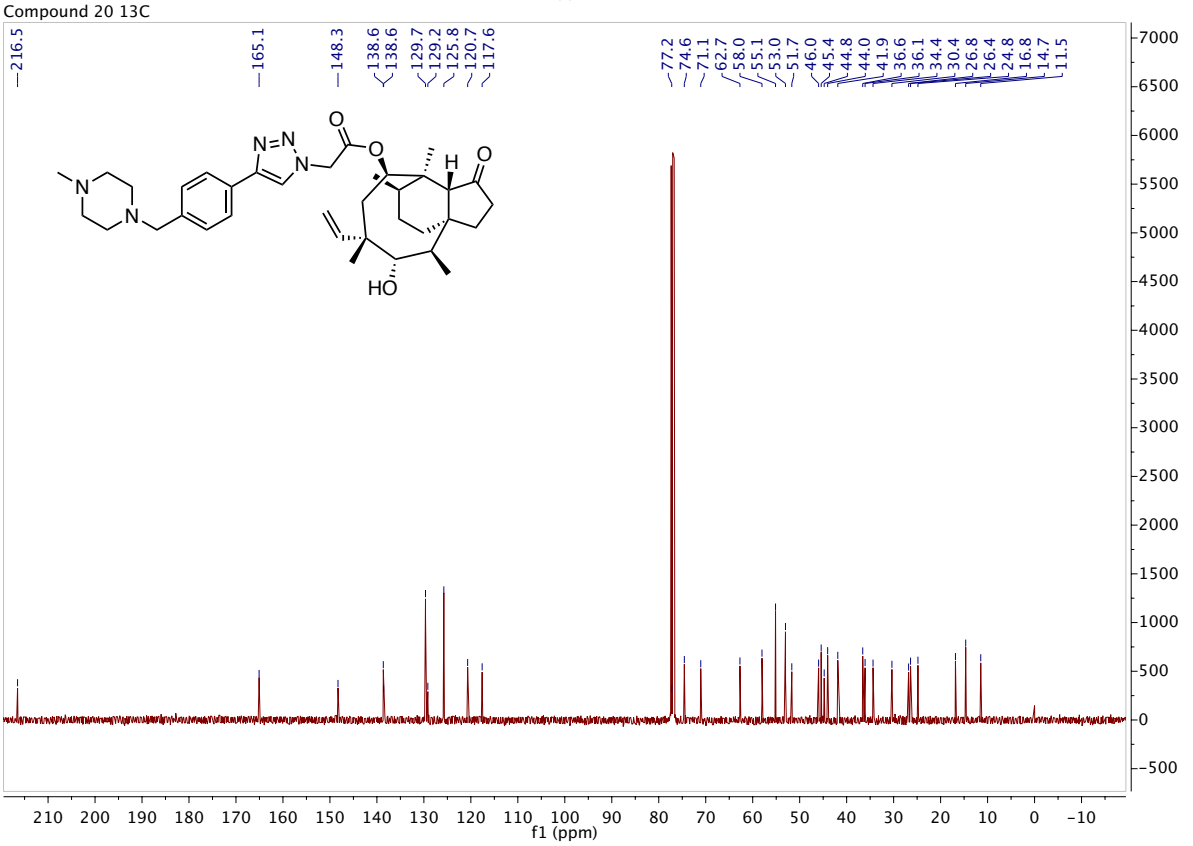


Compound 20

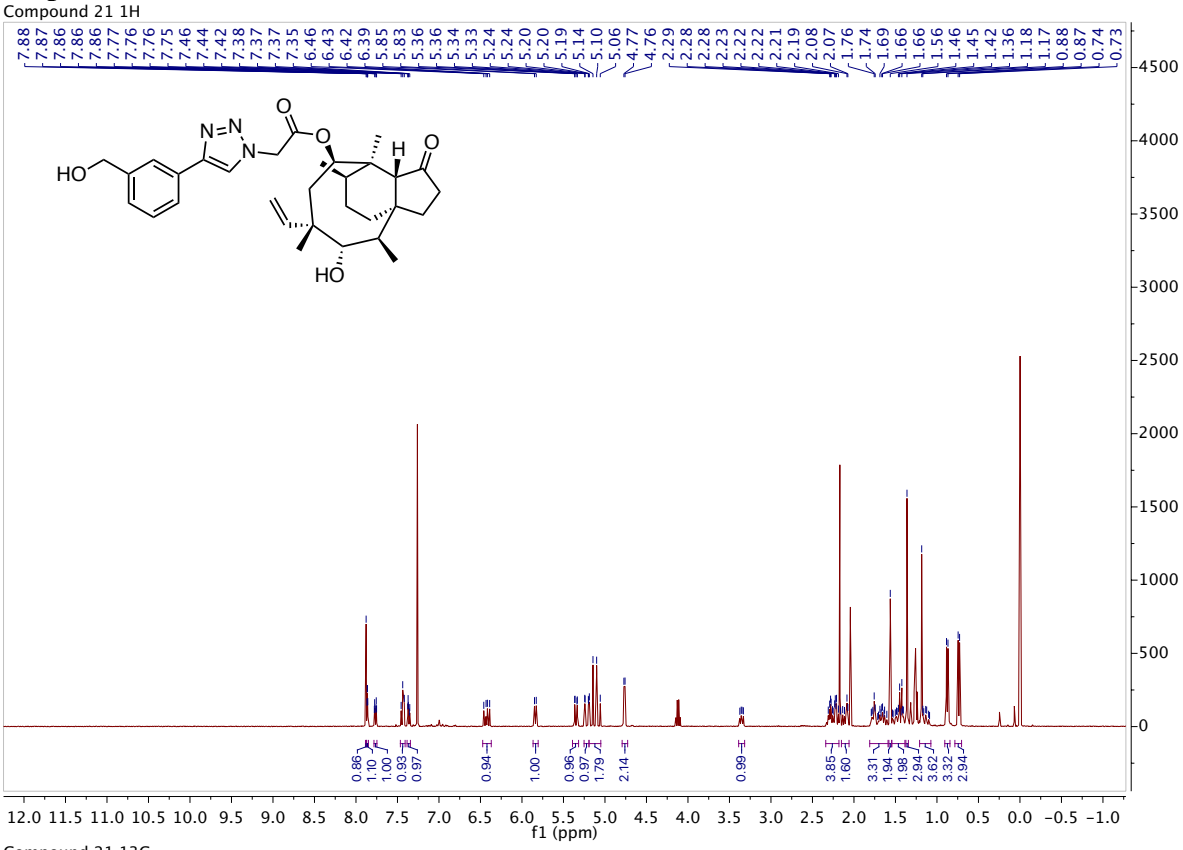
Compound 20 1H

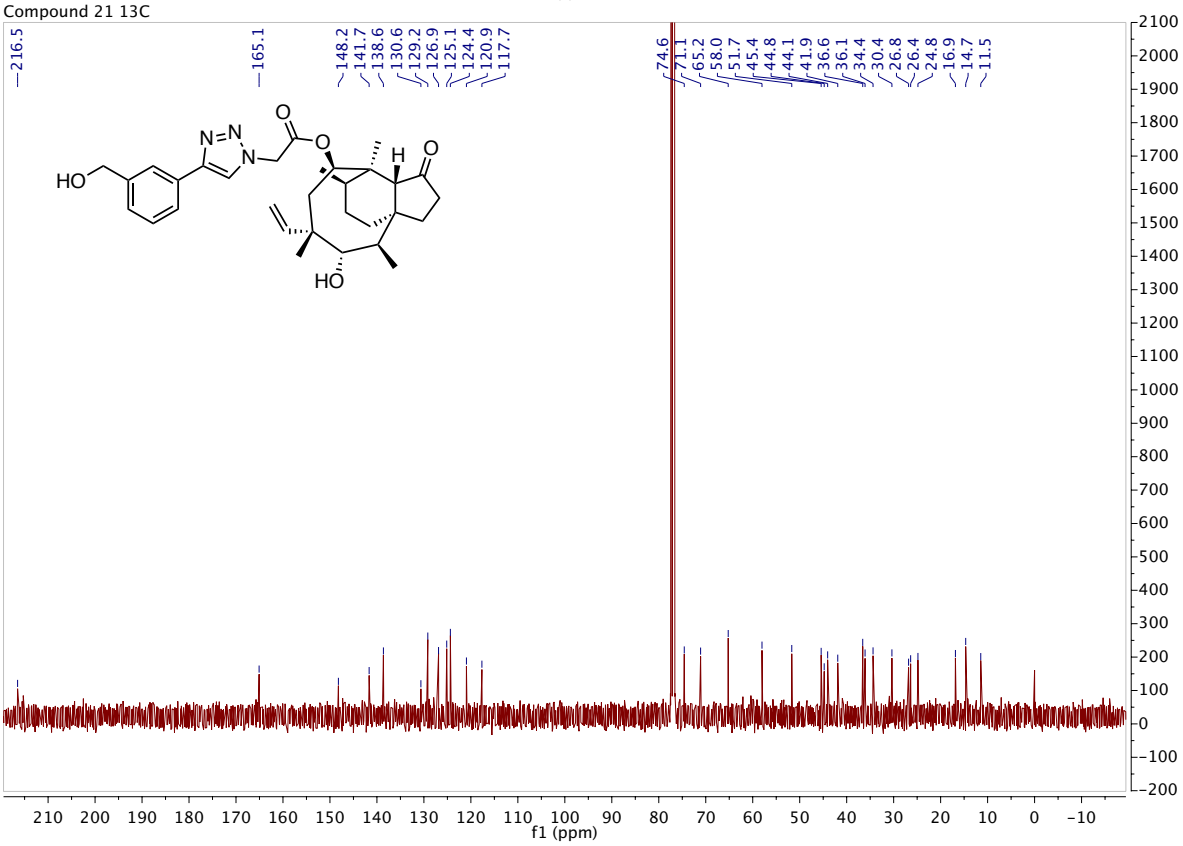


Compound 20 13C



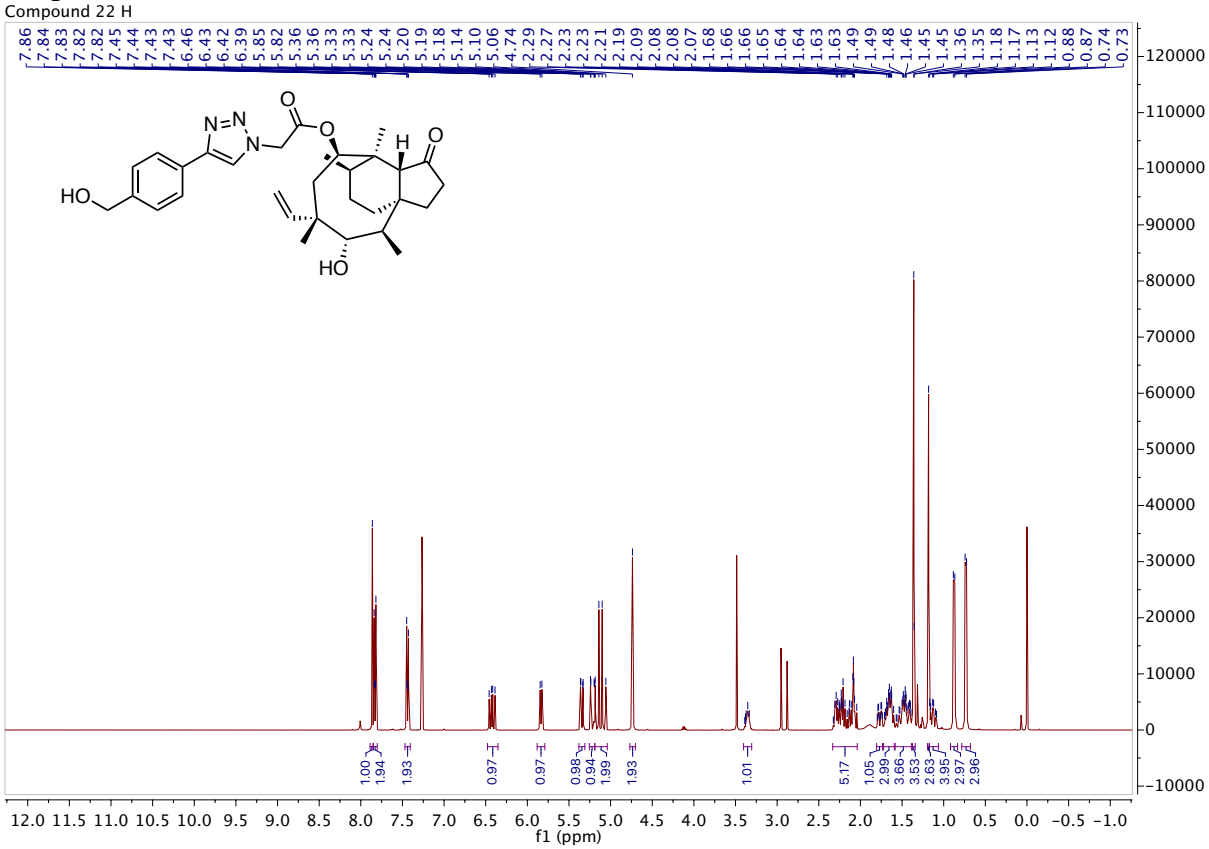
Compound 21



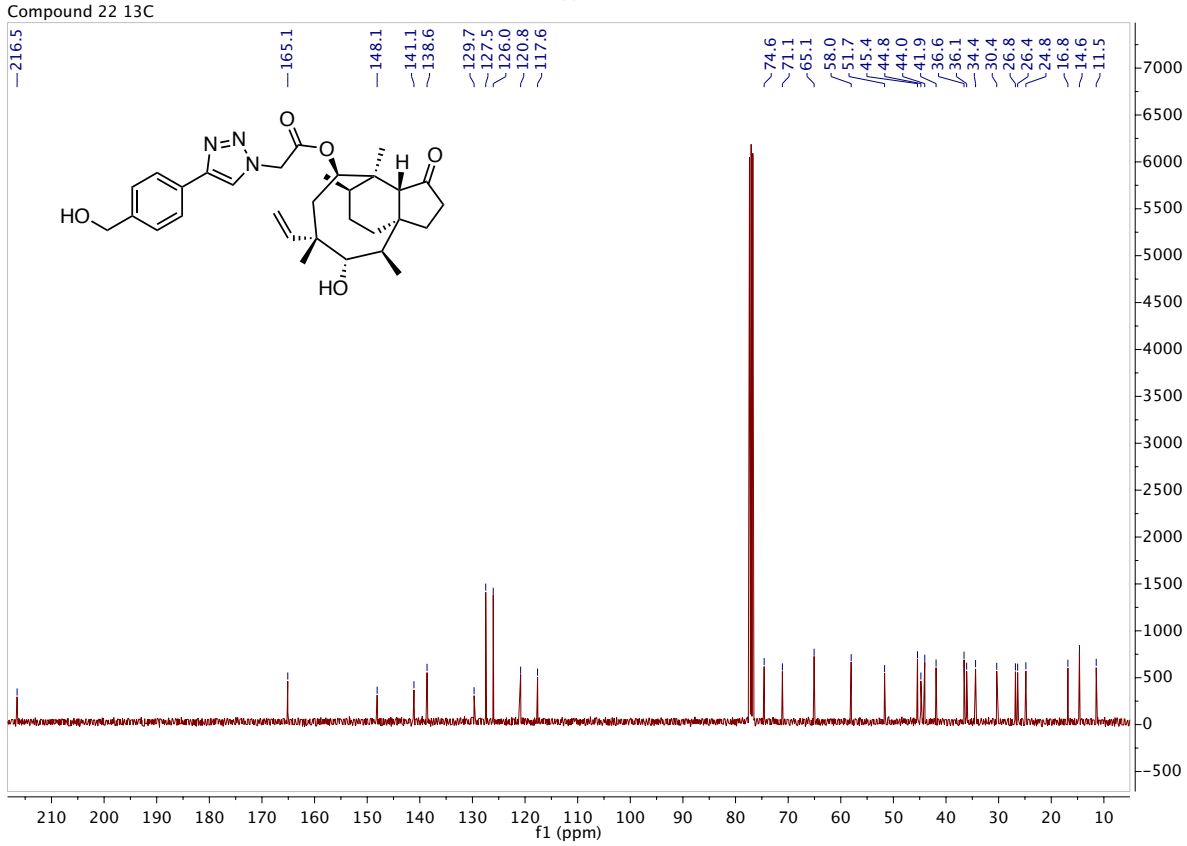


Compound 22

Compound 22 H

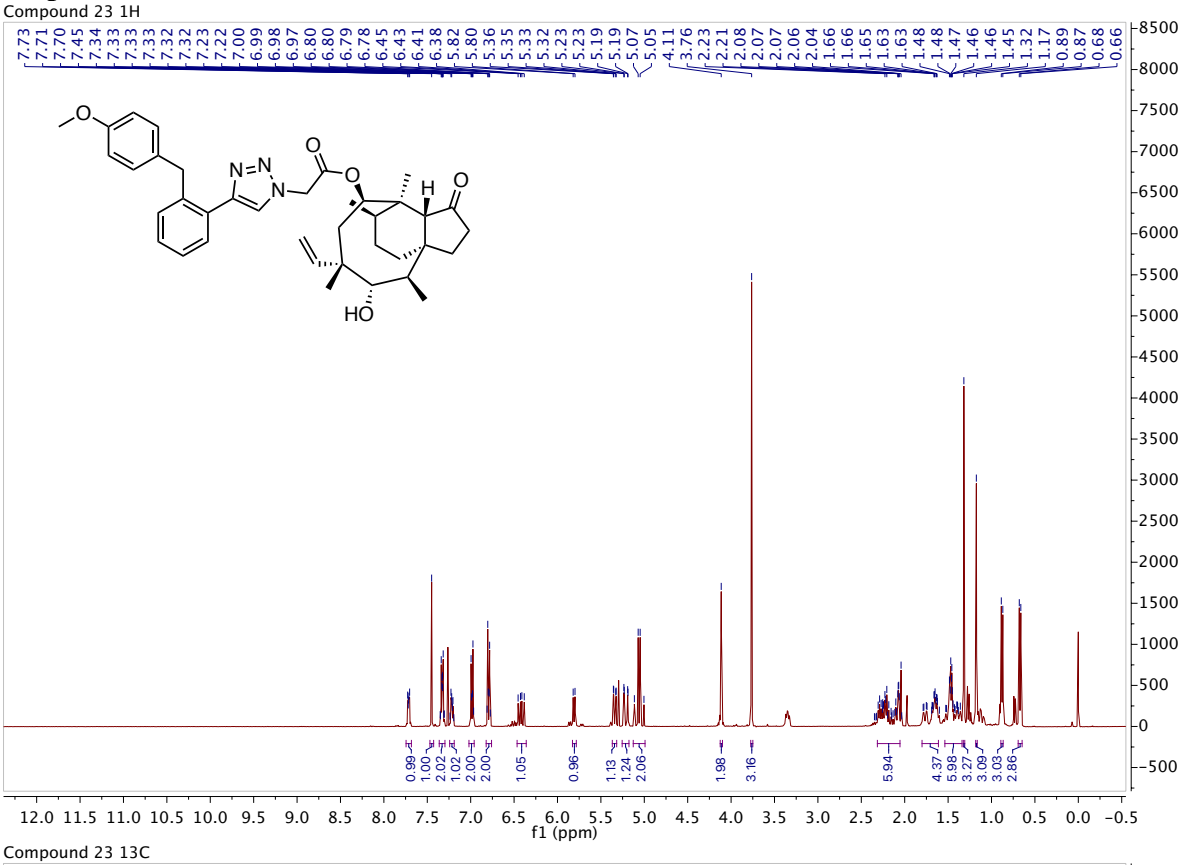


Compound 22 13C

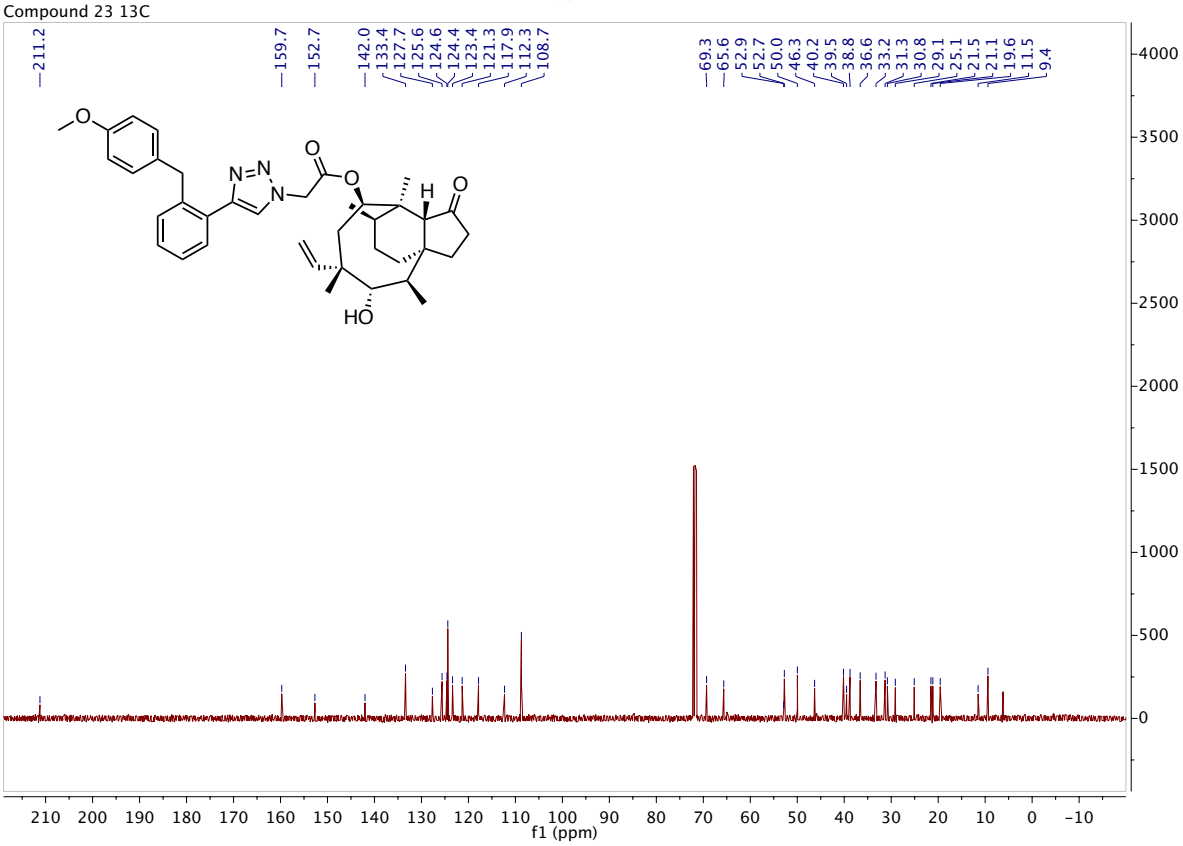


Compound 23

Compound 23 1H

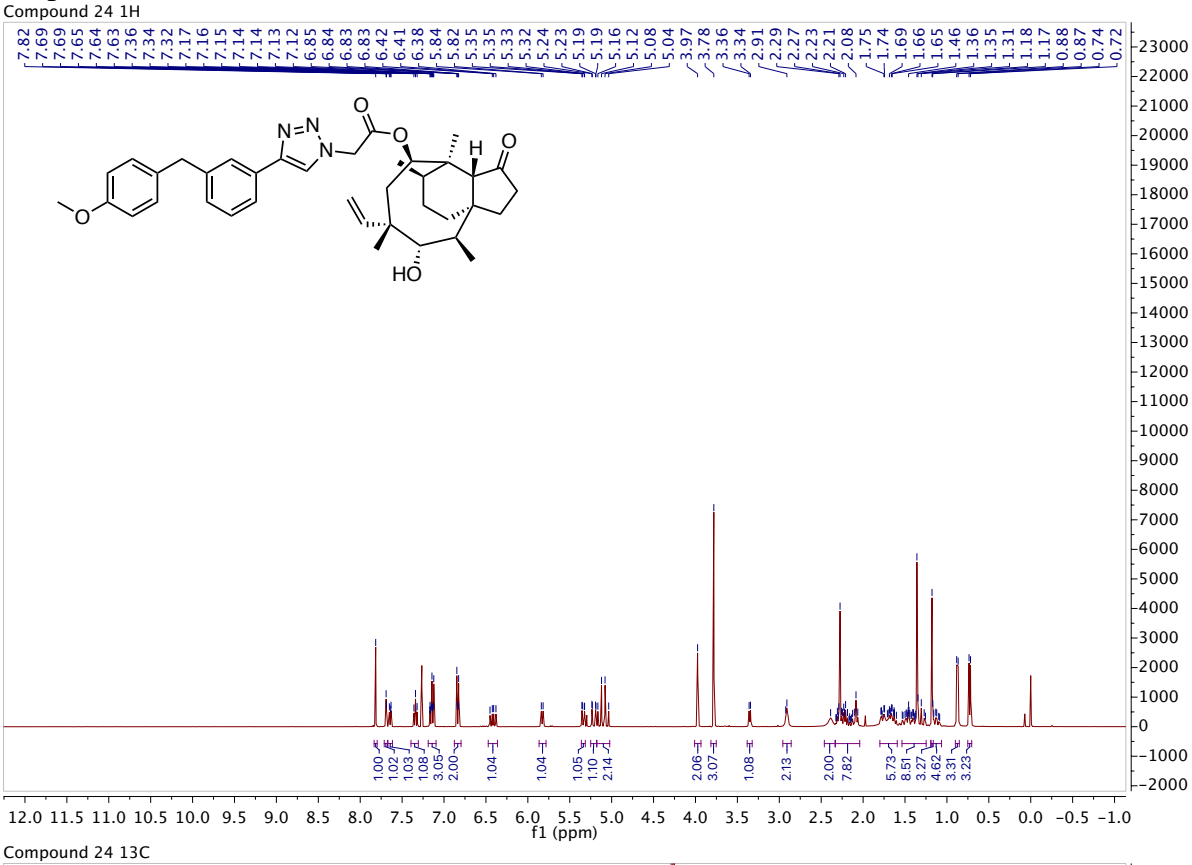


Compound 23 13C

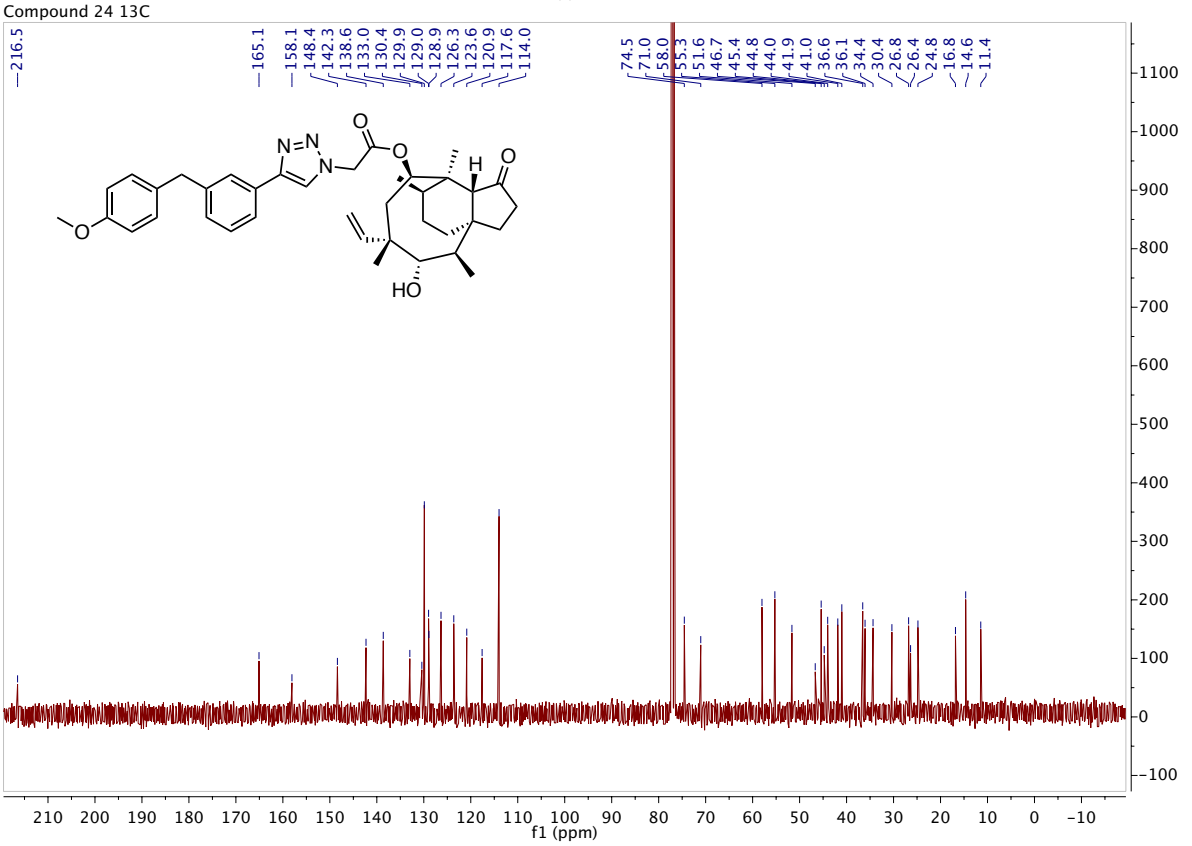


Compound 24

Compound 24 1H

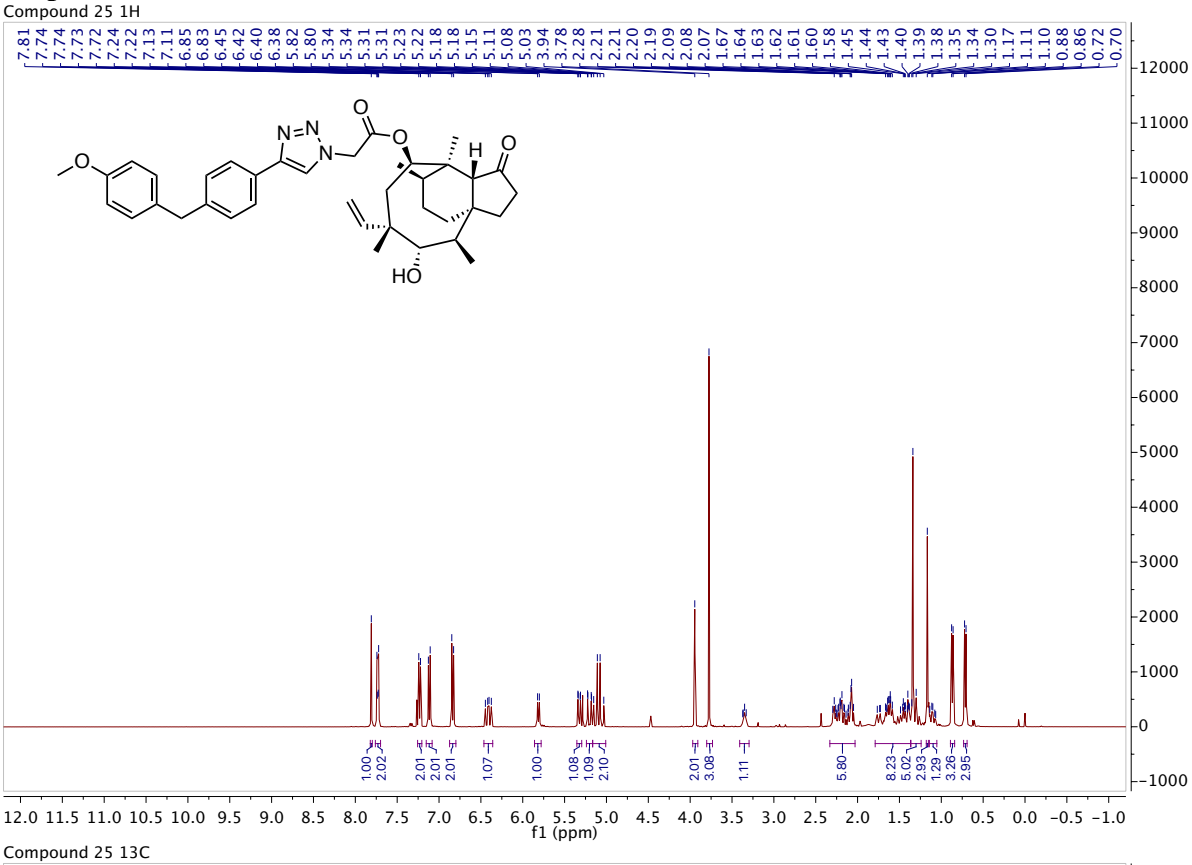


Compound 24 13C

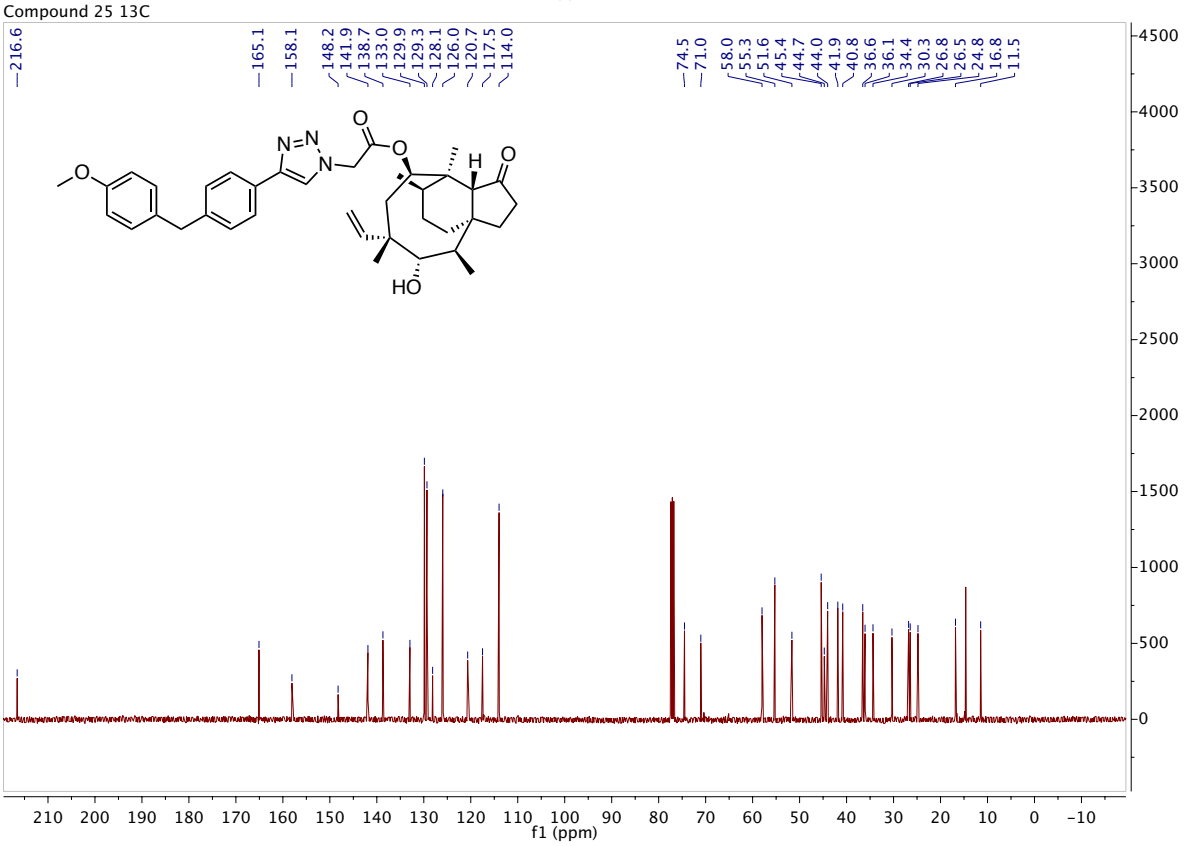


Compound 25

Compound 25 1H

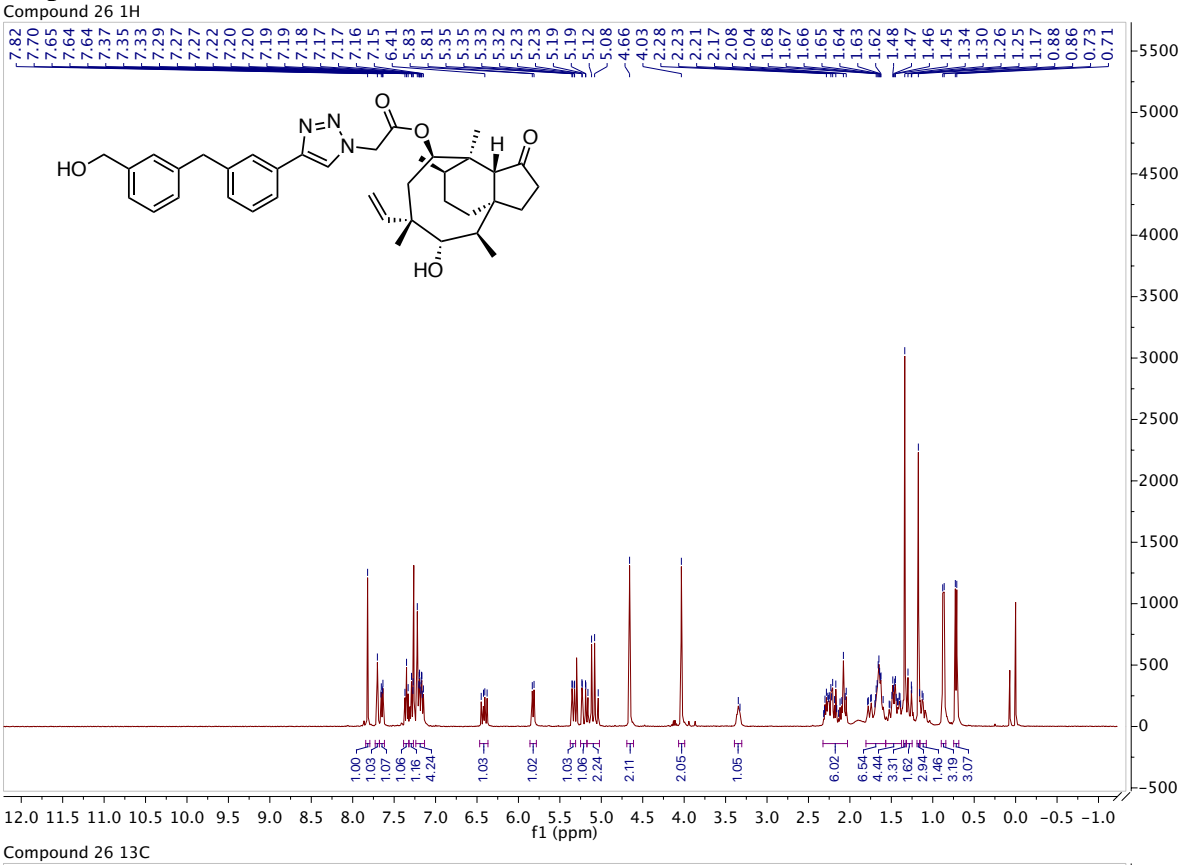


Compound 25 13C

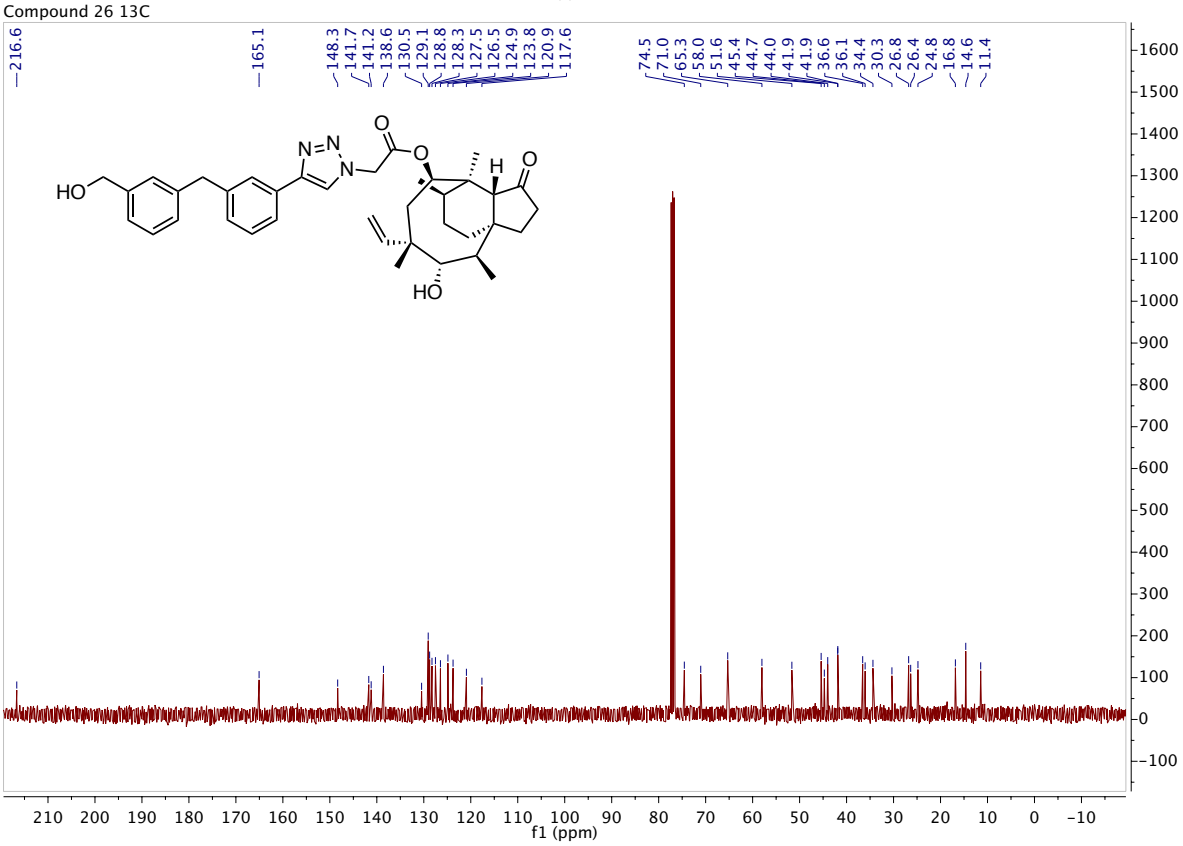


Compound 26

Compound 26 1H

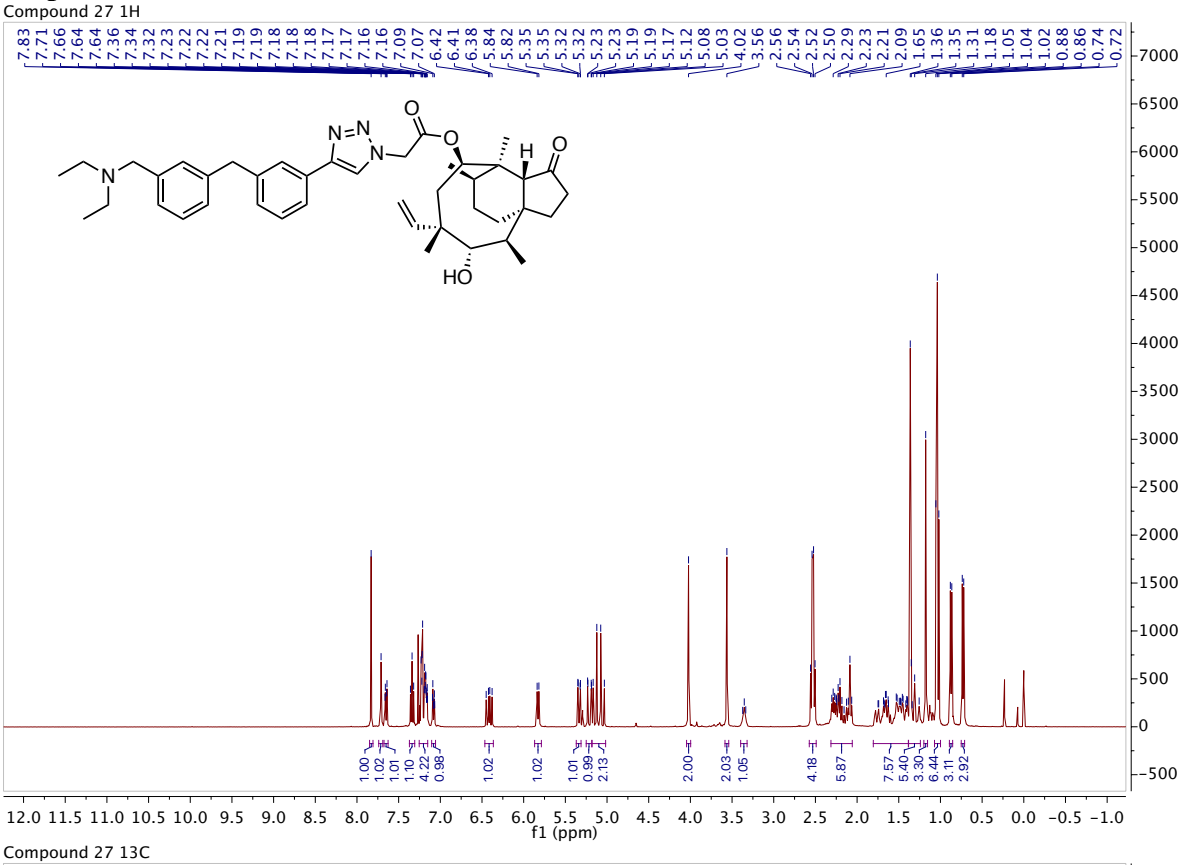


Compound 26 13C

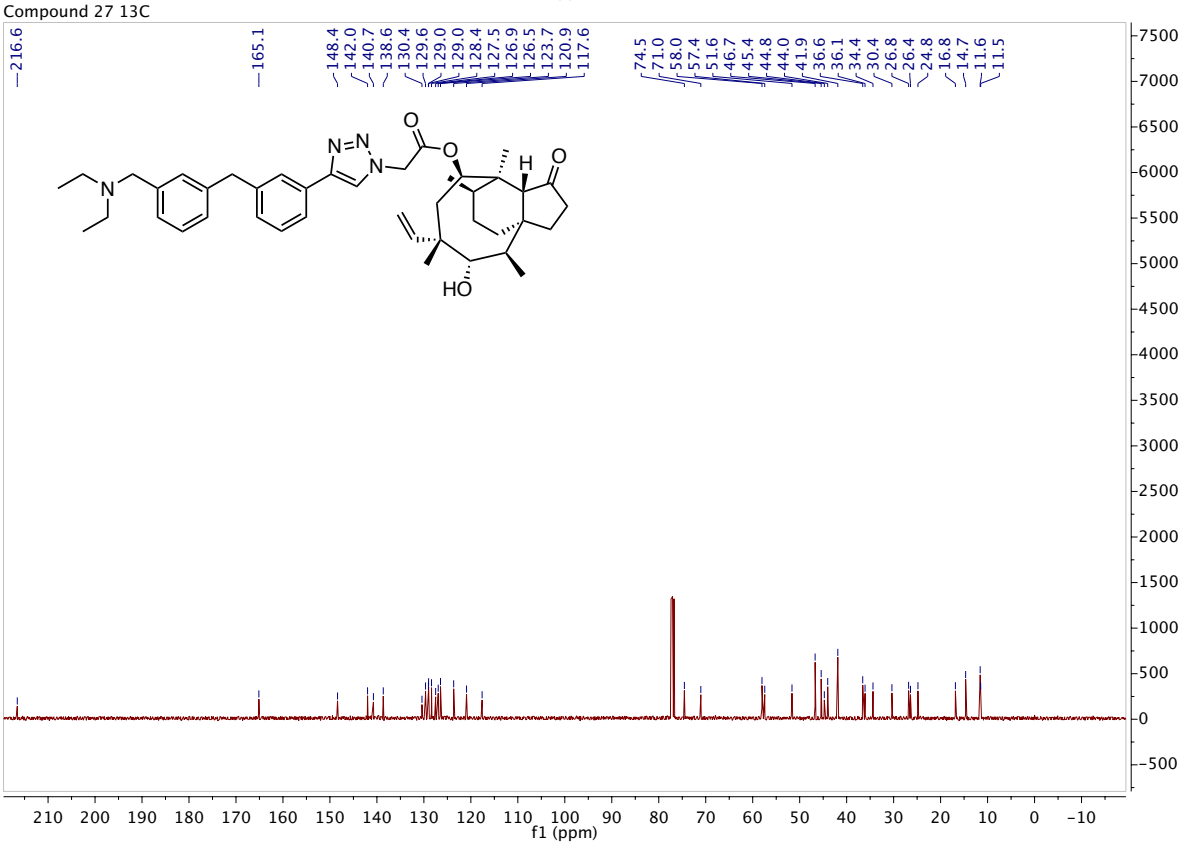


Compound 27

Compound 27 1H

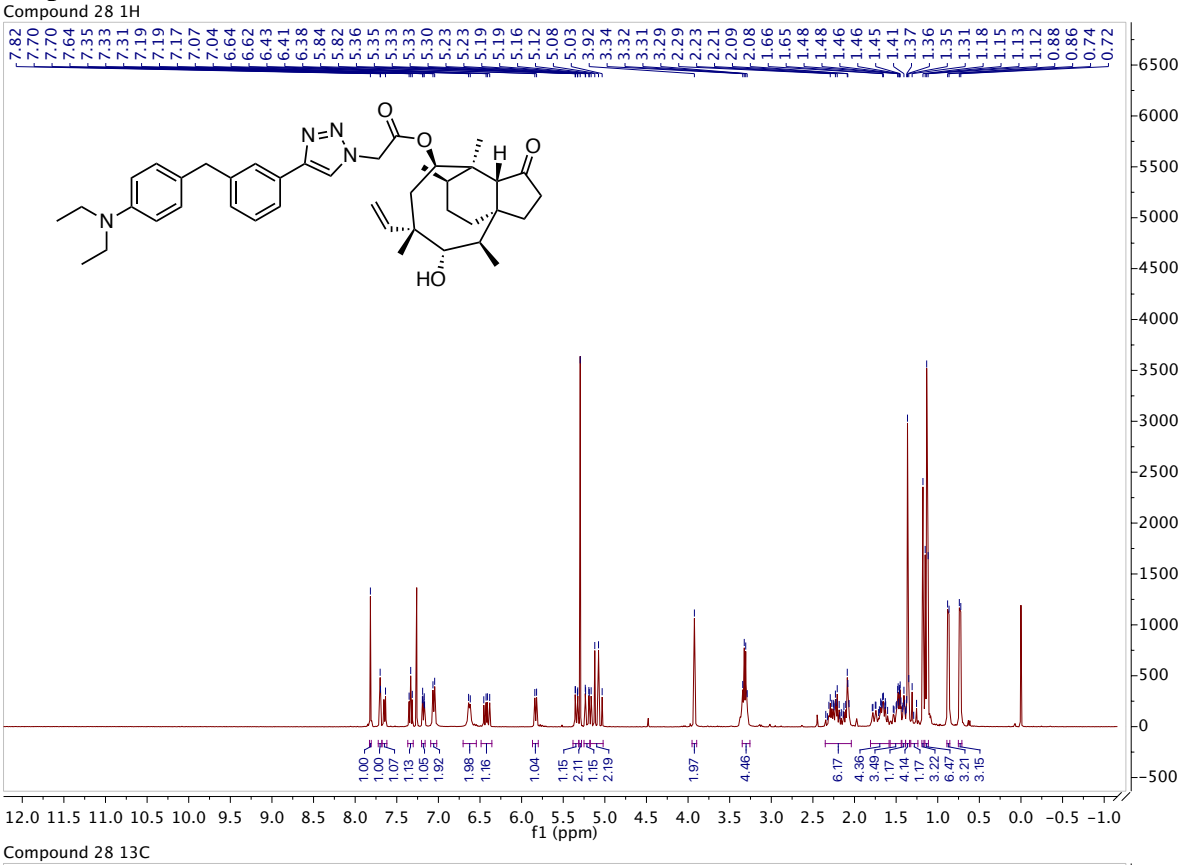


Compound 27 13C

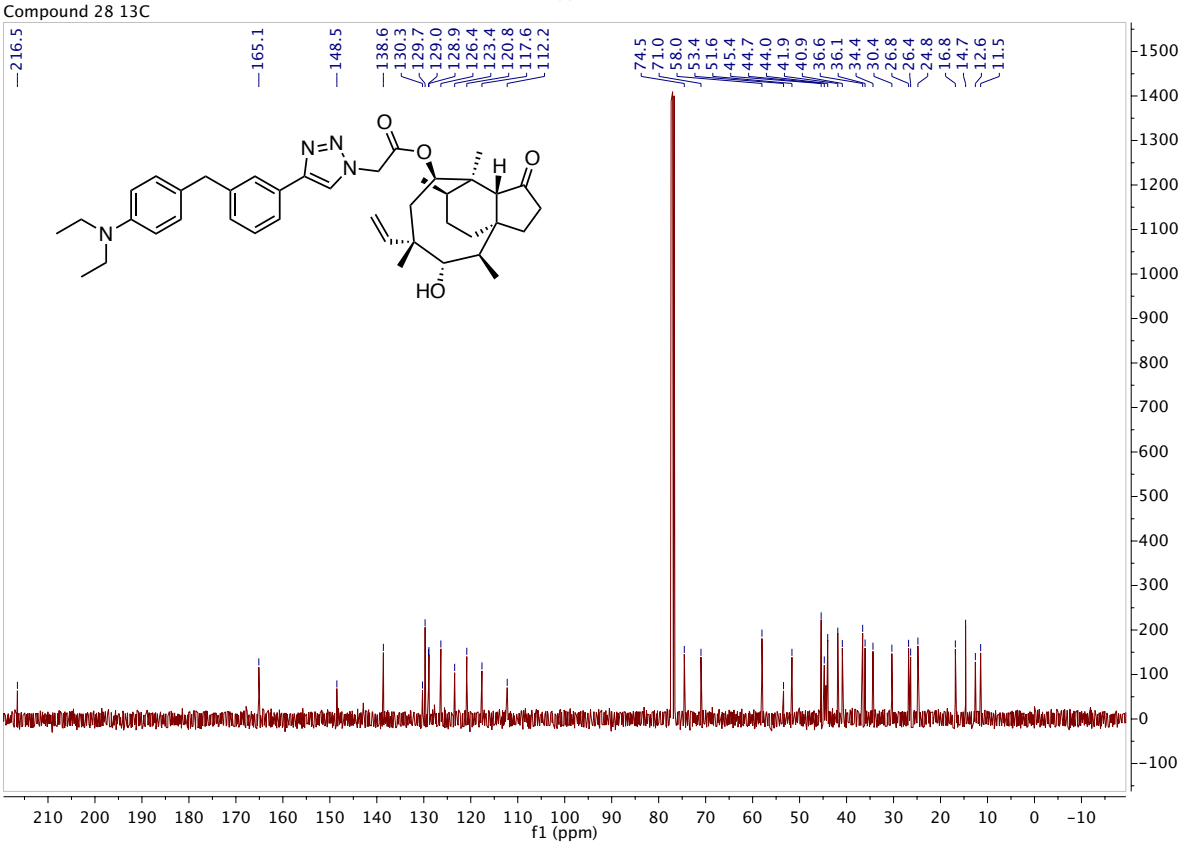


Compound 28

Compound 28 1H

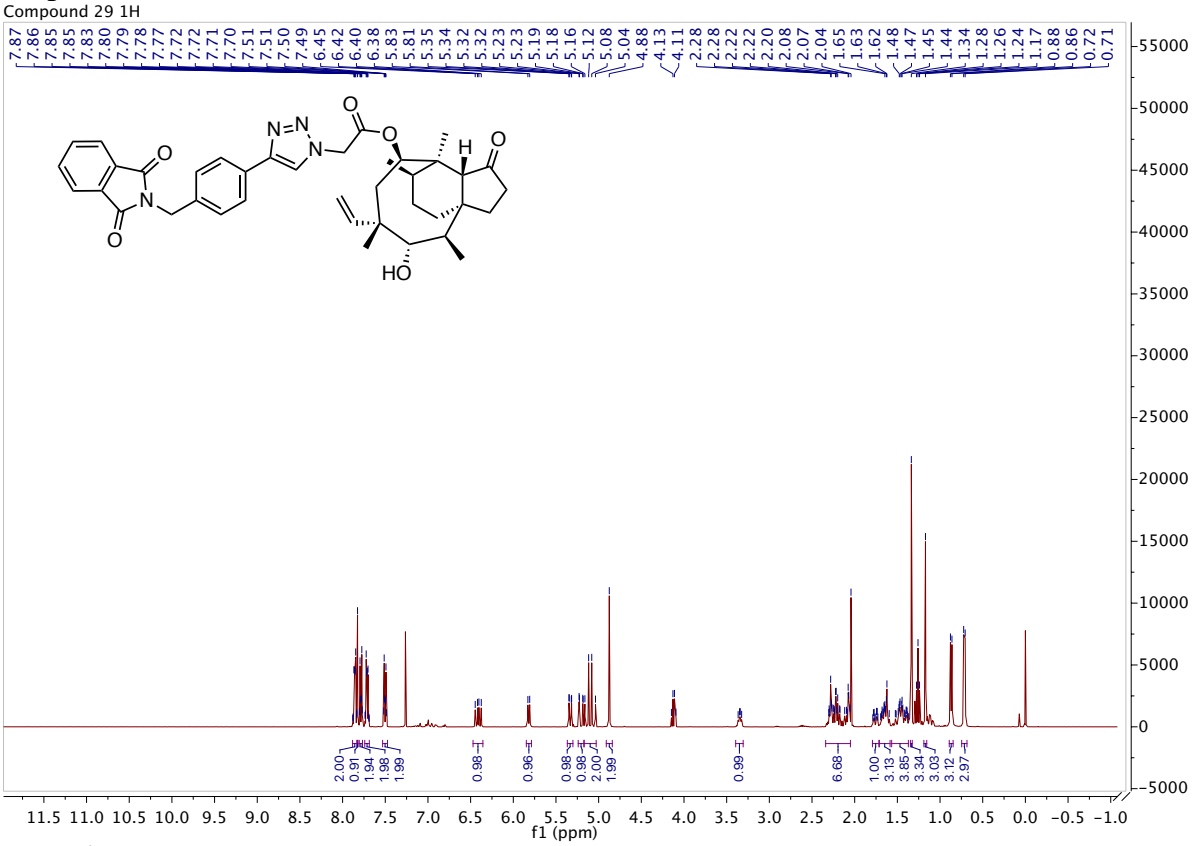


Compound 28 13C

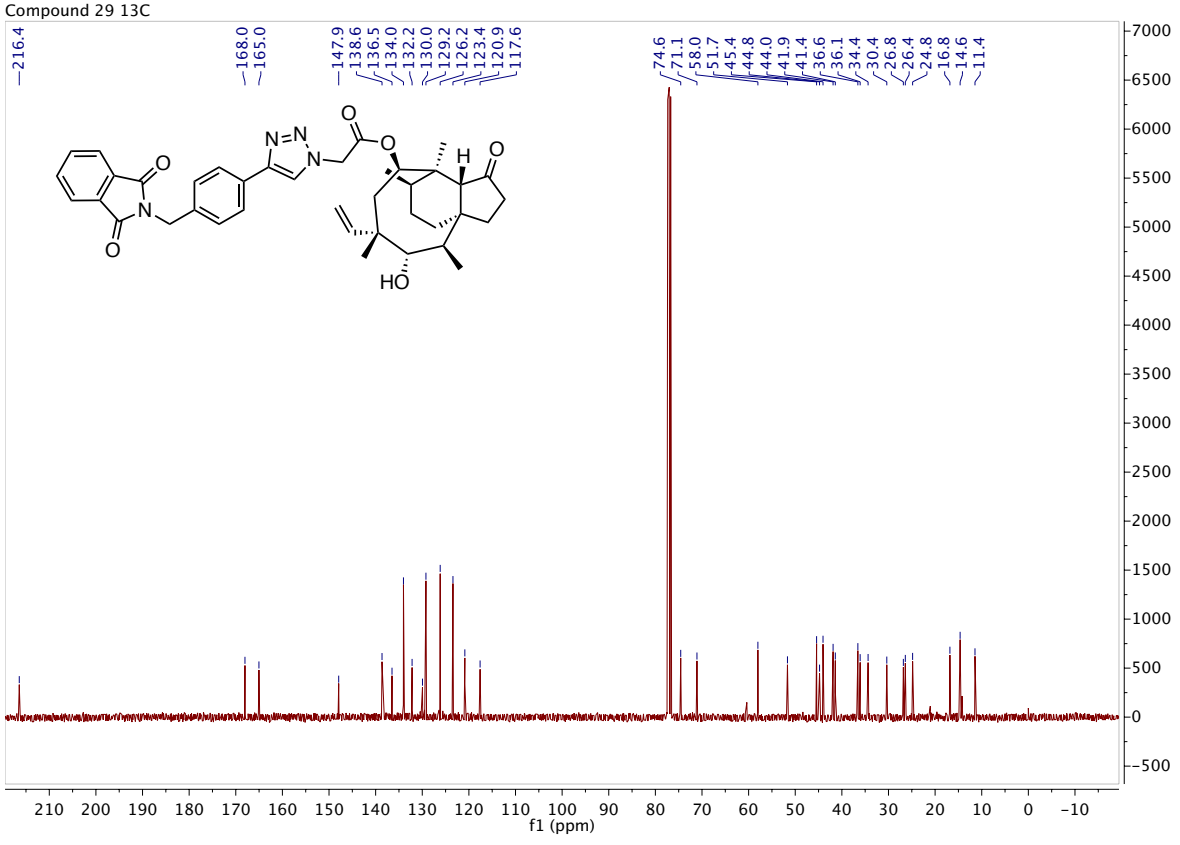


Compound 29

Compound 29 1H

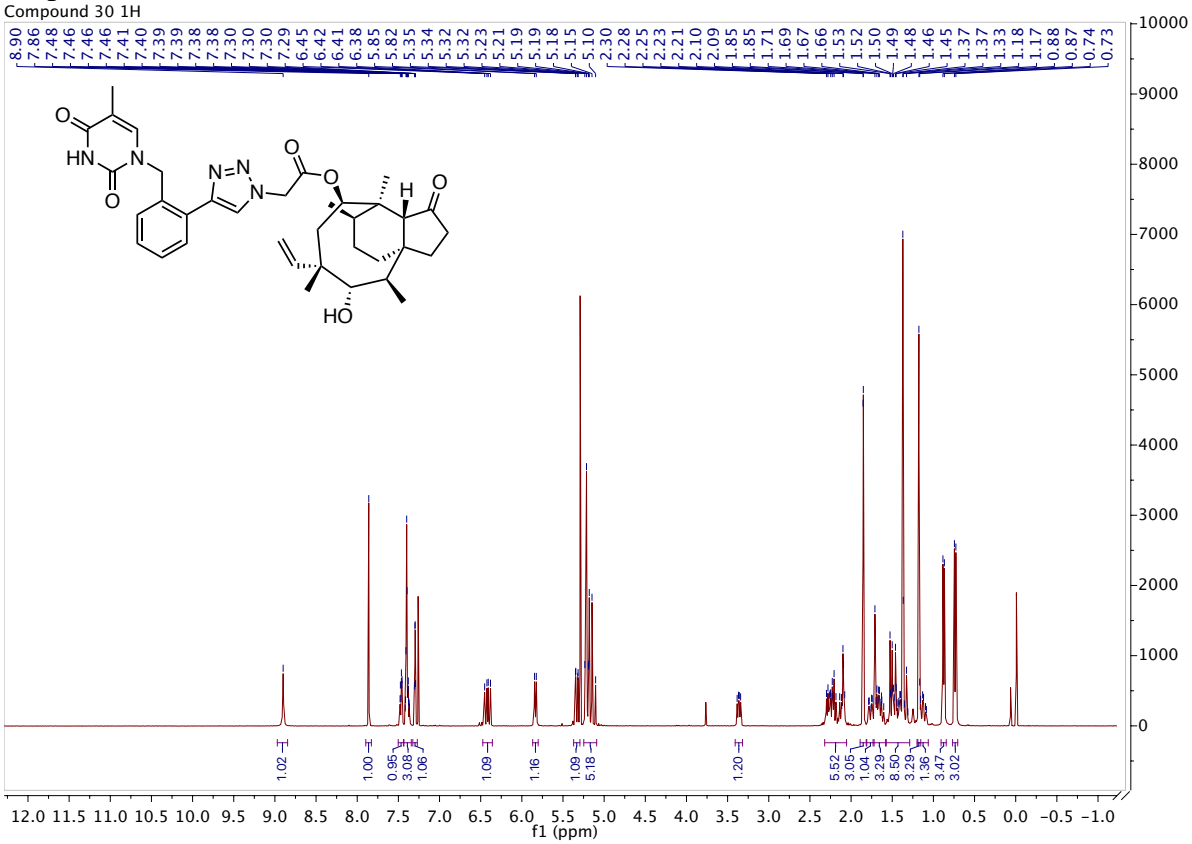


Compound 29 13C

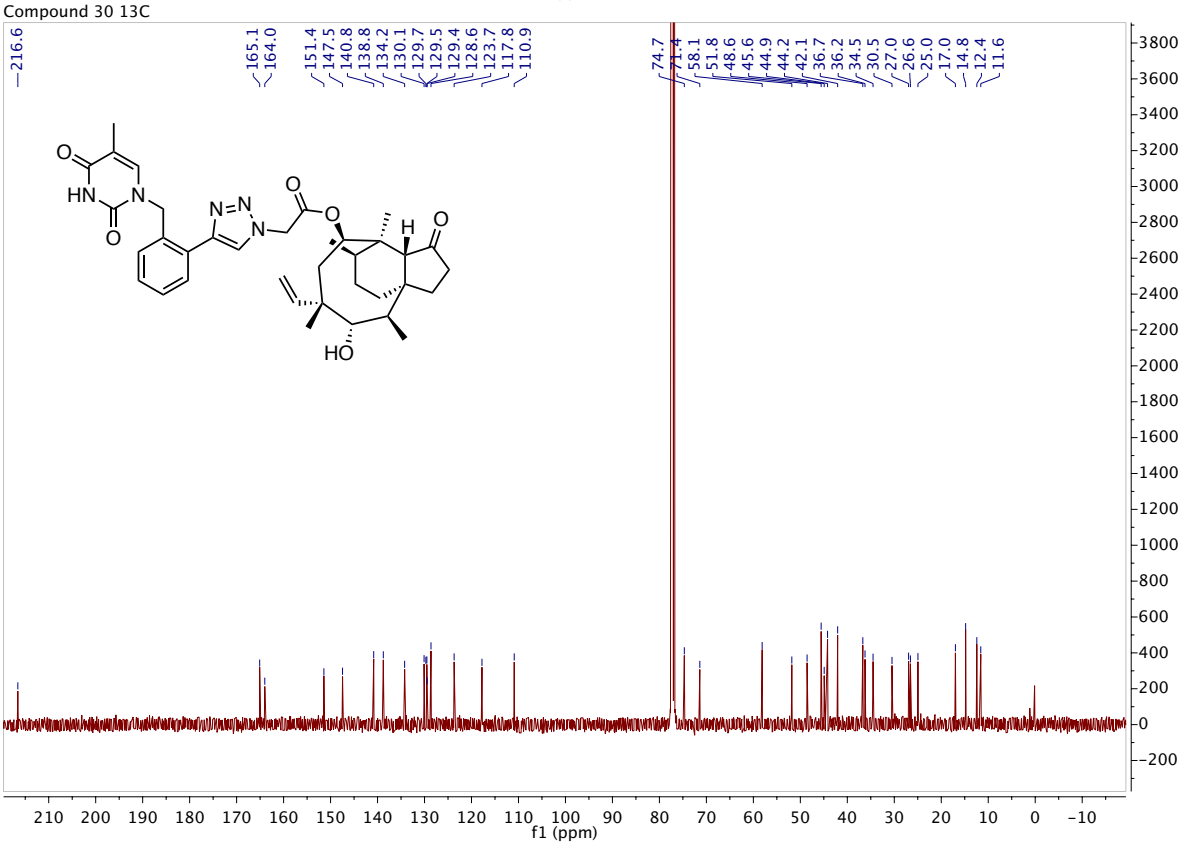


Compound 30

Compound 30 1H

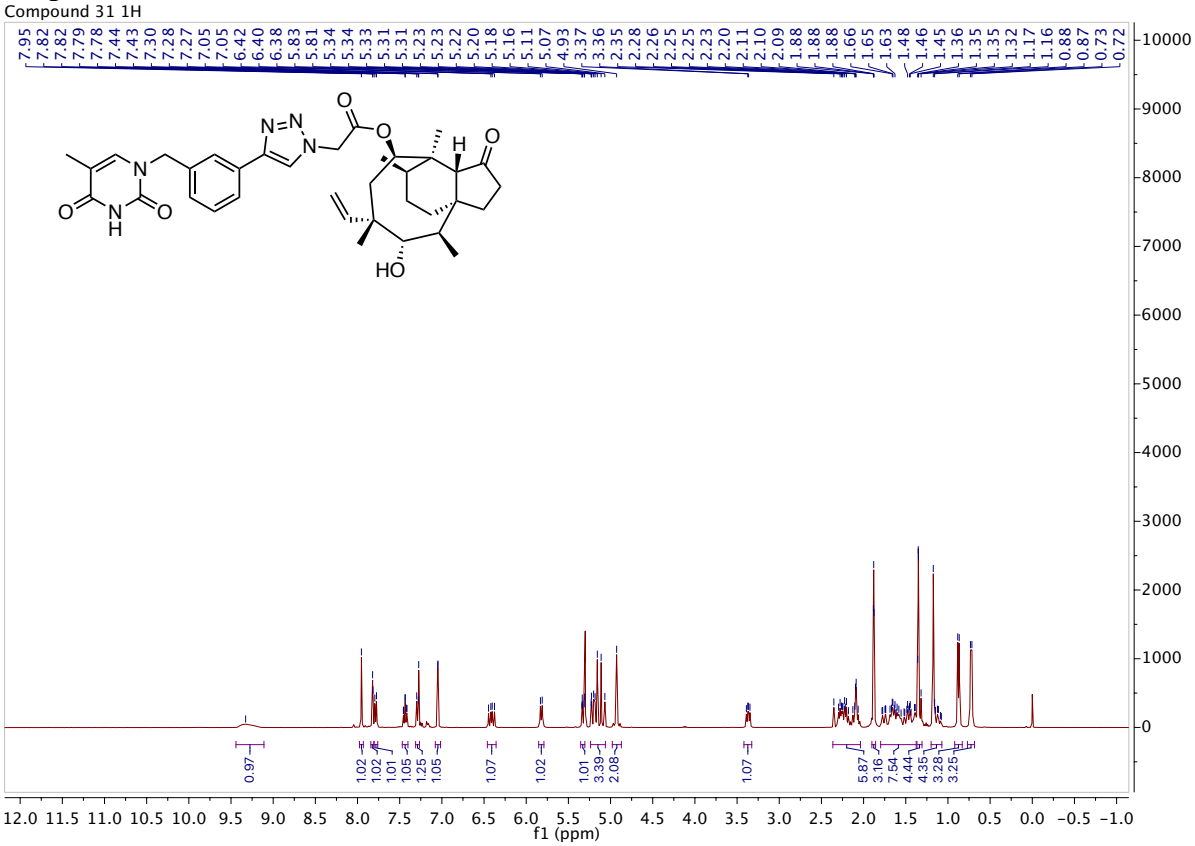


Compound 30 13C

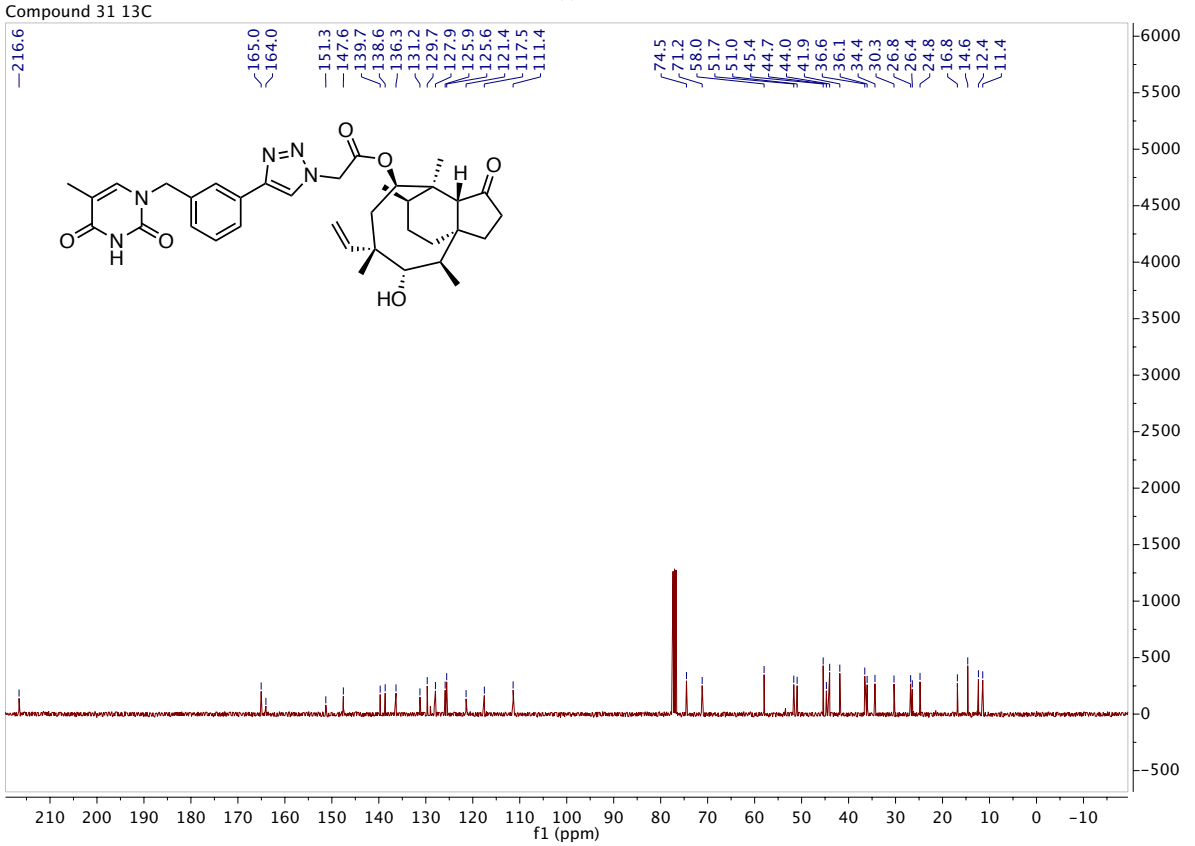


Compound 31

Compound 31 1H

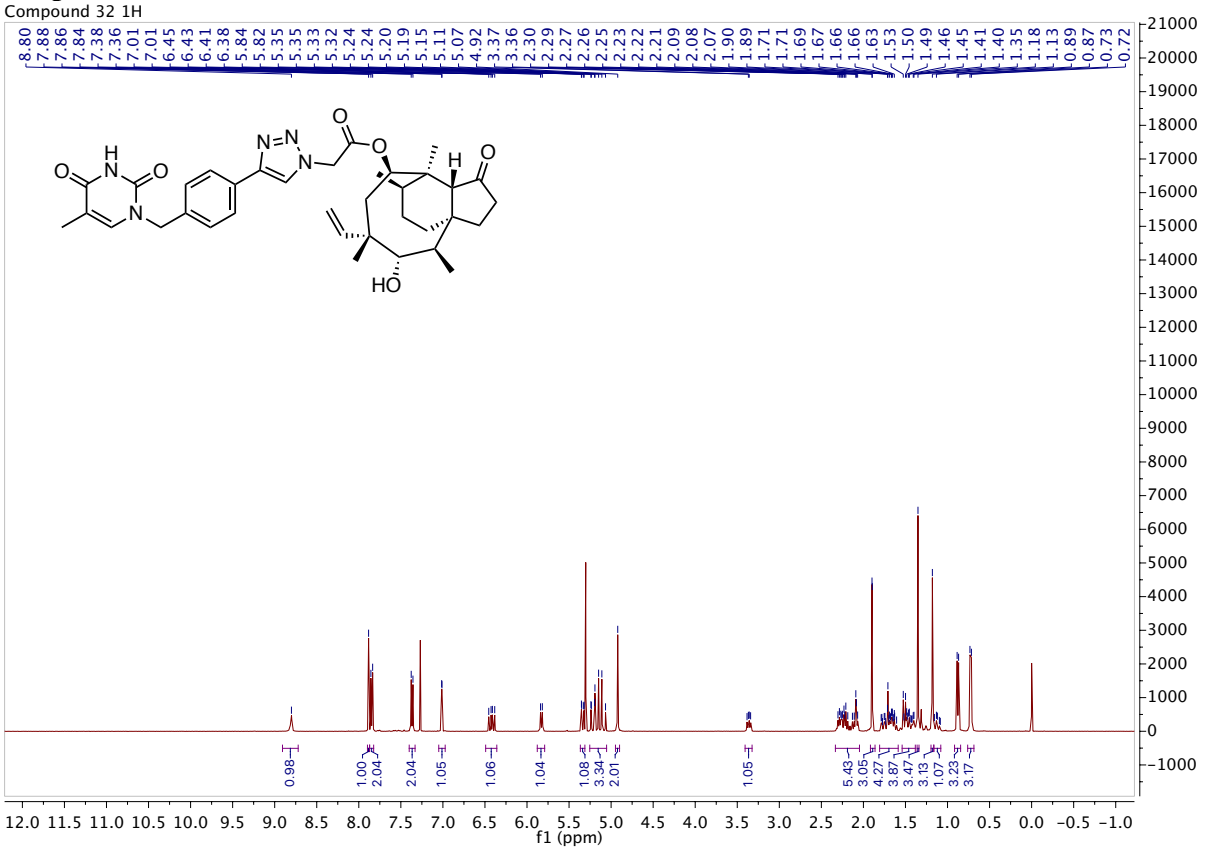


Compound 31 13C

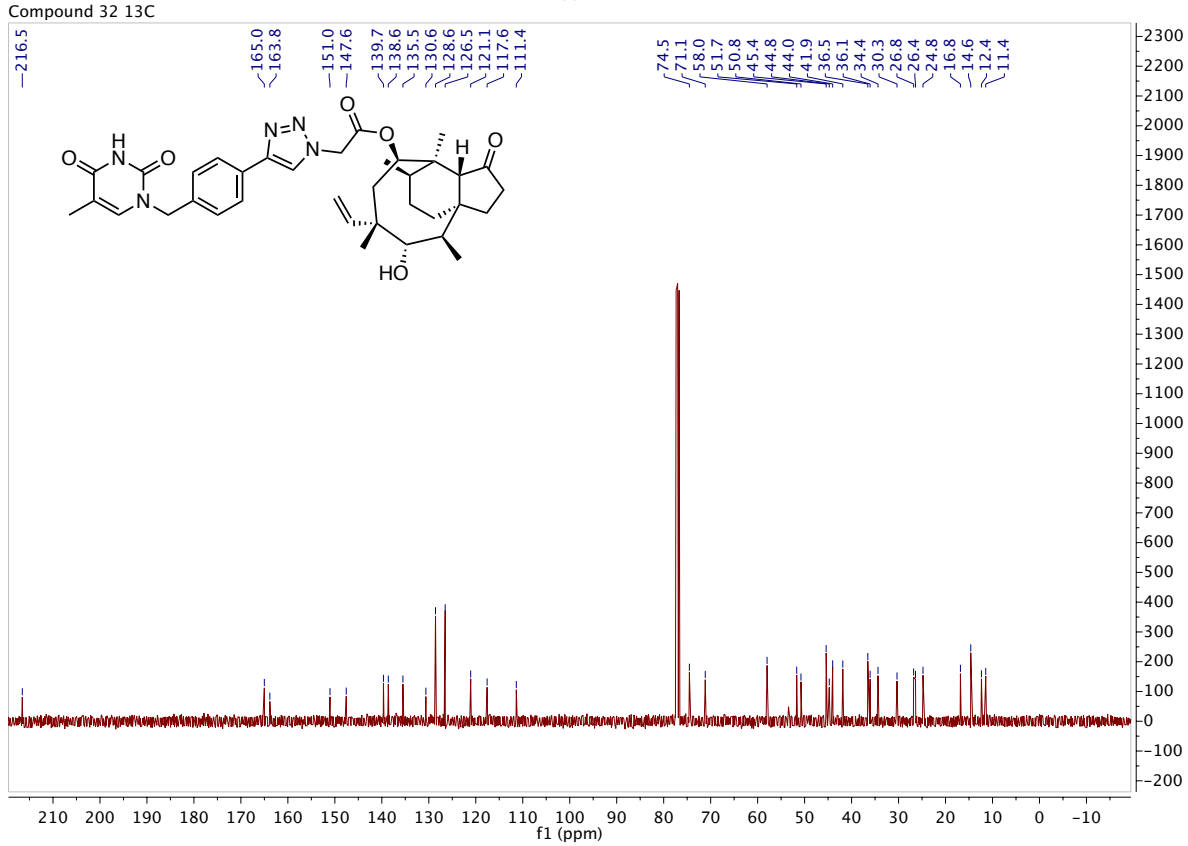


Compound 32

Compound 32 1H

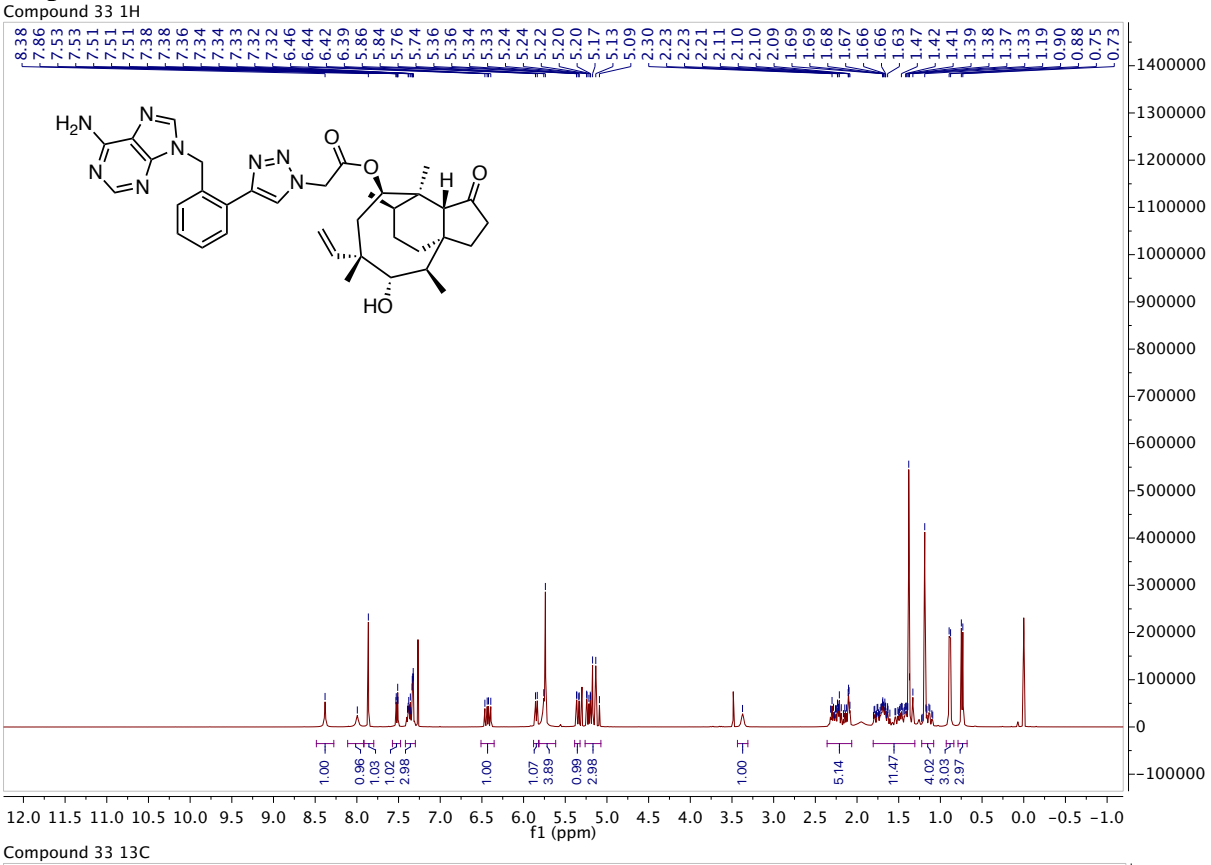


Compound 32 13C

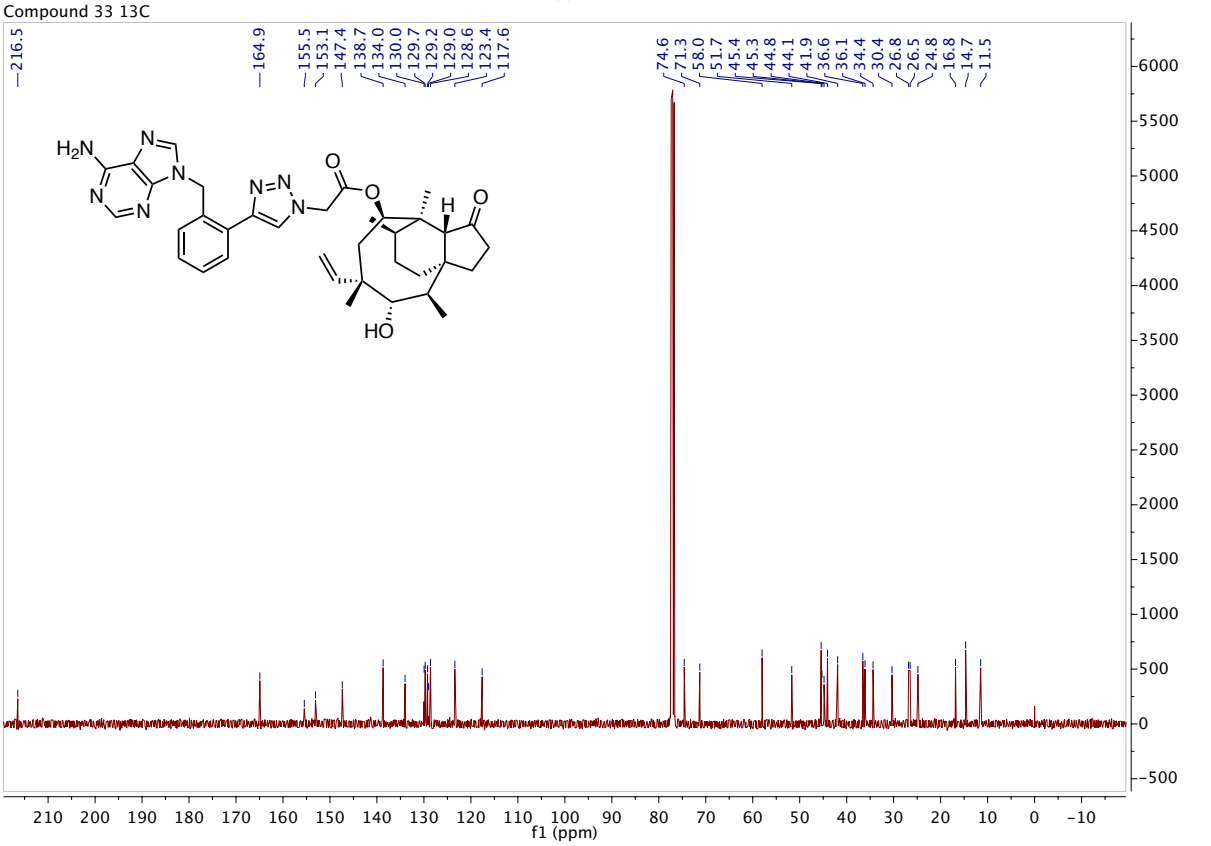


Compound 33

Compound 33 1H

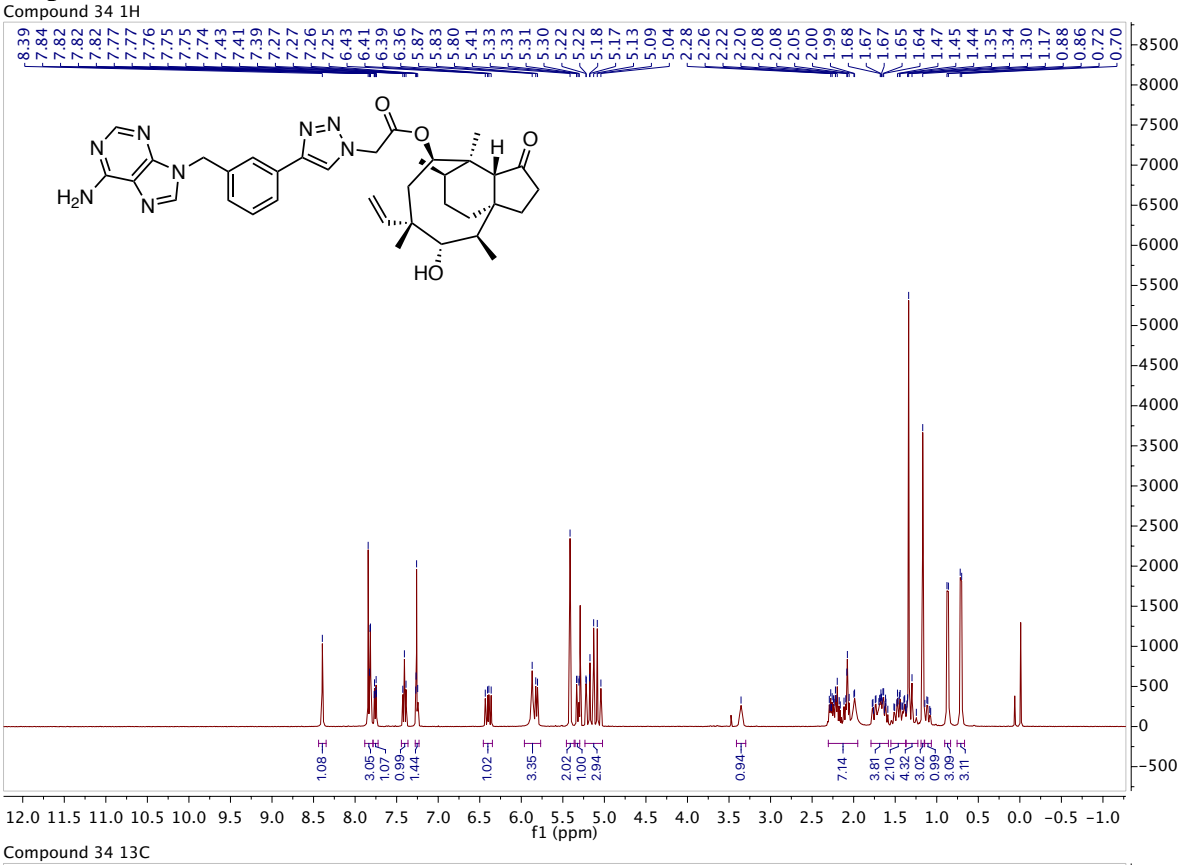


Compound 33 13C

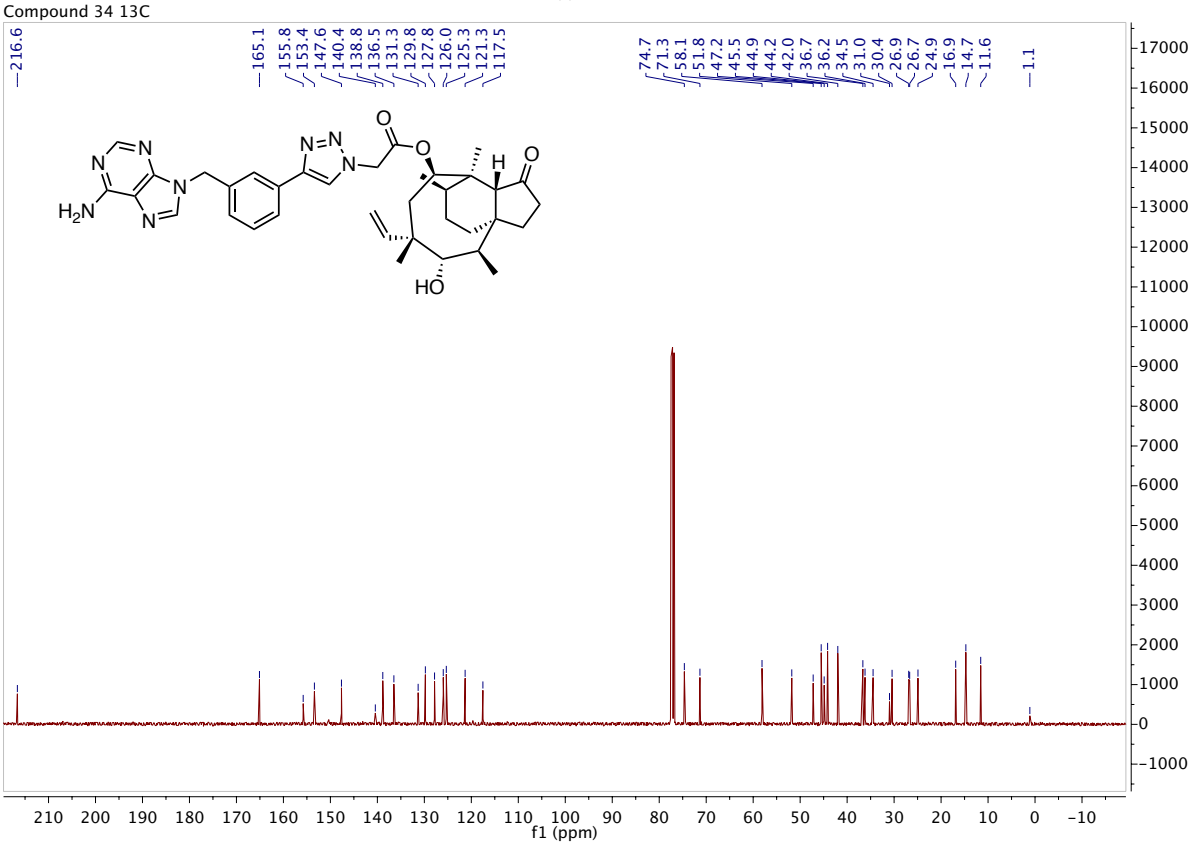


Compound 34

Compound 34 1H

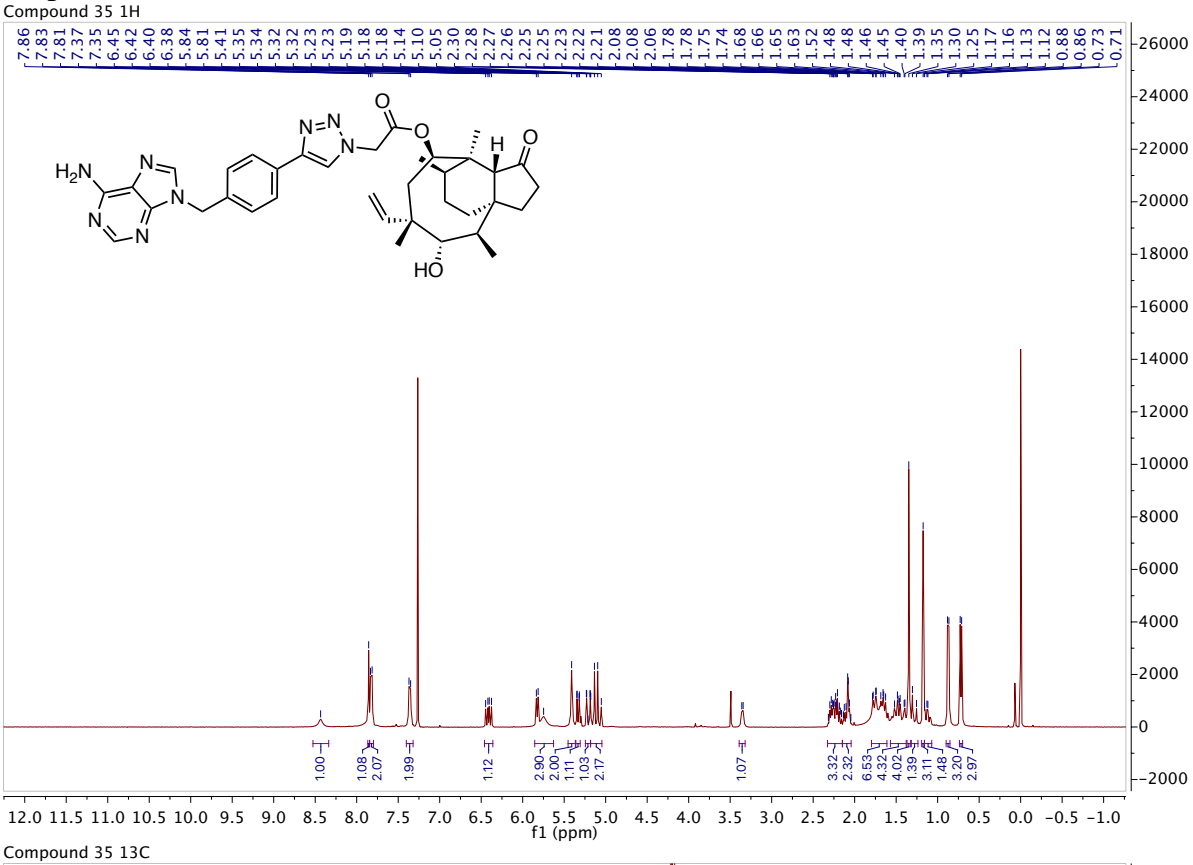


Compound 34 13C

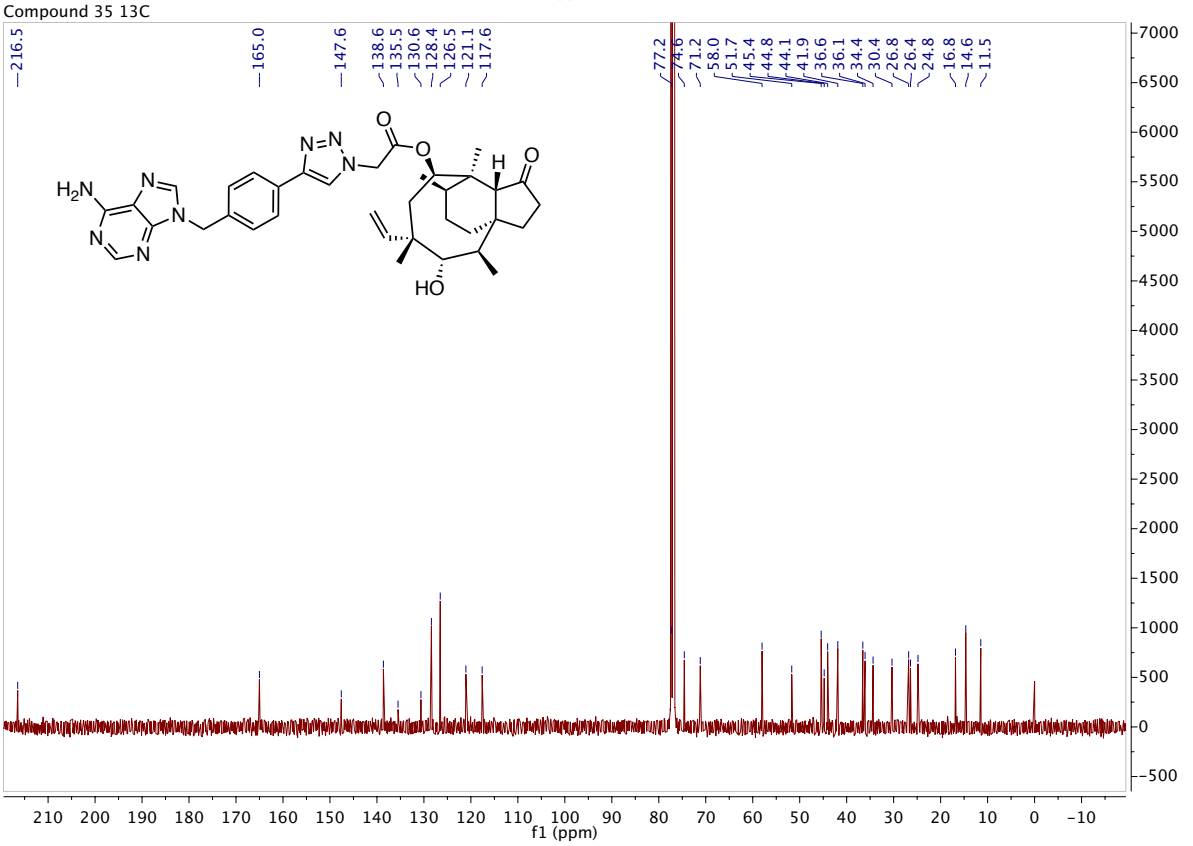


Compound 35

Compound 35 1H

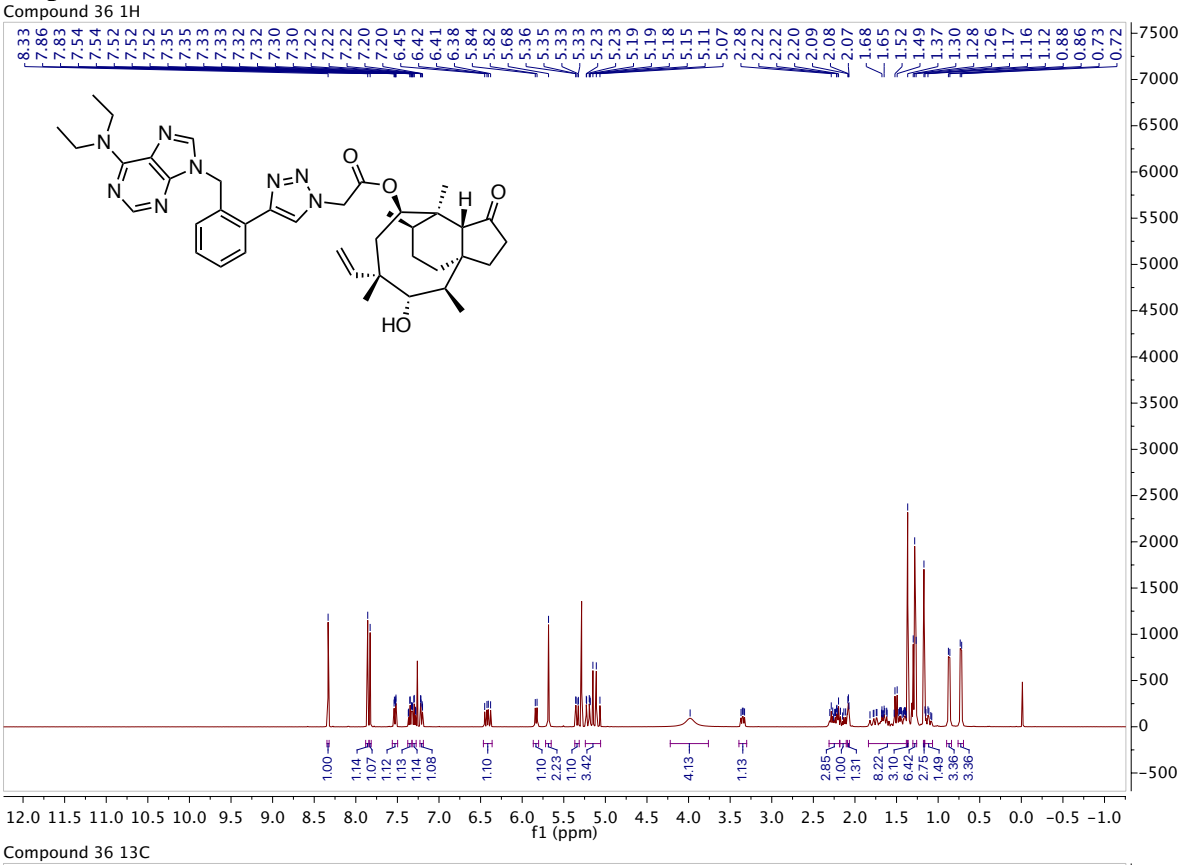


Compound 35 13C

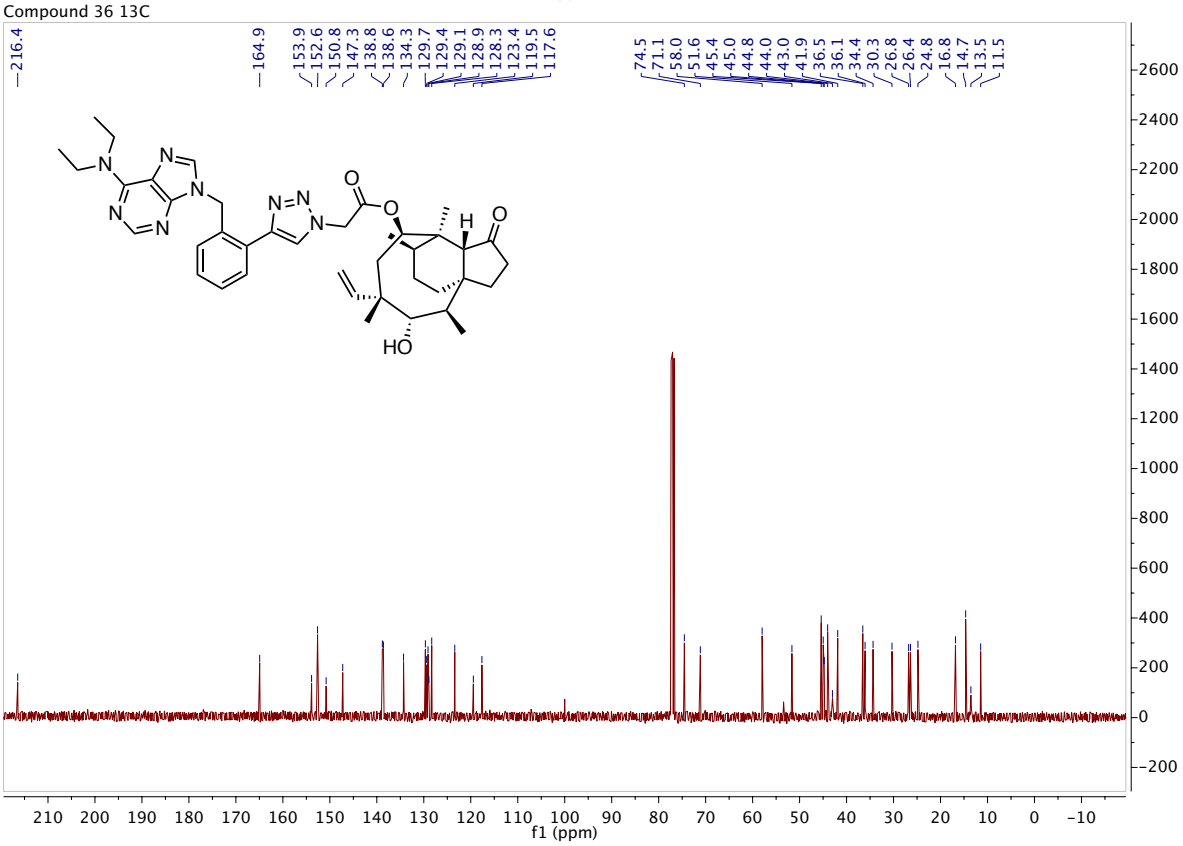


Compound 36

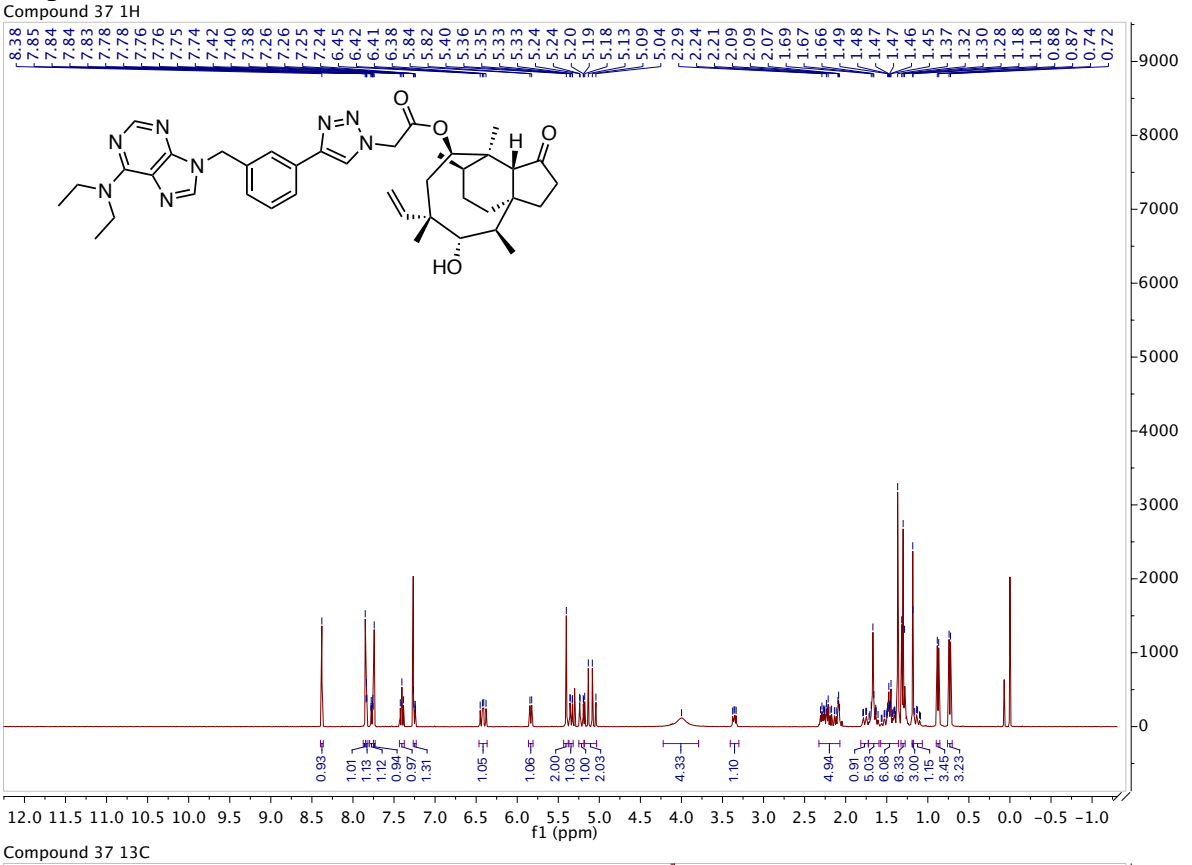
Compound 36 1H

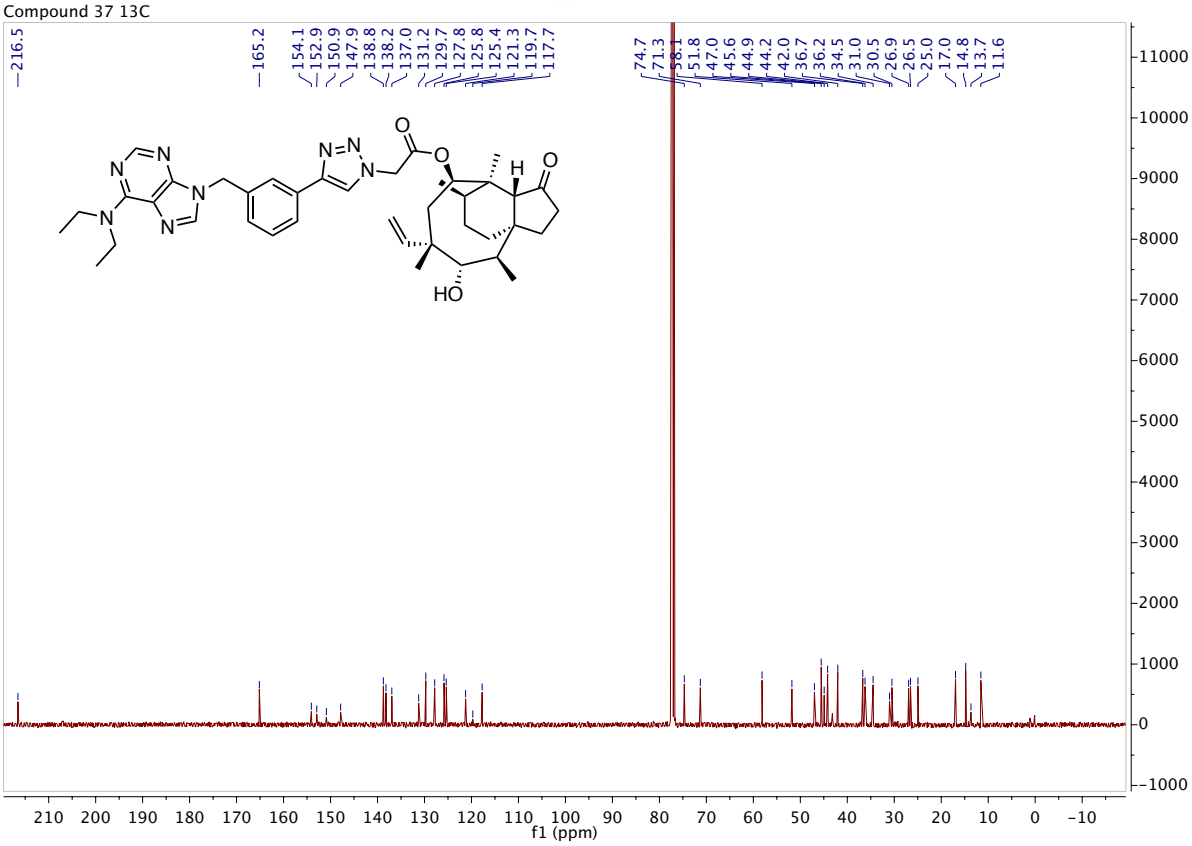


Compound 36 13C



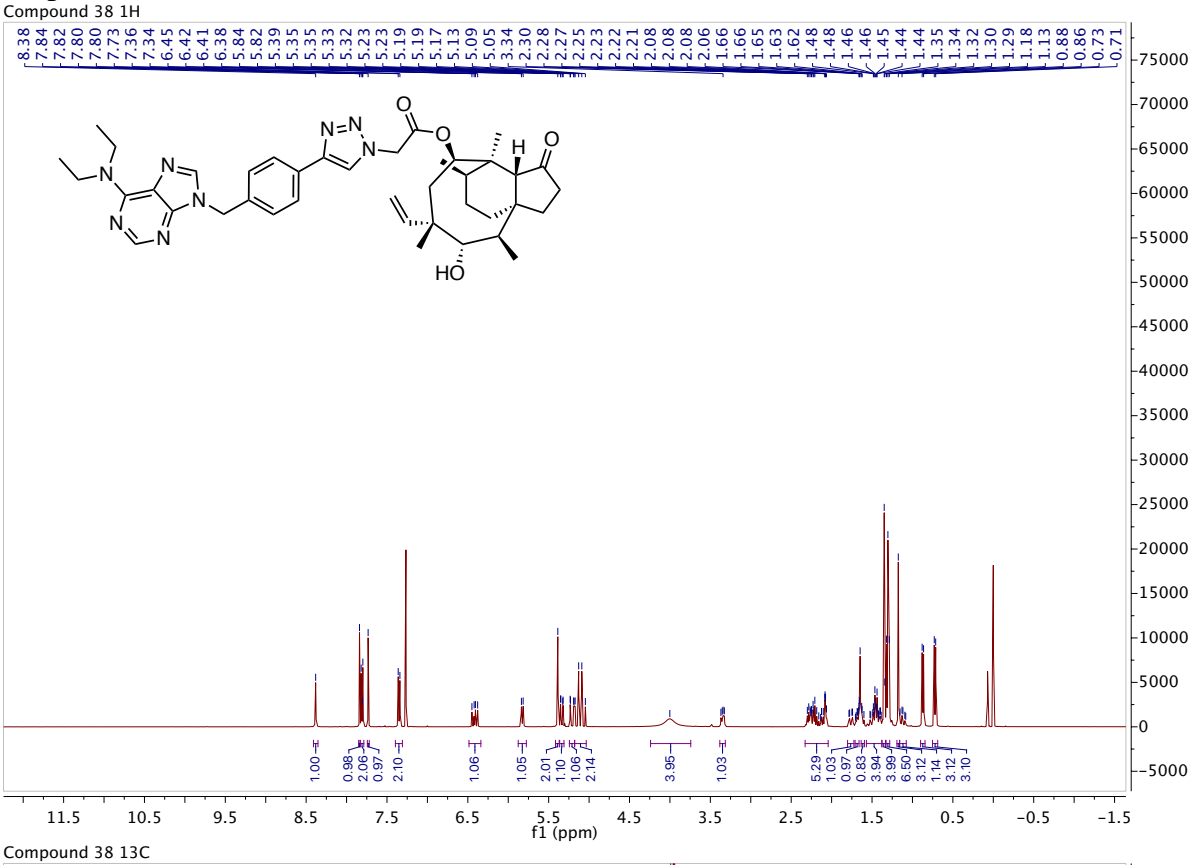
Compound 37



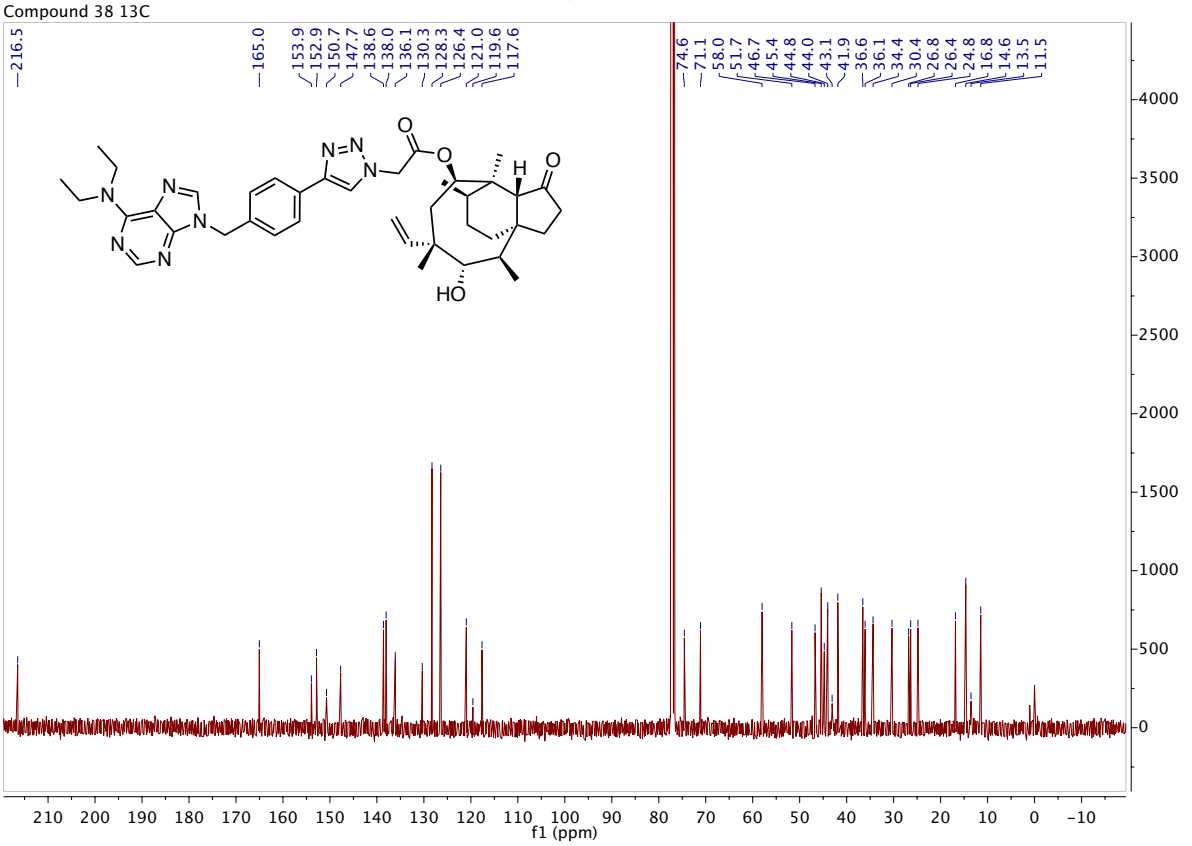


Compound 38

Compound 38 1H

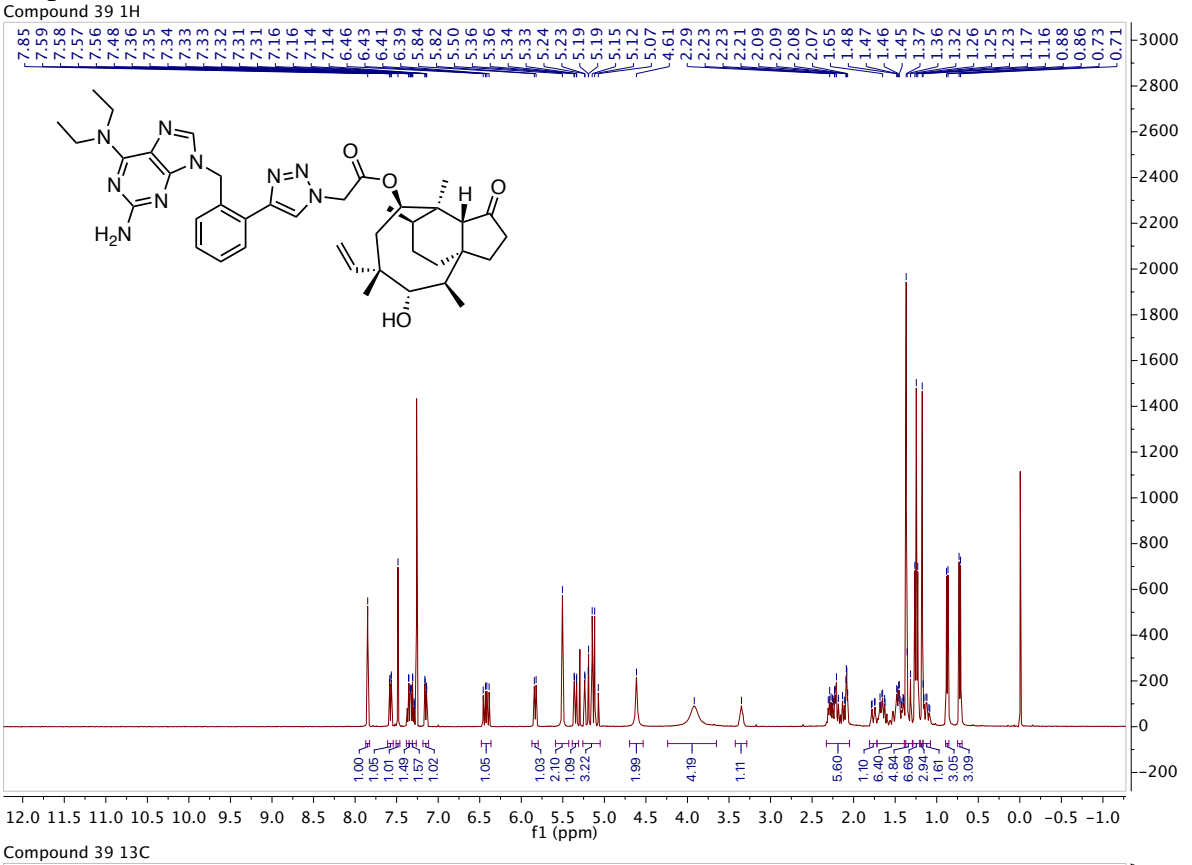


Compound 38 13C

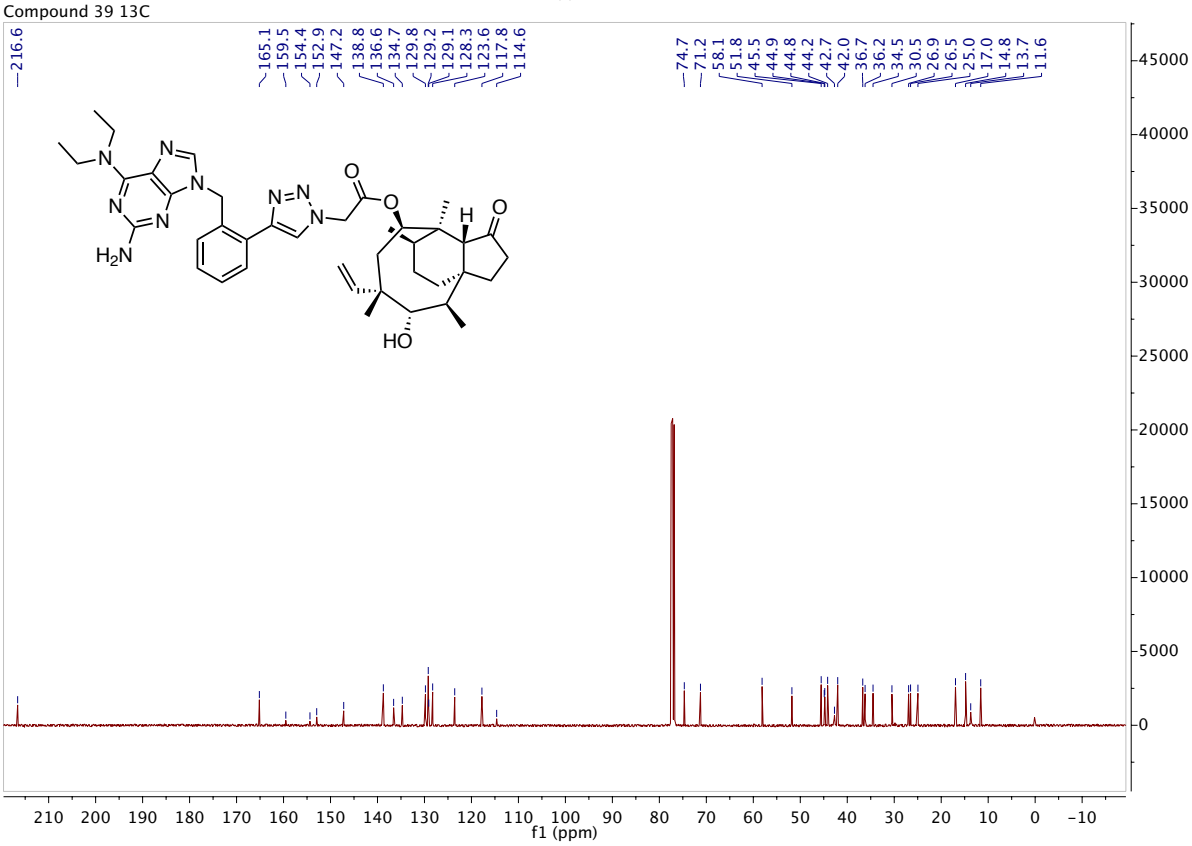


Compound 39

Compound 39 1H

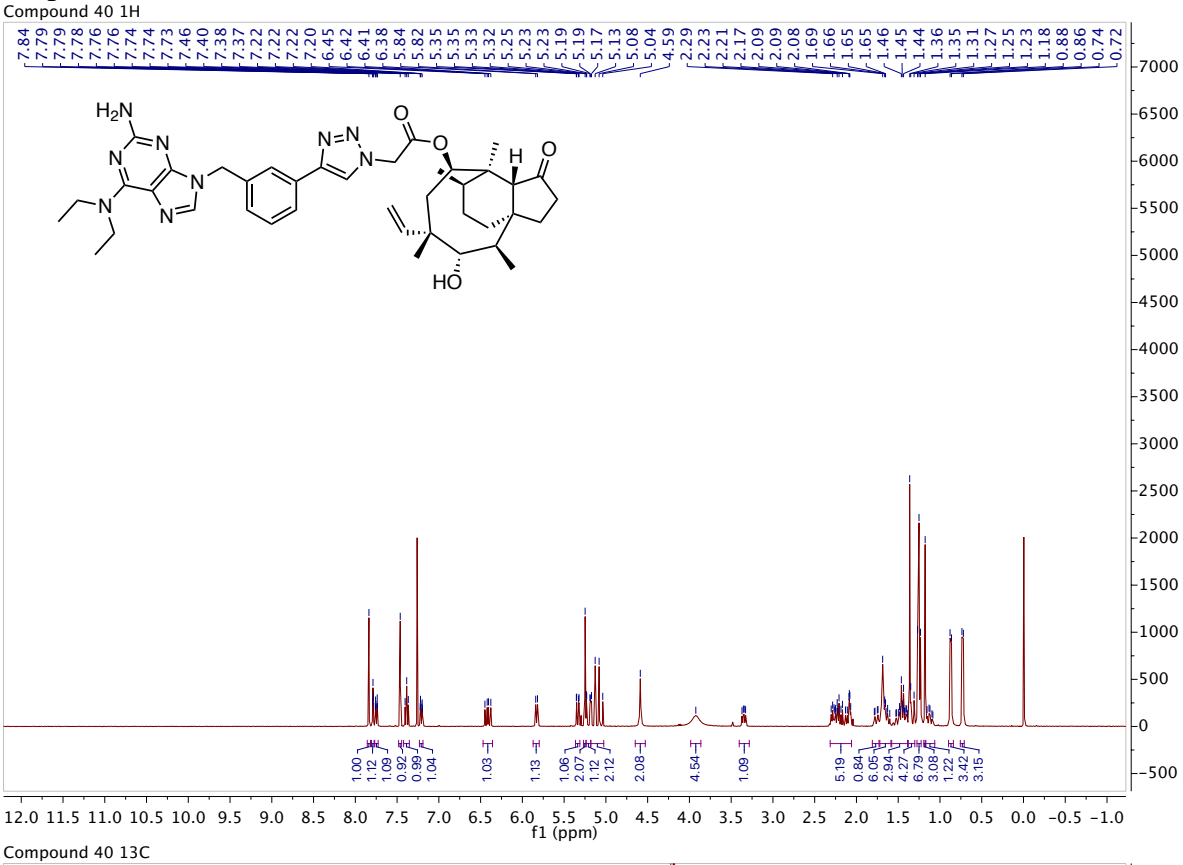


Compound 39 13C

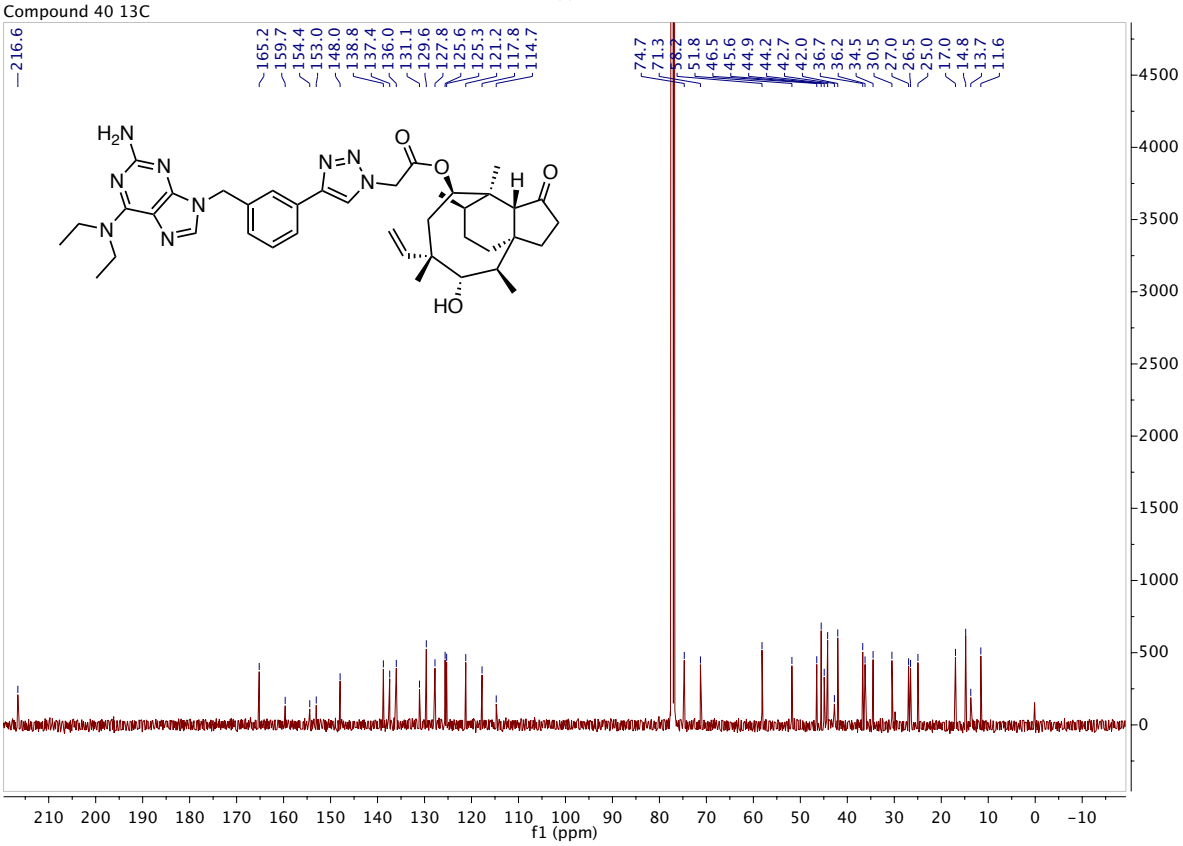


Compound 40

Compound 40 1H

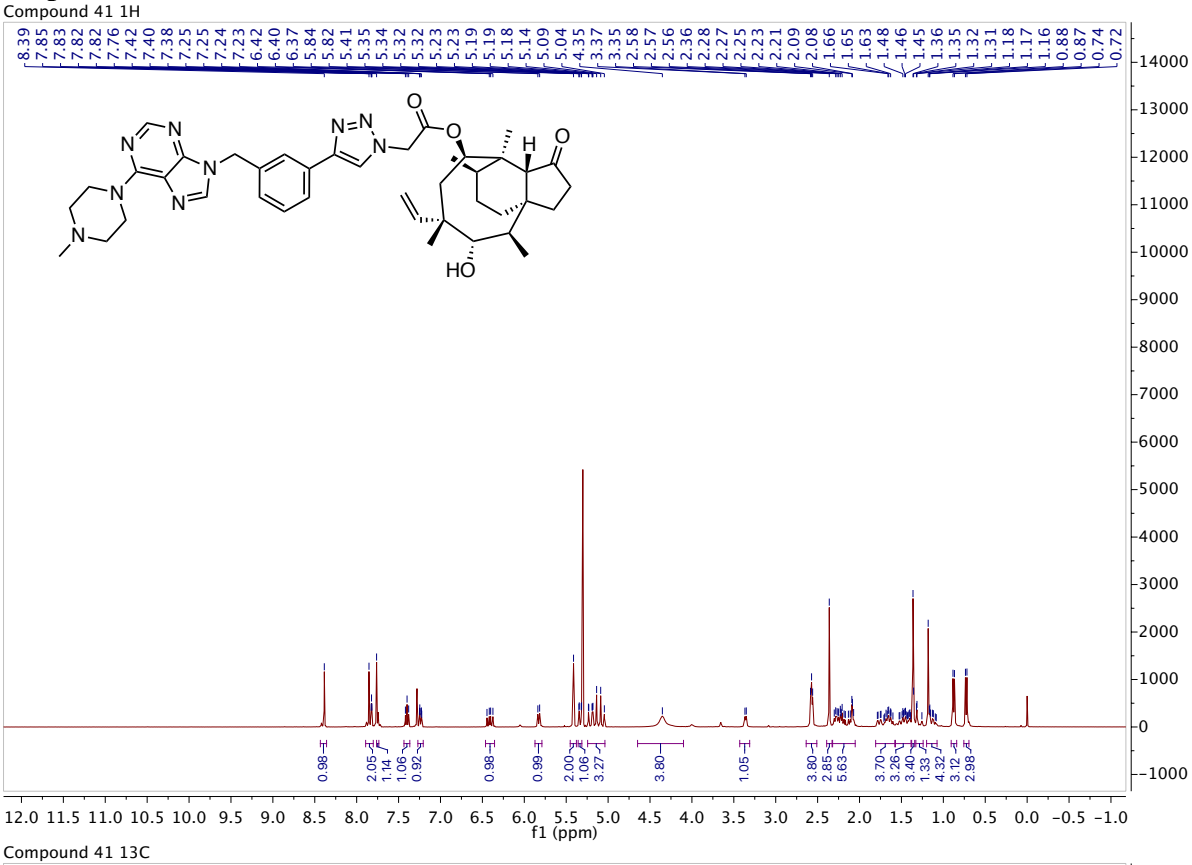


Compound 40 13C

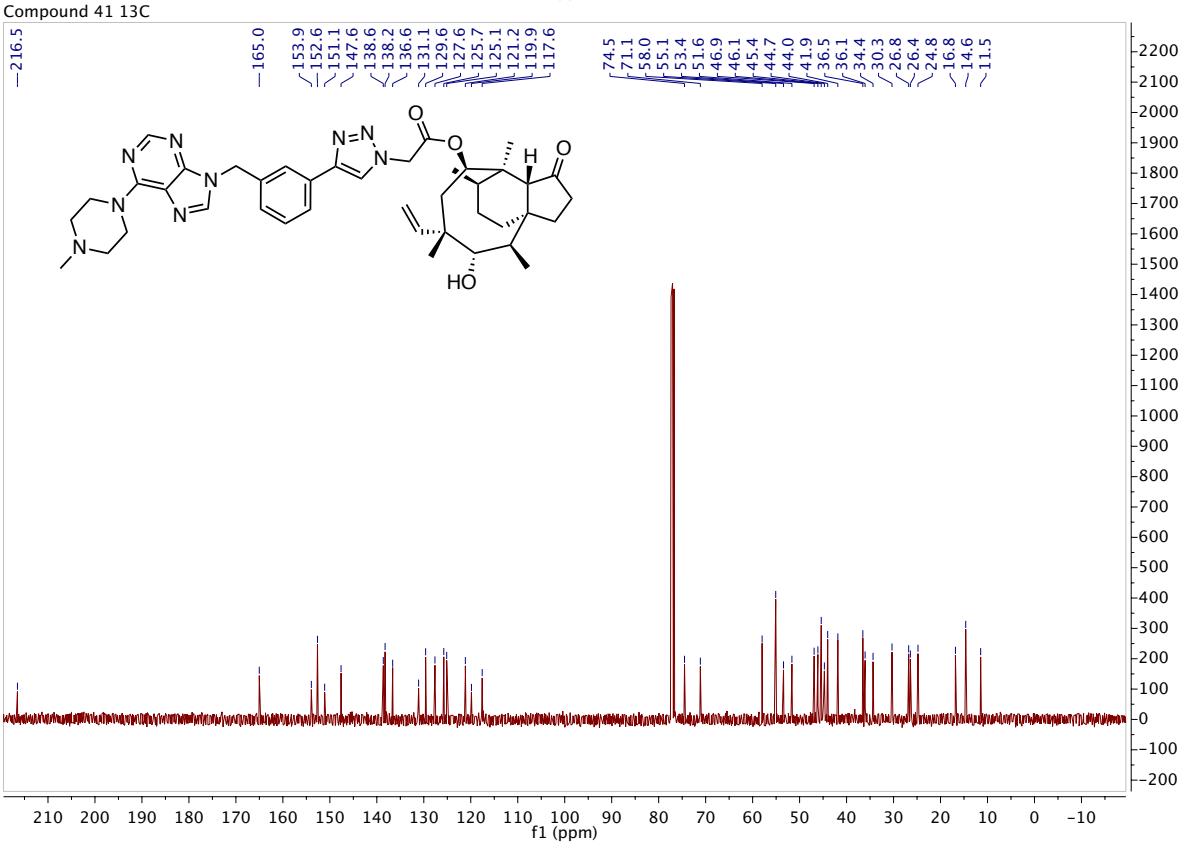


Compound 41

Compound 41 1H

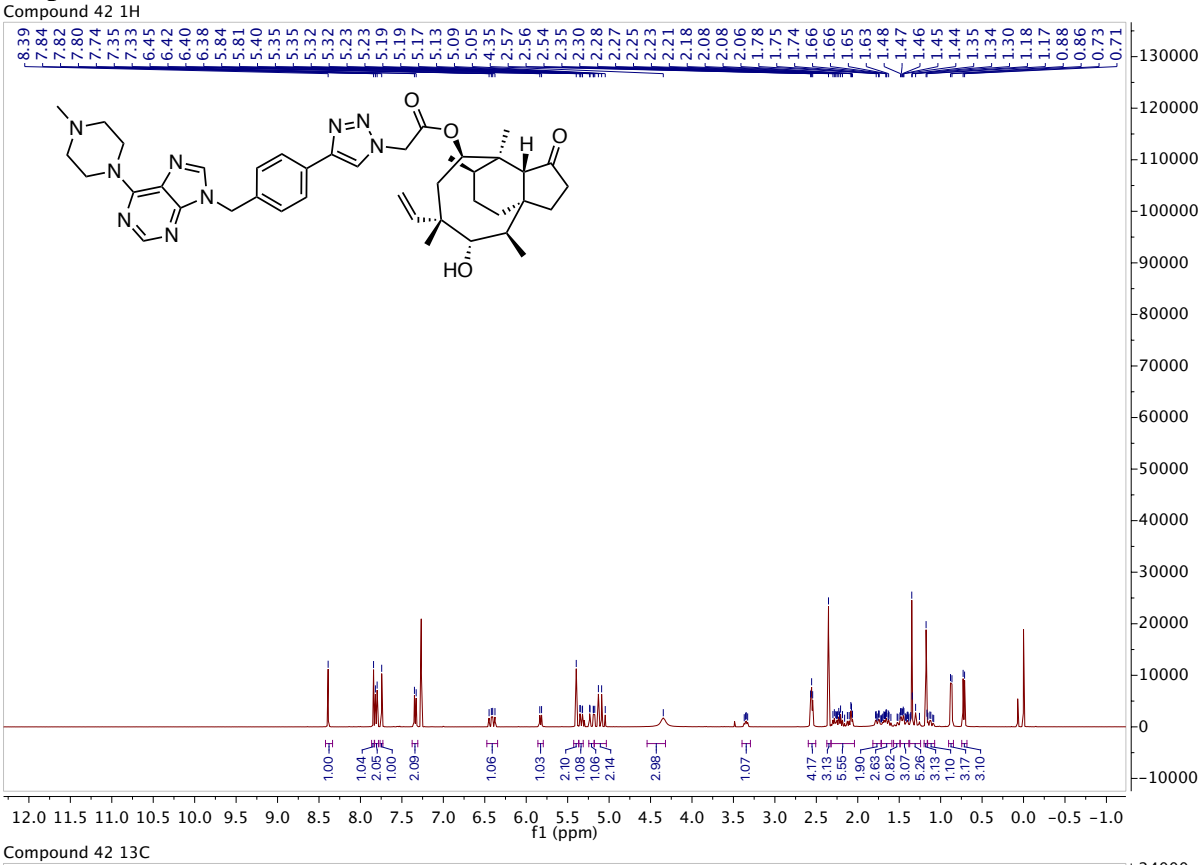


Compound 41 13C

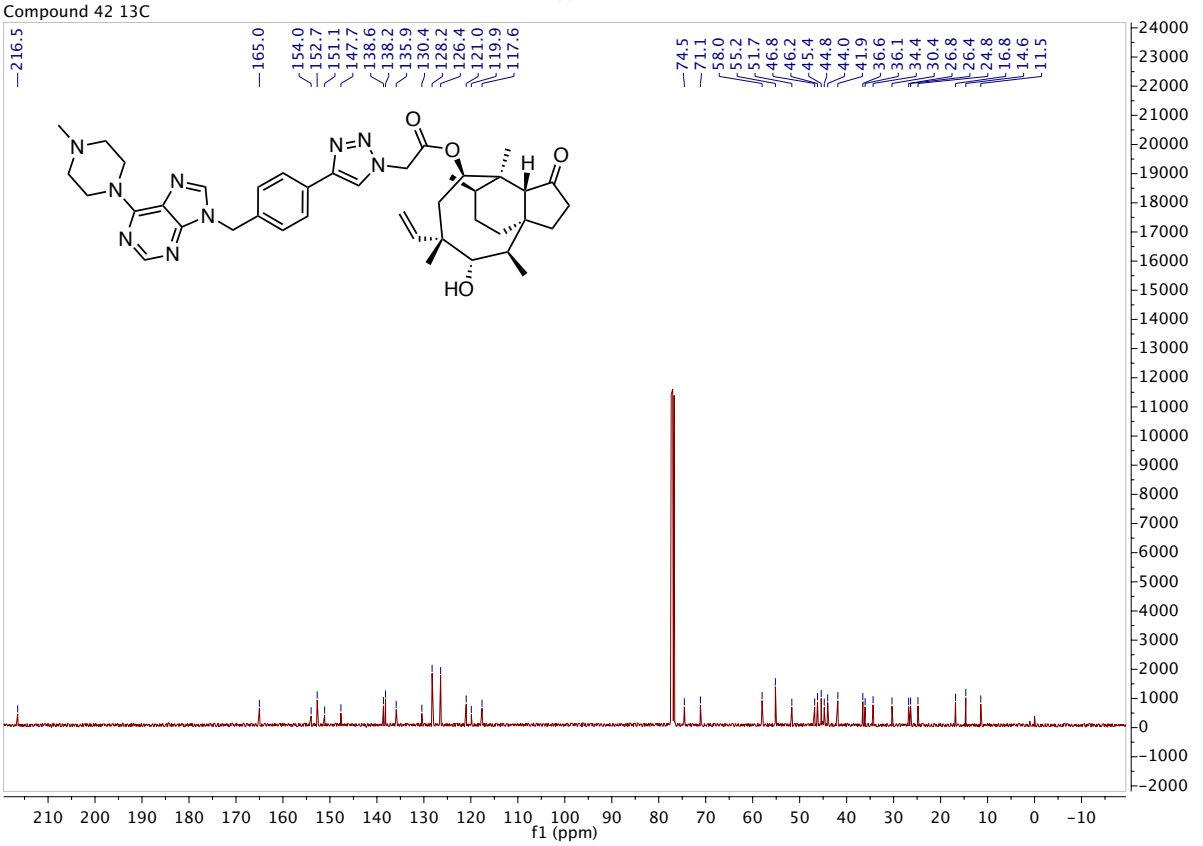


Compound 42

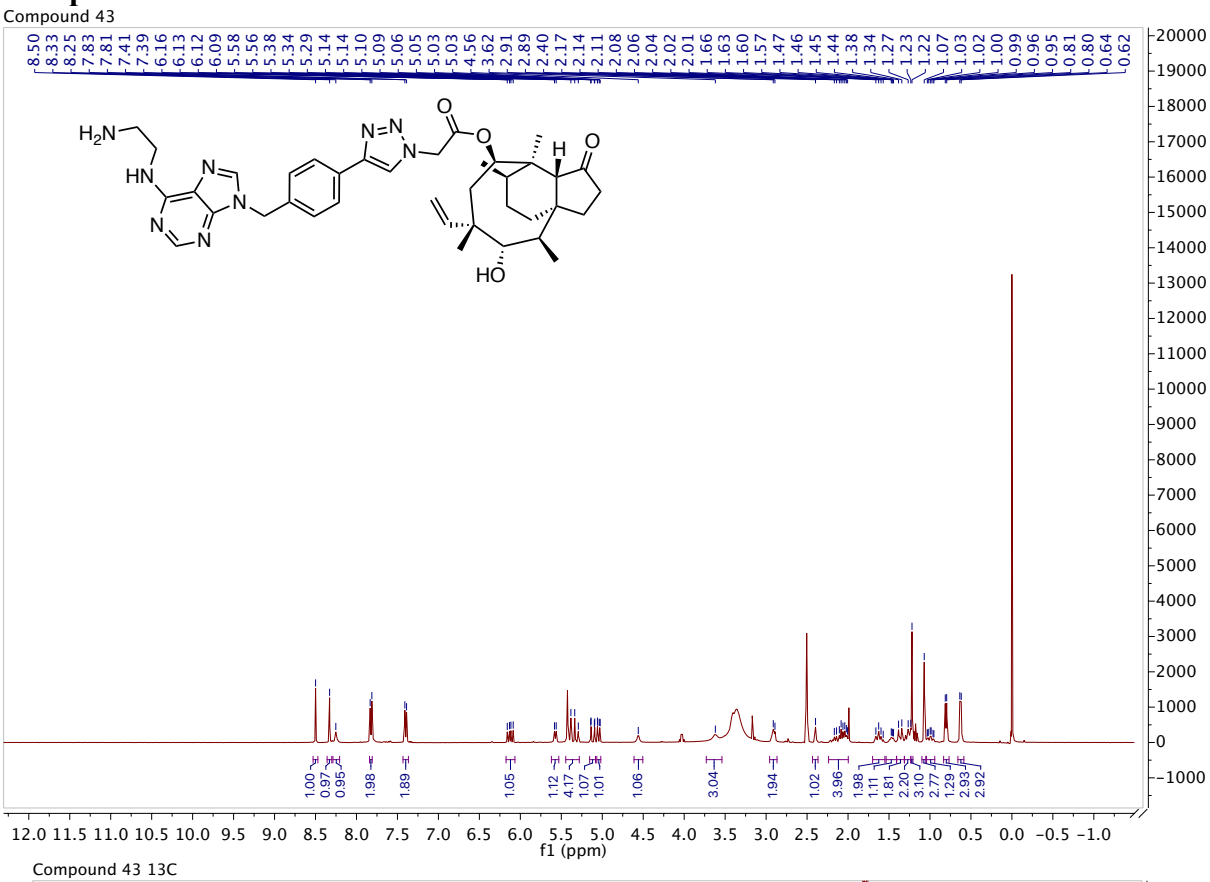
Compound 42 1H

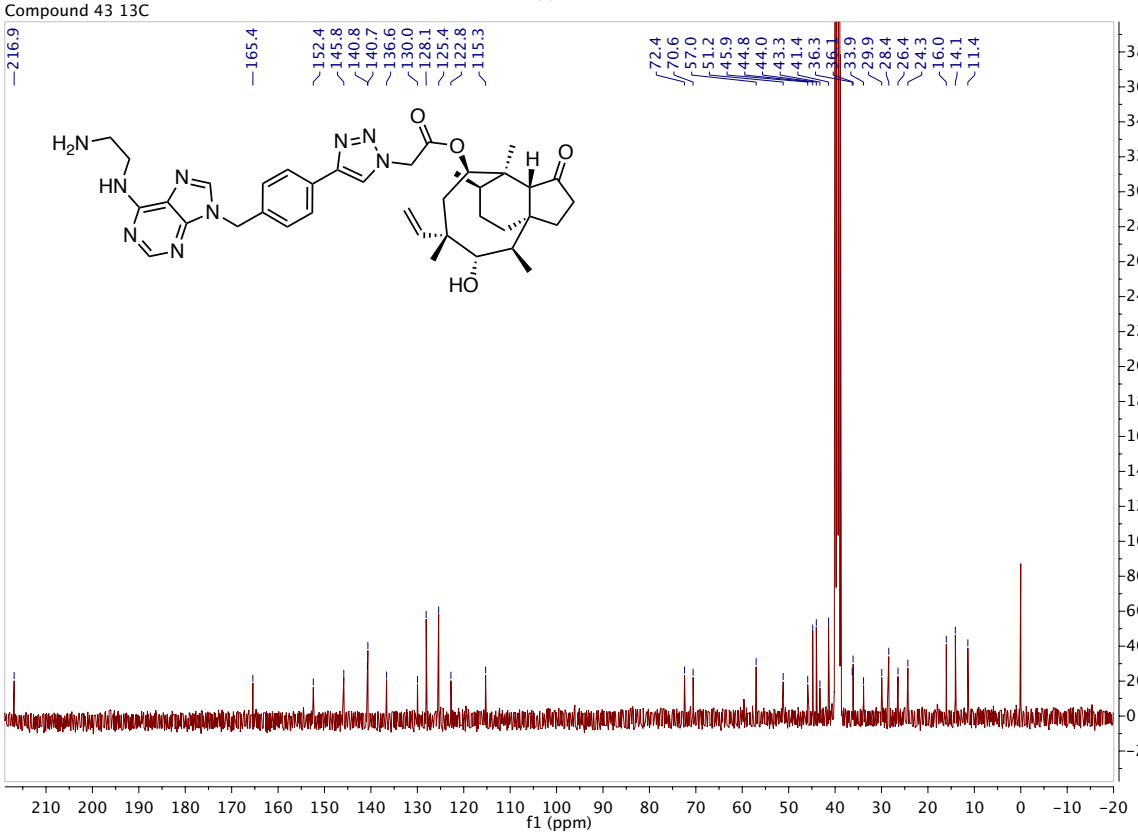


Compound 42 13C



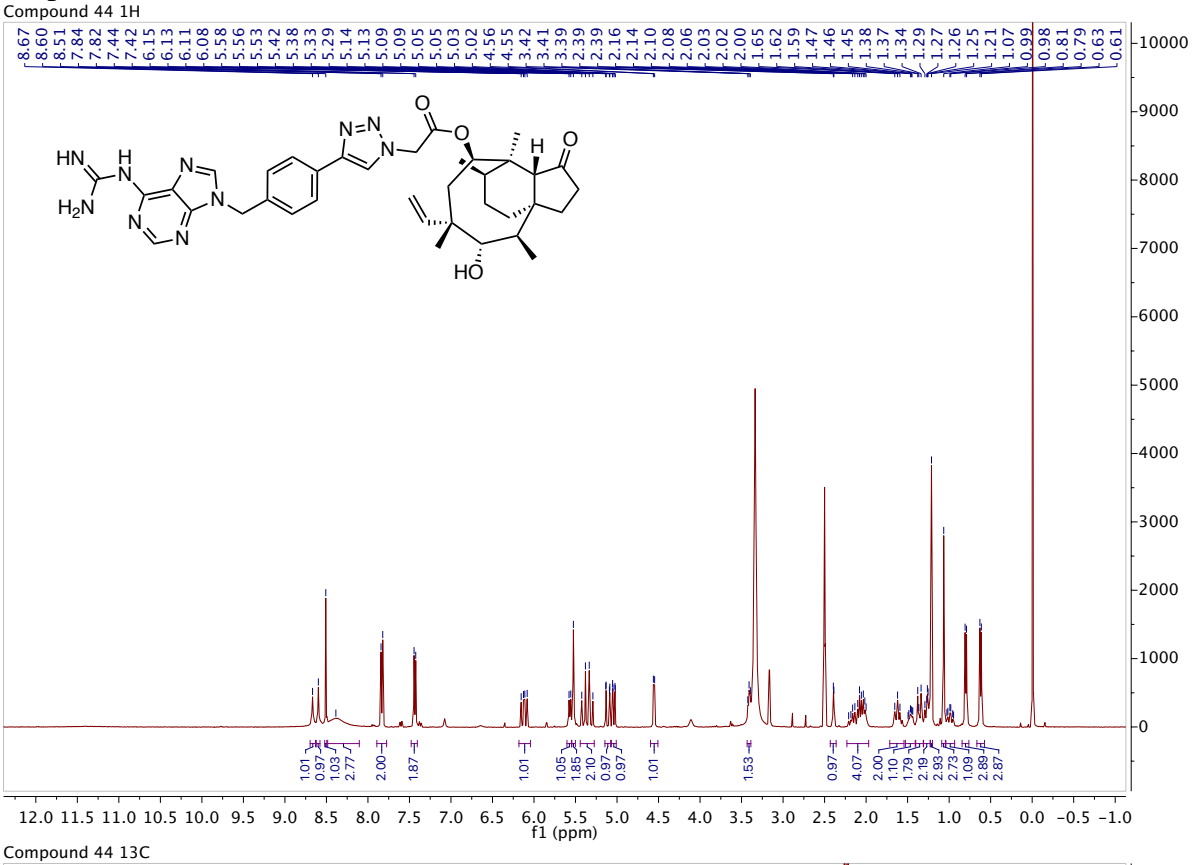
Compound 43



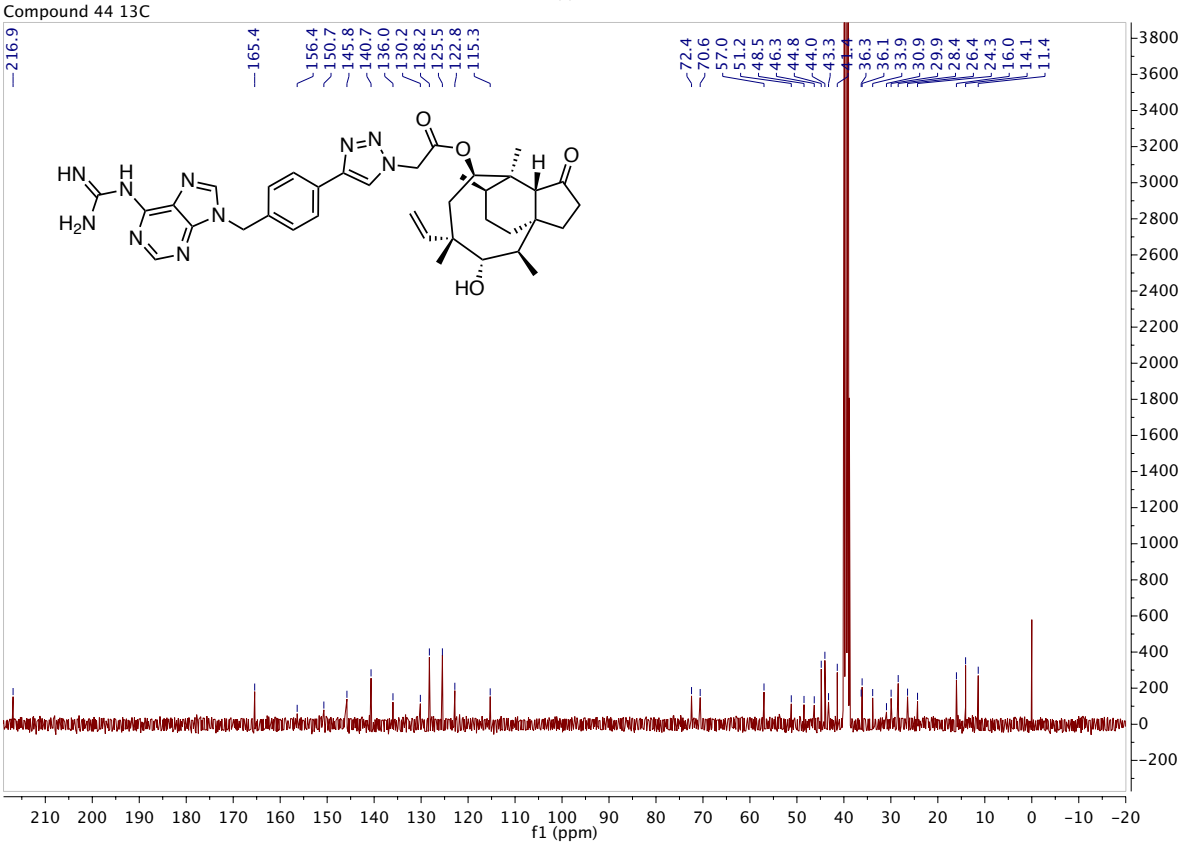


Compound 44

Compound 44 1H

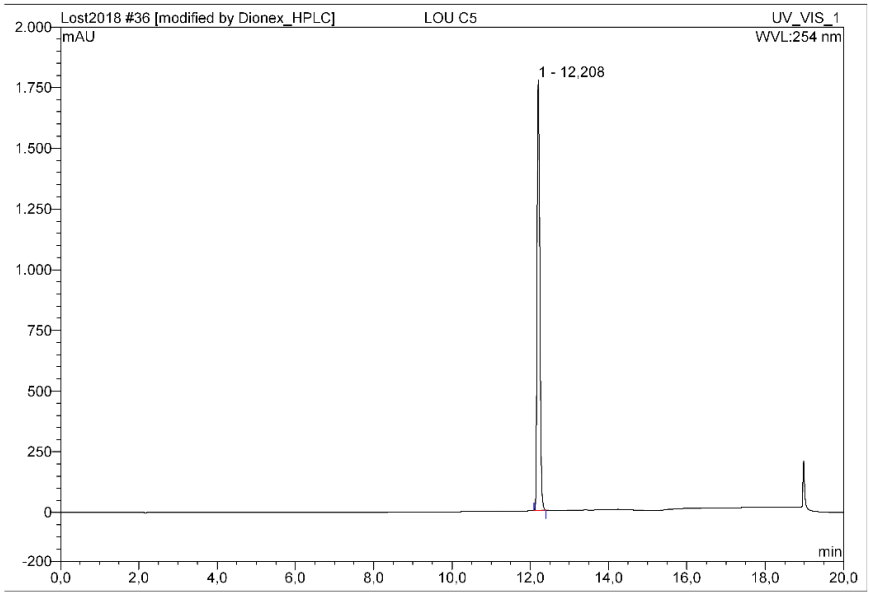


Compound 44 13C



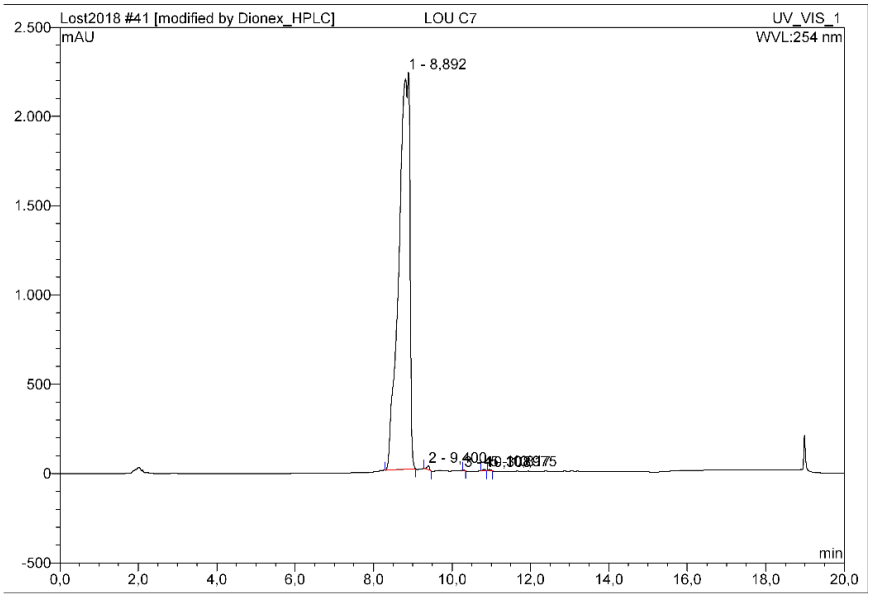
HPLC chromatograms for compound 10–44

Compound 10



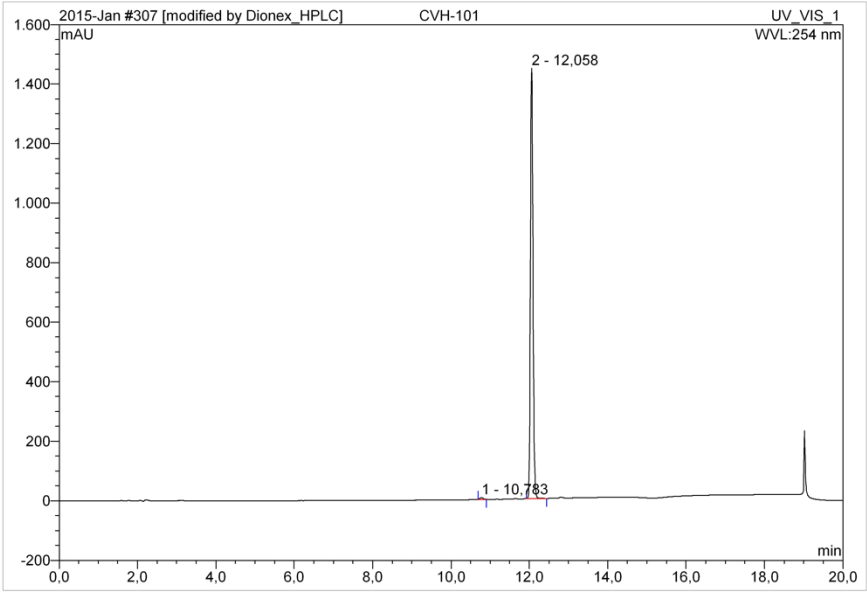
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	12,21	n.a.	1773,171	144,040	100,00	n.a.	BMB*
Total:			1773,171	144,040	100,00	0,000	

Compound 11



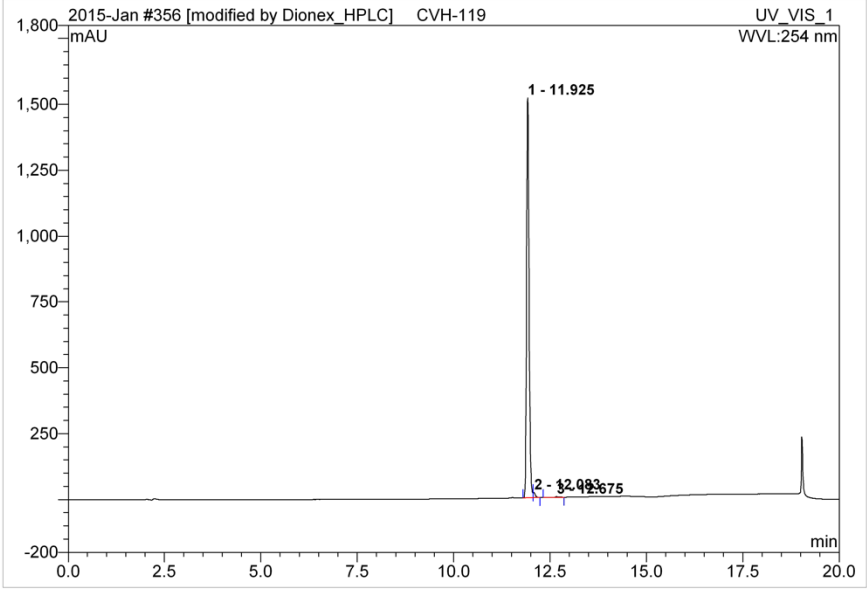
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8,89	n.a.	2222,253	729,355	99,61	n.a.	BMB*
2	9,40	n.a.	23,115	1,750	0,24	n.a.	BMB*
3	10,31	n.a.	2,467	0,114	0,02	n.a.	BMB*
4	10,82	n.a.	7,435	0,514	0,07	n.a.	BMB*
5	10,98	n.a.	6,788	0,466	0,06	n.a.	BMB*
Total:			2262,059	732,199	100,00	0,000	

Compound 12



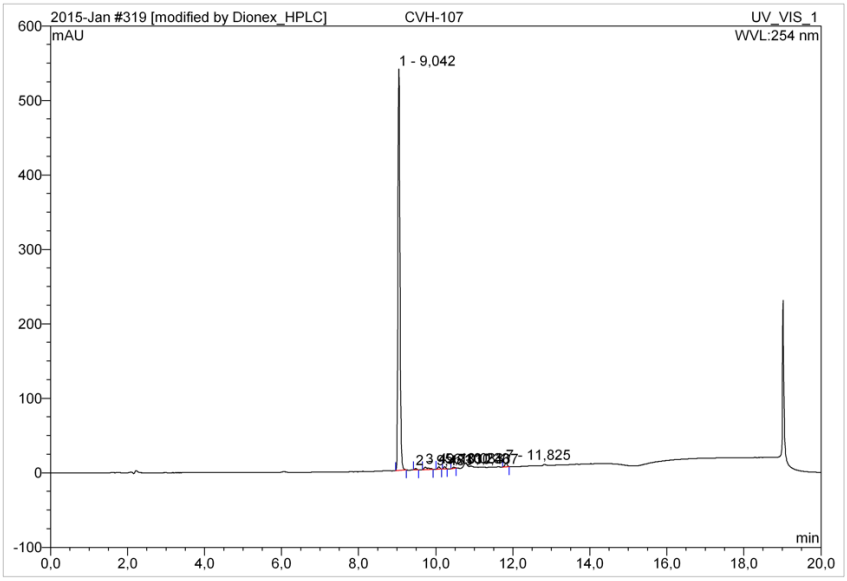
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	10,78	n.a.	5,533	0,532	0,49	n.a.	BMB*
2	12,06	n.a.	1445,583	107,548	99,51	n.a.	BMB*
Total:			1451,116	108,080	100,00	0,000	

Compound 13



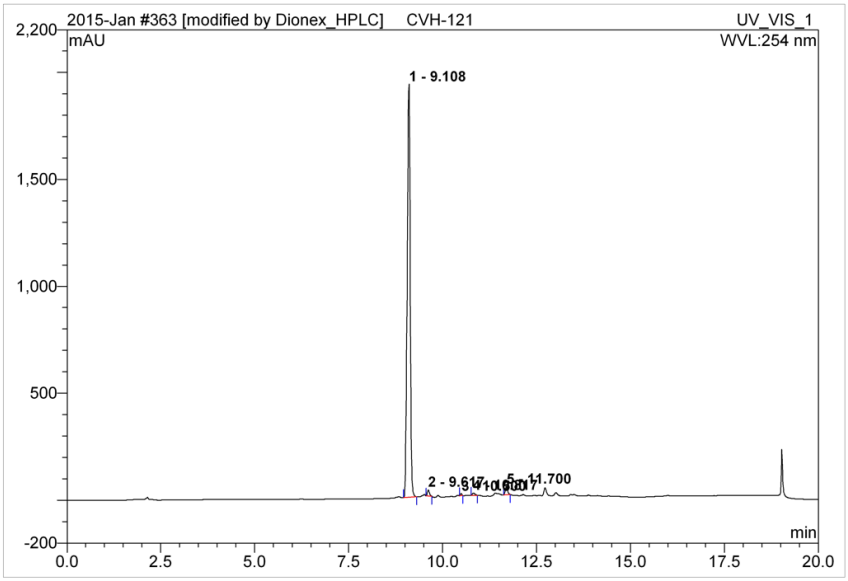
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	11.93	n.a.	1517.938	115.274	98.53	n.a.	BM *
2	12.08	n.a.	19.506	1.292	1.10	n.a.	MB
3	12.68	n.a.	2.431	0.425	0.36	n.a.	BMB*
Total:			1539.875	116.991	100.00	0.000	

Compound 14



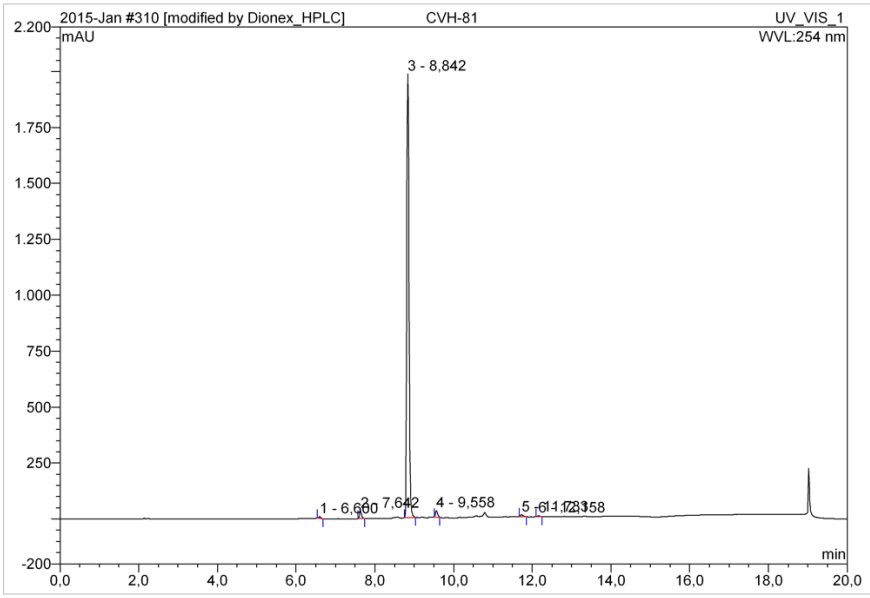
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9,04	n.a.	539,096	31,143	95,72	n.a.	BMB*
2	9,48	n.a.	1,761	0,106	0,32	n.a.	BMB*
3	9,73	n.a.	3,295	0,444	1,36	n.a.	BMB*
4	10,08	n.a.	3,131	0,210	0,65	n.a.	BMB*
5	10,23	n.a.	2,958	0,184	0,56	n.a.	BMB*
6	10,47	n.a.	1,773	0,100	0,31	n.a.	BMB*
7	11,83	n.a.	5,227	0,351	1,08	n.a.	BMB*
Total:			557,240	32,537	100,00	0,000	

Compound 15



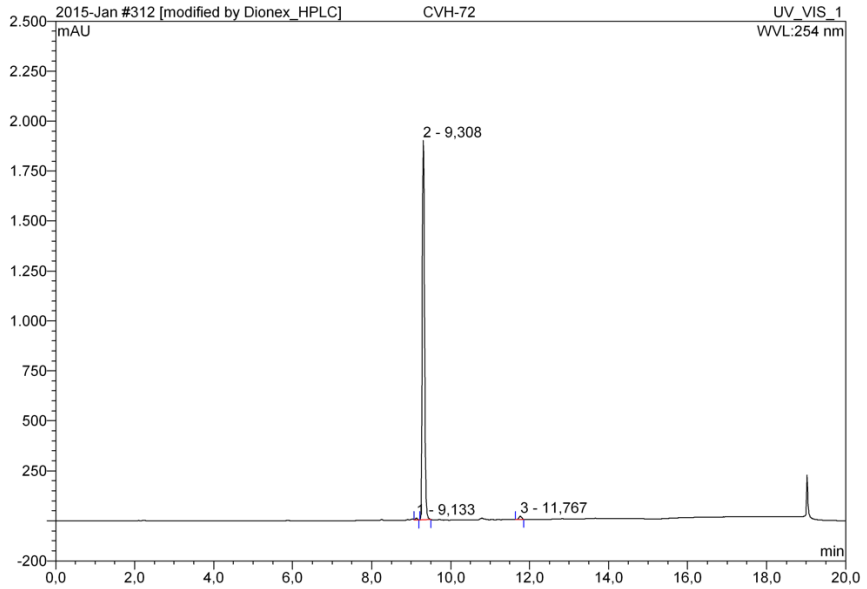
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9.11	n.a.	1932.634	178.322	96.82	n.a.	BMB*
2	9.62	n.a.	28.845	1.852	1.01	n.a.	BMB*
3	10.50	n.a.	8.692	0.429	0.23	n.a.	BMB*
4	10.82	n.a.	10.796	0.868	0.47	n.a.	BMB*
5	11.70	n.a.	37.929	2.709	1.47	n.a.	BMB*
Total:			2018.896	184.180	100.00	0.000	

Compound 16



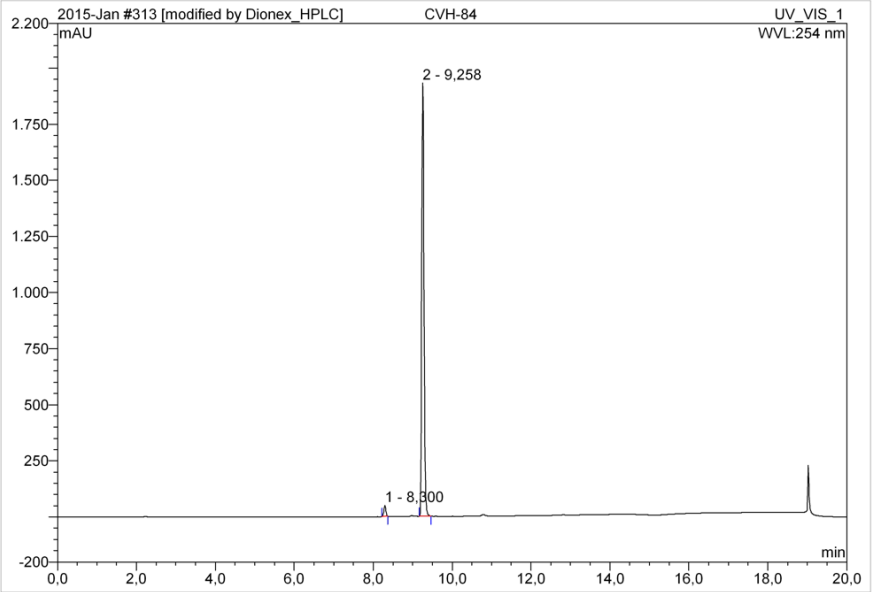
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	6,60	n.a.	7,476	0,445	0,32	n.a.	BMB*
2	7,64	n.a.	32,905	1,852	1,34	n.a.	BMB*
3	8,84	n.a.	1984,027	133,507	96,29	n.a.	BMB*
4	9,56	n.a.	28,811	1,899	1,37	n.a.	BMB*
5	11,73	n.a.	8,426	0,642	0,46	n.a.	BMB*
6	12,16	n.a.	4,124	0,302	0,22	n.a.	BMB*
Total:			2065,769	138,647	100,00	0,000	

Compound 17



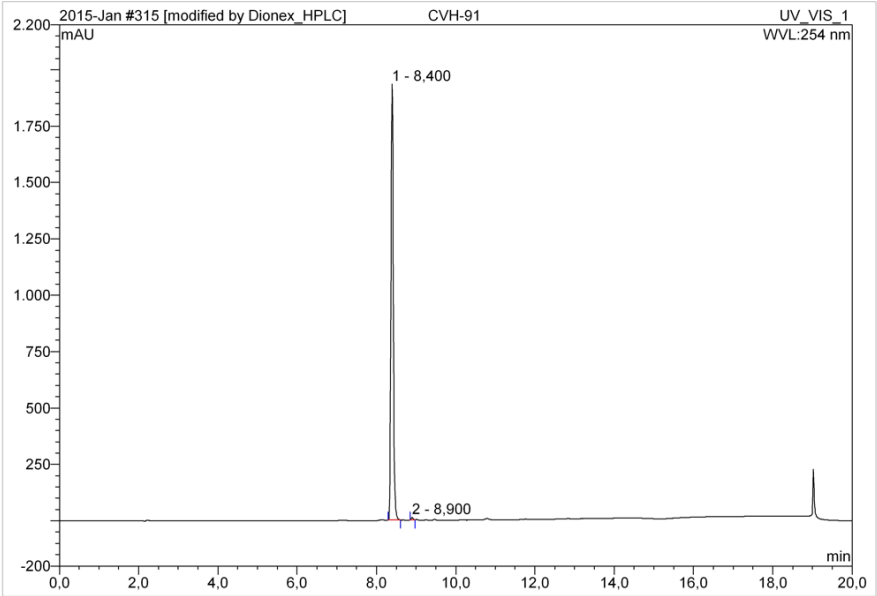
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9,13	n.a.	9,557	0,490	0,37	n.a.	BMB*
2	9,31	n.a.	1896,657	130,776	98,71	n.a.	BMB*
3	11,77	n.a.	16,176	1,220	0,92	n.a.	BMB*
Total:			1922,391	132,486	100,00	0,000	

Compound 18



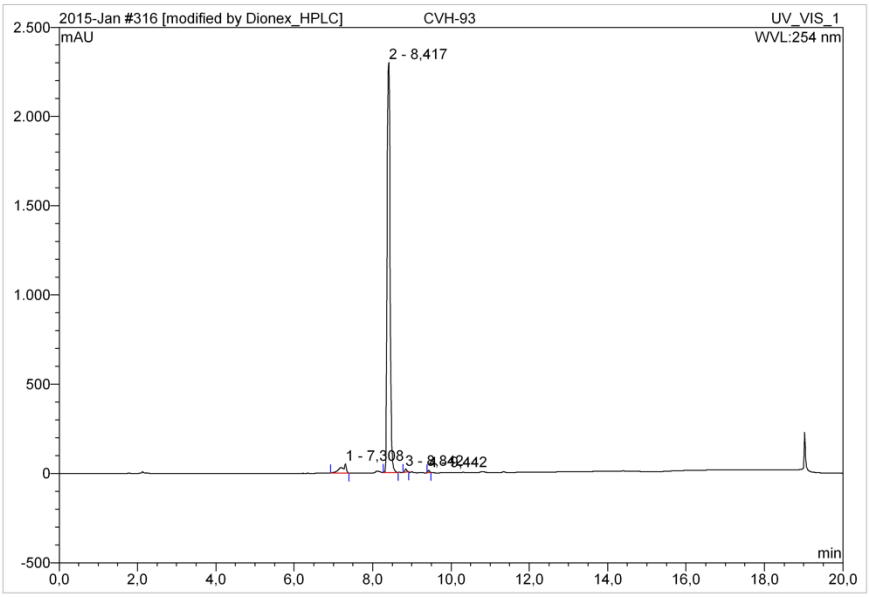
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8,30	n.a.	47,506	2,811	2,17	n.a.	BMB*
2	9,26	n.a.	1929,387	126,954	97,83	n.a.	BMB*
Total:			1976,893	129,766	100,00	0,000	

Compound 19



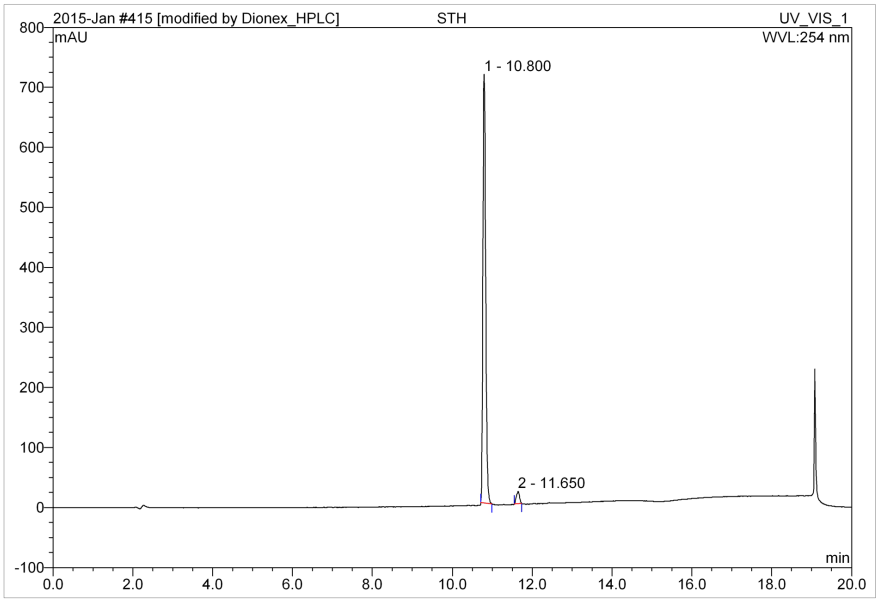
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8,40	n.a.	1931,614	137,744	99,54	n.a.	BMB*
2	8,90	n.a.	9,985	0,630	0,46	n.a.	BMB*
Total:			1941,599	138,374	100,00	0,000	

Compound 20



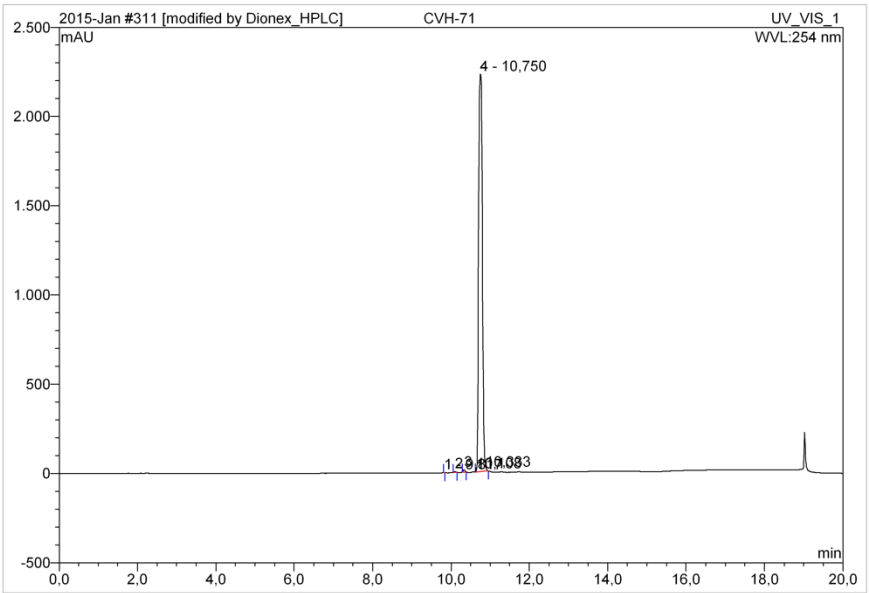
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	7,31	n.a.	50,835	7,840	3,64	n.a.	BMB*
2	8,42	n.a.	2298,741	206,019	95,59	n.a.	BMB*
3	8,84	n.a.	18,137	1,048	0,49	n.a.	BMB*
4	9,44	n.a.	12,346	0,618	0,29	n.a.	BMB*
Total:			2380,059	215,525	100,00	0,000	

Compound 21



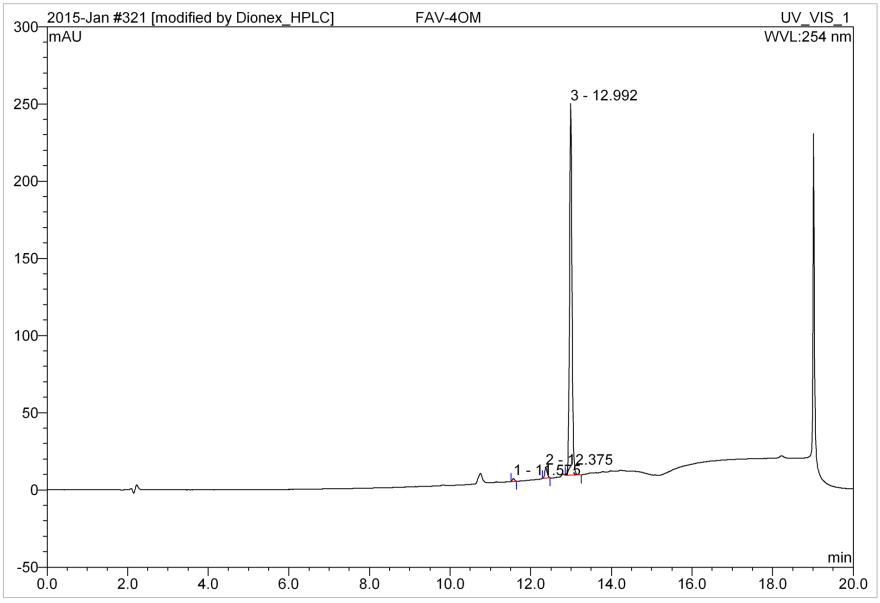
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	10.80	n.a.	714.459	55.586	96.72	n.a.	BMB*
2	11.65	n.a.	20.116	1.887	3.28	n.a.	BMB*
Total:			734.576	57.473	100.00	0.000	

Compound 22



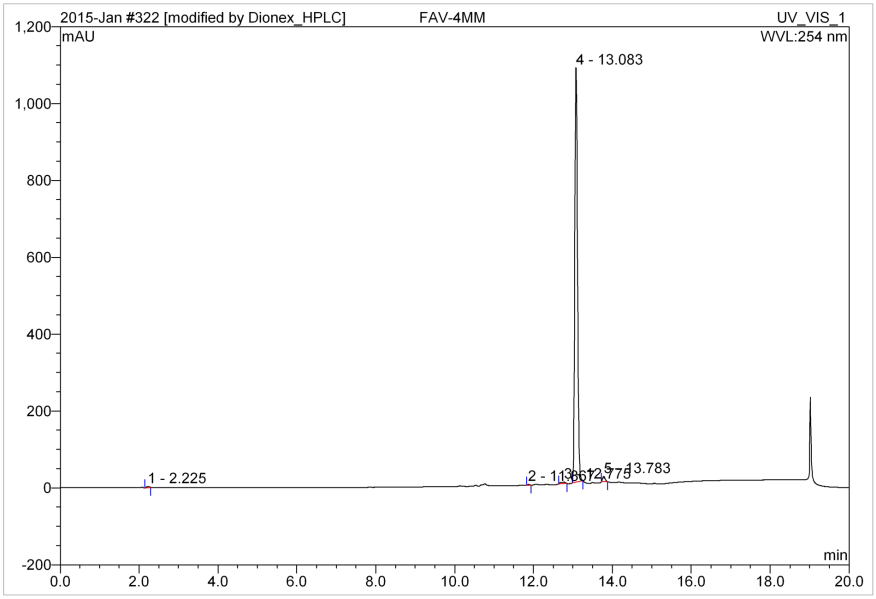
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9,82	n.a.	0,143	0,003	0,00	n.a.	BMB*
2	10,11	n.a.	5,509	0,303	0,12	n.a.	BMB*
3	10,33	n.a.	12,477	0,718	0,30	n.a.	BMB*
4	10,75	n.a.	2226,612	241,763	99,58	n.a.	BMB*
Total:			2244,739	242,787	100,00	0,000	

Compound 23



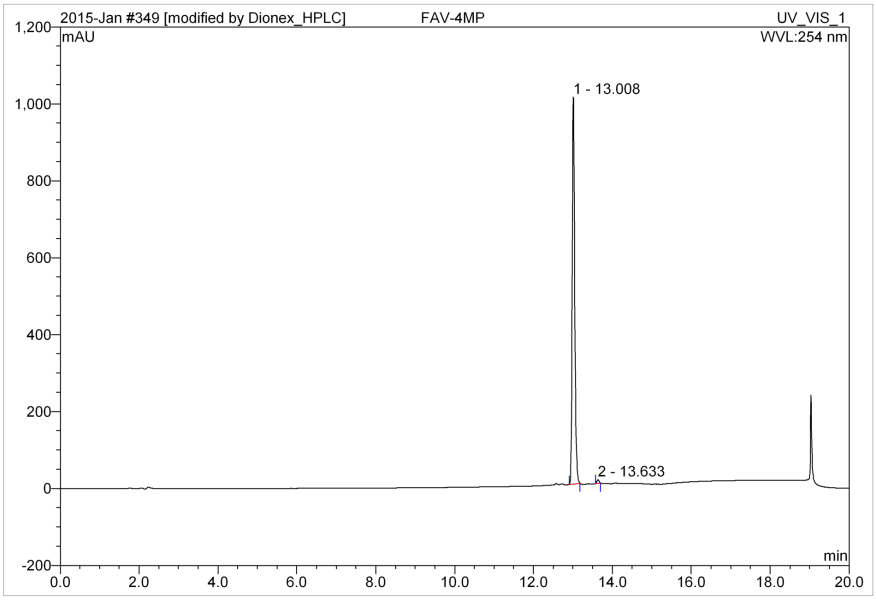
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	11.58	n.a.	1.825	0.110	0.62	n.a.	BMB*
2	12.38	n.a.	6.603	0.488	2.72	n.a.	BMB*
3	12.99	n.a.	240.526	17.346	96.67	n.a.	BMB*
Total:			248.955	17.945	100.00	0.000	

Compound 24



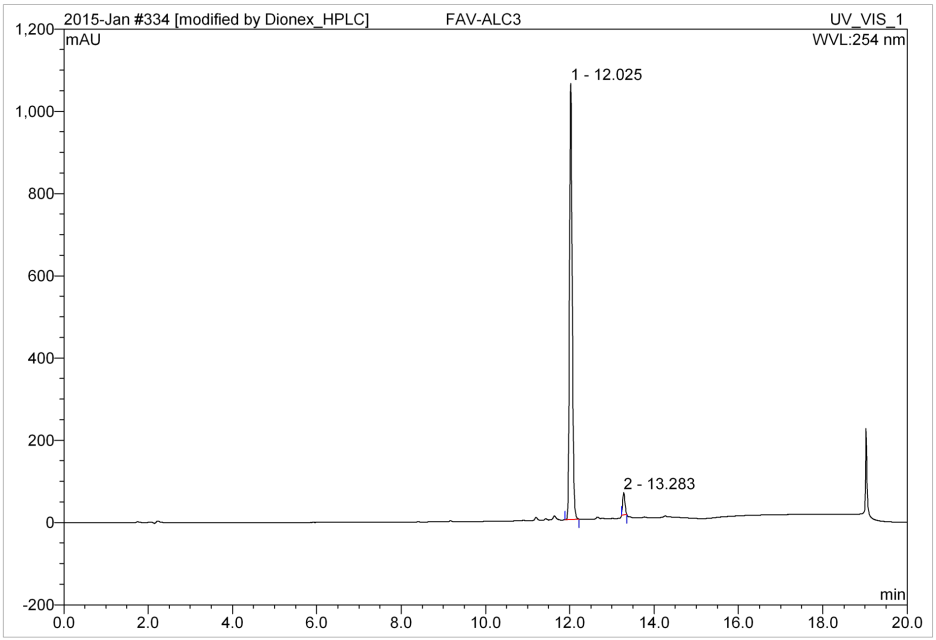
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	2.23	n.a.	2.888	0.263	0.31	n.a.	BMB*
2	11.87	n.a.	1.505	0.093	0.11	n.a.	BMB*
3	12.78	n.a.	3.930	0.577	0.68	n.a.	BMB*
4	13.08	n.a.	1078.260	83.093	97.73	n.a.	BMB*
5	13.78	n.a.	13.431	0.996	1.17	n.a.	BMB*
Total:			1100.013	85.021	100.00	0.000	

Compound 25



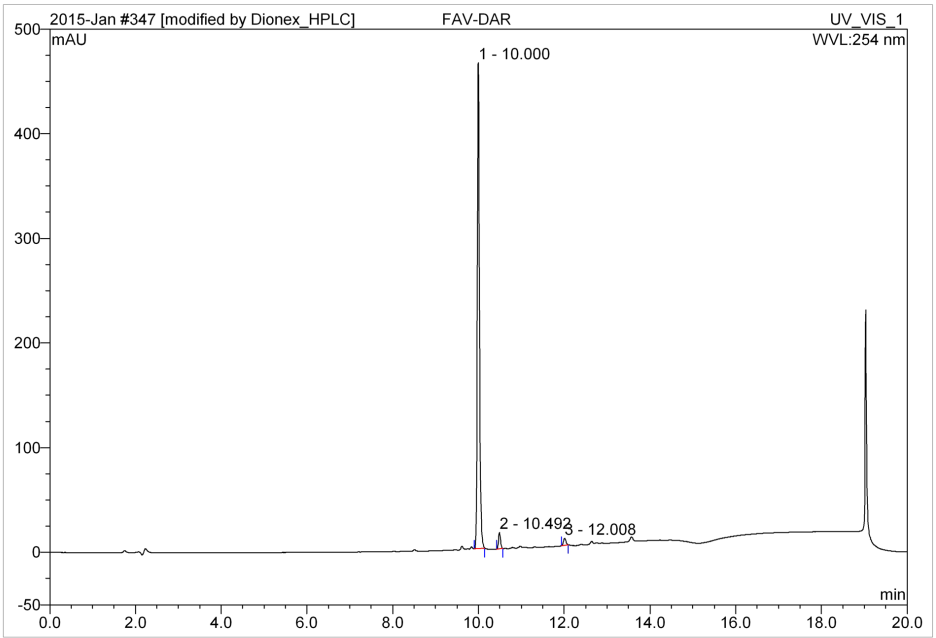
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	13.01	n.a.	1005.918	75.099	99.17	n.a.	BMB*
2	13.63	n.a.	9.518	0.625	0.83	n.a.	BMB*
Total:			1015.436	75.724	100.00	0.000	

Compound 26



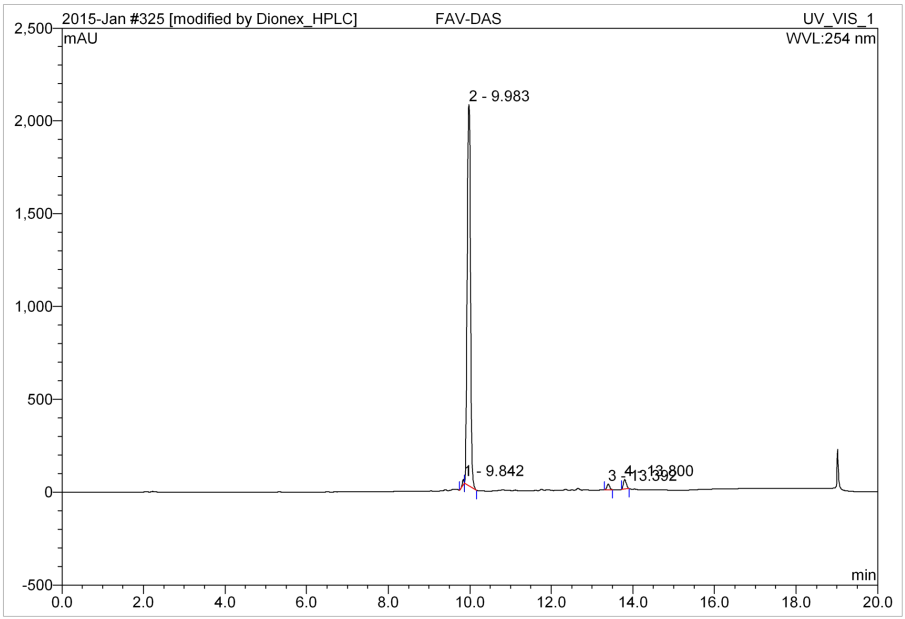
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	12.03	n.a.	1061.127	78.425	95.77	n.a.	BMB*
2	13.28	n.a.	54.571	3.467	4.23	n.a.	BMB*
Total:			1115.698	81.892	100.00	0.000	

Compound 27



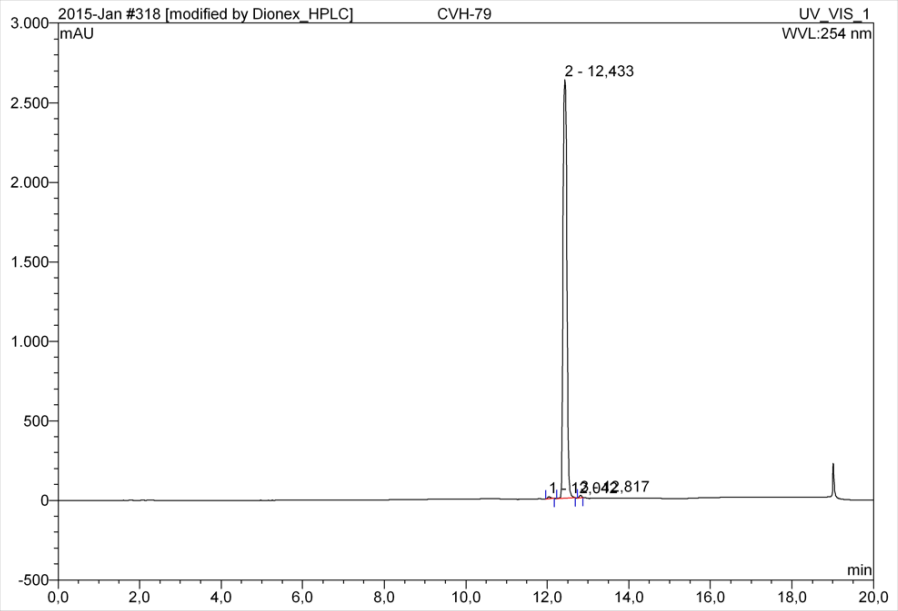
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	10.00	n.a.	464.235	27.972	95.60	n.a.	BMB*
2	10.49	n.a.	15.446	0.847	2.90	n.a.	BMB*
3	12.01	n.a.	6.548	0.441	1.51	n.a.	BMB*
Total:			486.228	29.260	100.00	0.000	

Compound 28



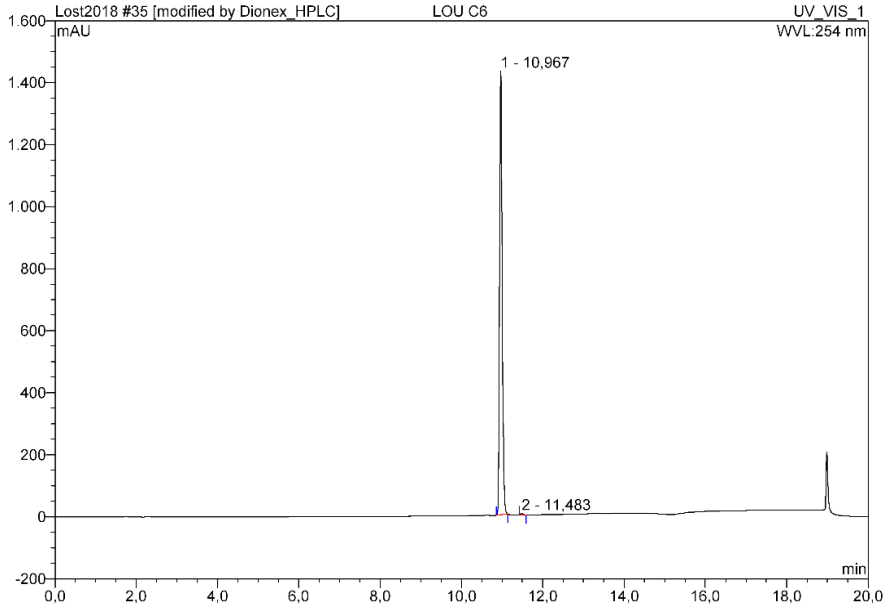
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9.84	n.a.	31.094	1.358	0.70	n.a.	BMb*
2	9.98	n.a.	2054.921	187.358	95.91	n.a.	bMB*
3	13.39	n.a.	31.853	2.474	1.27	n.a.	BMB*
4	13.80	n.a.	51.345	4.153	2.13	n.a.	BMB*
Total:			2169.213	195.343	100.00	0.000	

Compound 29



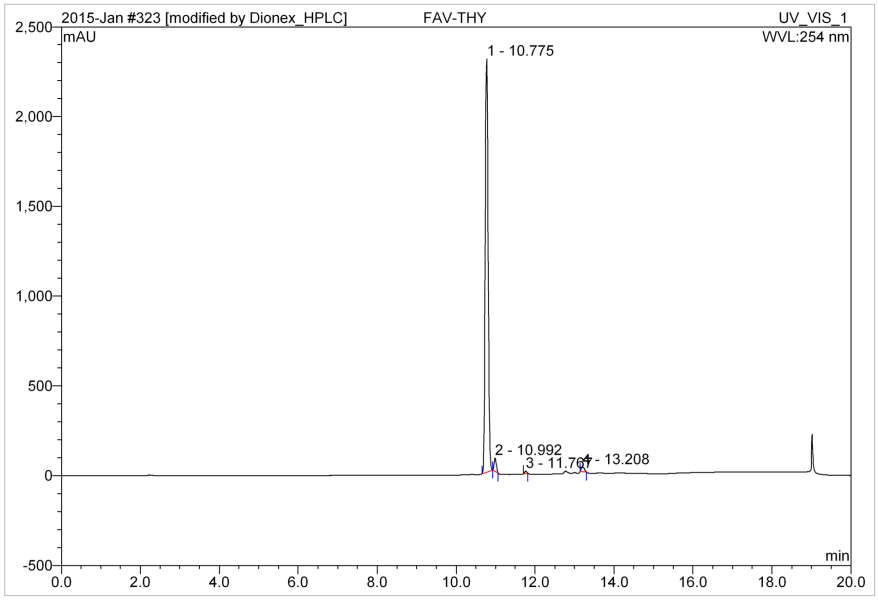
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	12,04	n.a.	11,761	1,001	0,34	n.a.	BMB*
2	12,43	n.a.	2630,330	292,886	99,30	n.a.	BMB*
3	12,82	n.a.	16,396	1,066	0,36	n.a.	BMB*
Total:			2658,486	294,953	100,00	0,000	

Compound 30



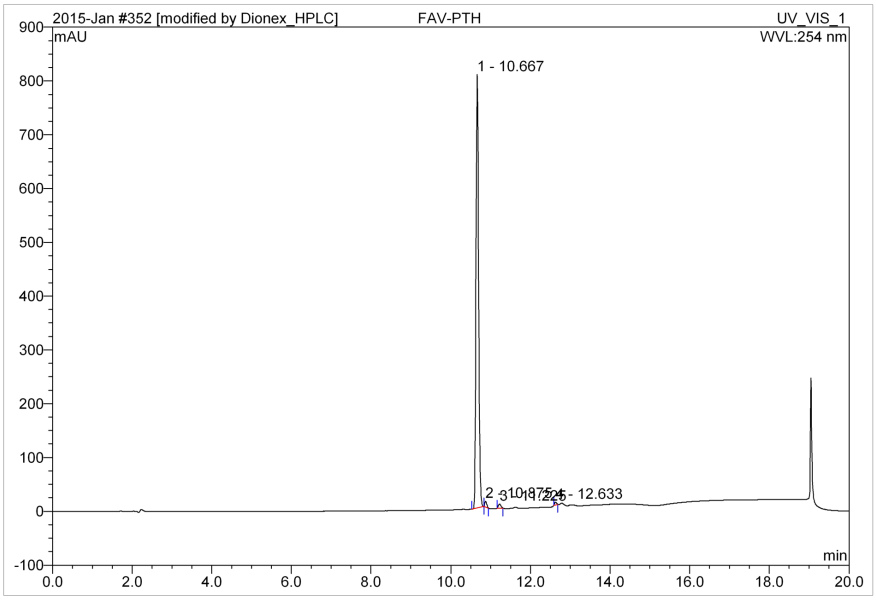
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	10,97	n.a.	1431,456	104,590	99,67	n.a.	BMB*
2	11,48	n.a.	4,891	0,346	0,33	n.a.	BMB*
Total:			1436,347	104,935	100,00	0,000	

Compound 31



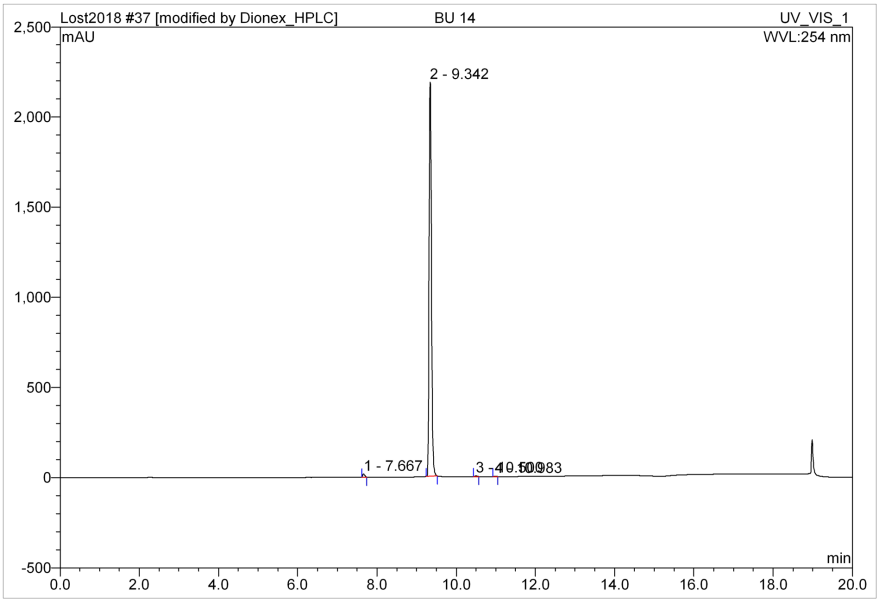
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	10.78	n.a.	2304.156	193.772	96.05	n.a.	BMb*
2	10.99	n.a.	73.463	4.752	2.36	n.a.	bMB*
3	11.77	n.a.	14.698	0.876	0.43	n.a.	BMB*
4	13.21	n.a.	24.263	2.333	1.16	n.a.	BMB*
Total:			2416.580	201.733	100.00	0.000	

Compound 32



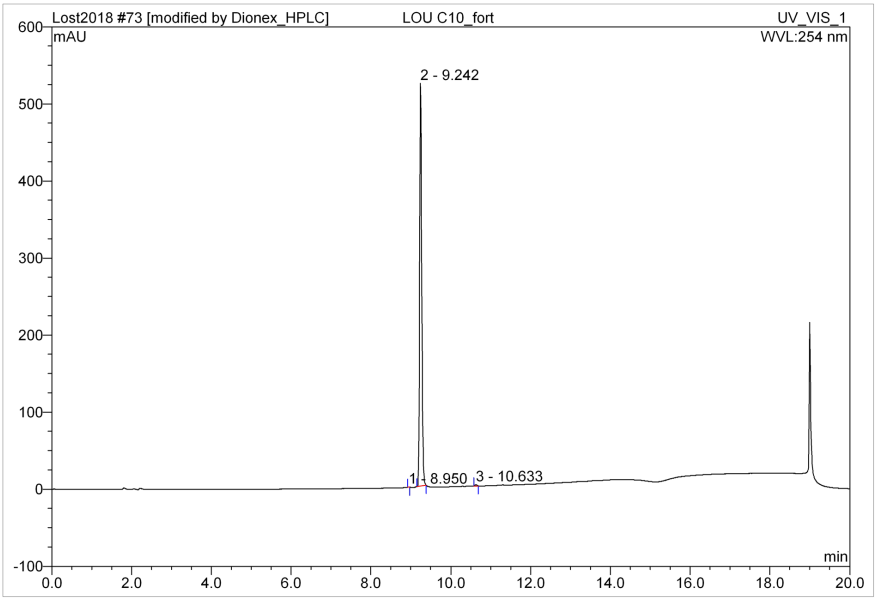
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	10.67	n.a.	805.908	58.896	97.50	n.a.	BMb*
2	10.88	n.a.	10.250	0.597	0.99	n.a.	bMB*
3	11.23	n.a.	7.631	0.599	0.99	n.a.	BMB*
4	12.63	n.a.	5.202	0.318	0.53	n.a.	BMB*
Total:			828.991	60.409	100.00	0.000	

Compound 33



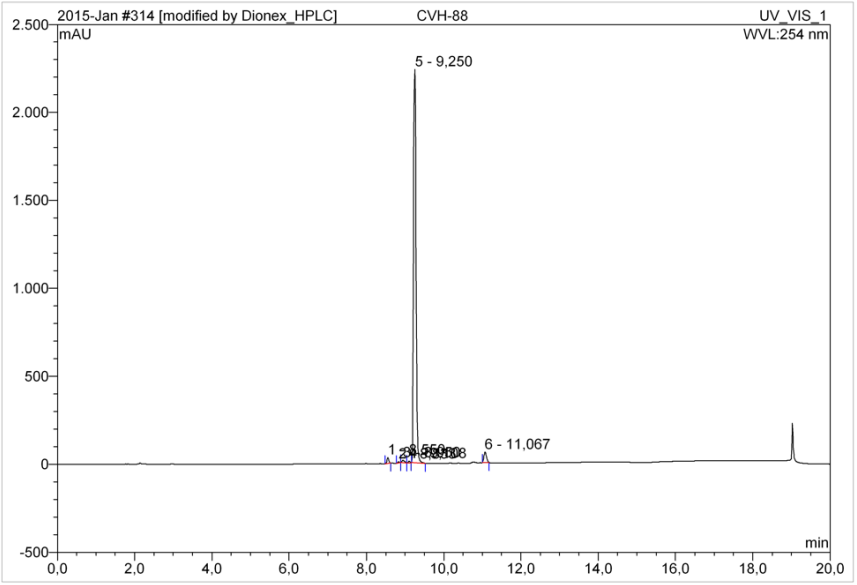
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	7.67	n.a.	18.862	1.022	0.65	n.a.	BMB*
2	9.34	n.a.	2185.385	156.266	99.07	n.a.	BMB*
3	10.50	n.a.	4.371	0.279	0.18	n.a.	BMB*
4	10.98	n.a.	2.827	0.172	0.11	n.a.	BMB*
Total:			2211.445	157.739	100.00	0.000	

Compound 34



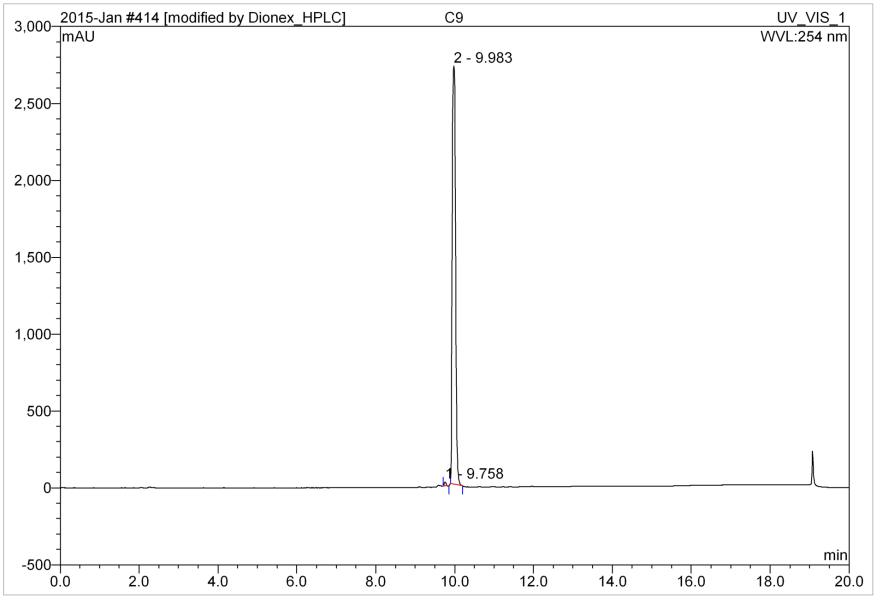
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8.95	n.a.	0.301	0.011	0.03	n.a.	BMB*
2	9.24	n.a.	523.152	32.371	99.67	n.a.	BMB*
3	10.63	n.a.	1.673	0.095	0.29	n.a.	BMB*
Total:			525.126	32.476	100.00	0.000	

Compound 35



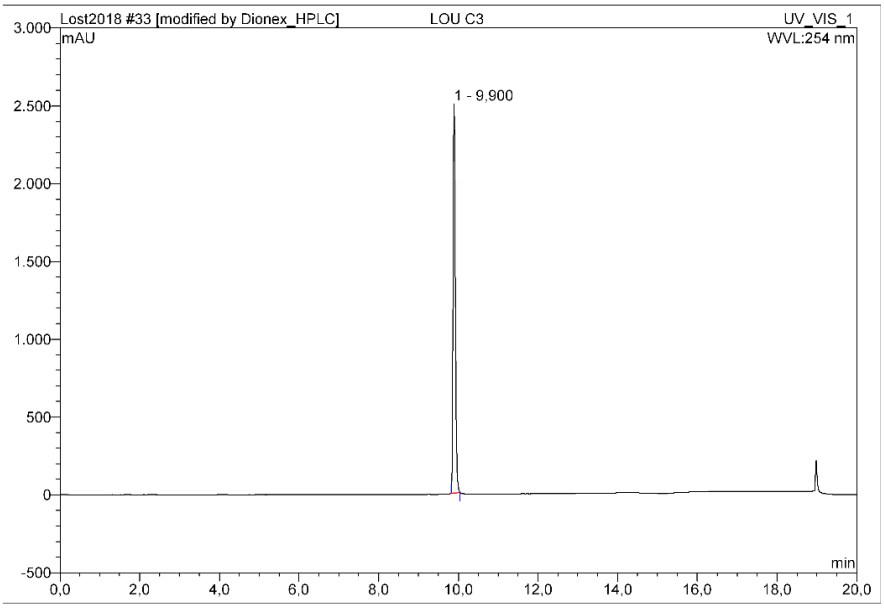
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8,55	n.a.	33,358	1,797	1,02	n.a.	BMB*
2	8,83	n.a.	7,476	0,384	0,22	n.a.	BMb*
3	8,95	n.a.	15,772	1,137	0,65	n.a.	bMb*
4	9,11	n.a.	9,159	0,429	0,24	n.a.	bMB*
5	9,25	n.a.	2237,164	167,777	95,28	n.a.	BMB*
6	11,07	n.a.	58,259	4,573	2,60	n.a.	BMB*
Total:			2361,189	176,097	100,00	0,000	

Compound 36



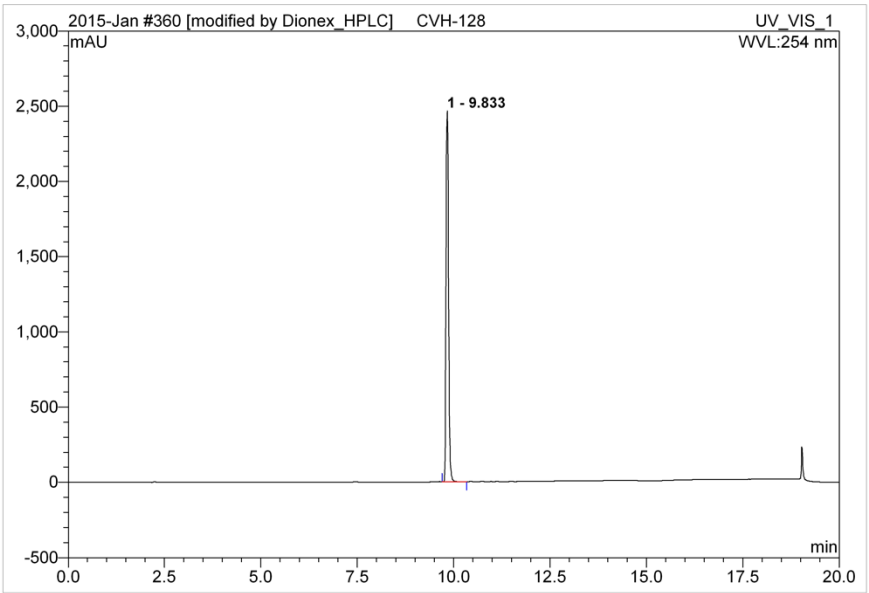
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9.76	n.a.	23.032	1.048	0.40	n.a.	BMB*
2	9.98	n.a.	2719.356	260.202	99.60	n.a.	BMB*
Total:			2742.388	261.250	100.00	0.000	

Compound 37



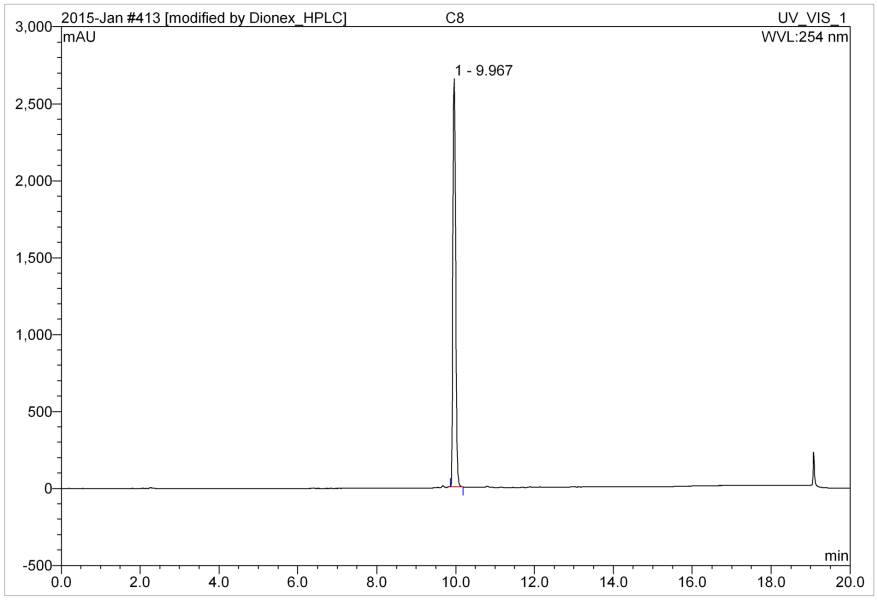
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9,90	n.a.	2501,118	176,953	100,00	n.a.	BMB*
Total:			2501,118	176,953	100,00	0,000	

Compound 38



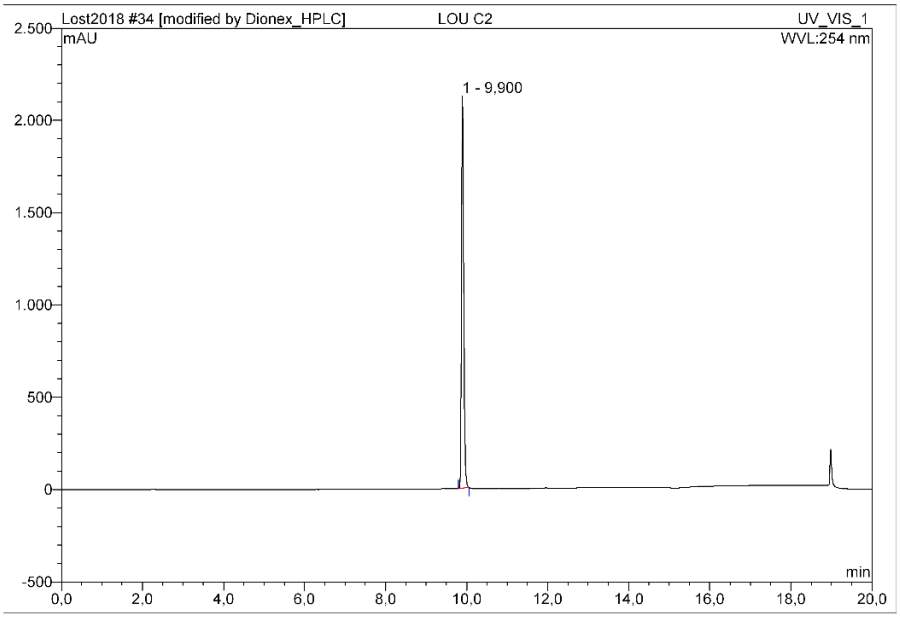
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9.83	n.a.	2466.492	188.633	100.00	n.a.	BMB*
Total:			2466.492	188.633	100.00	0.000	

Compound 39



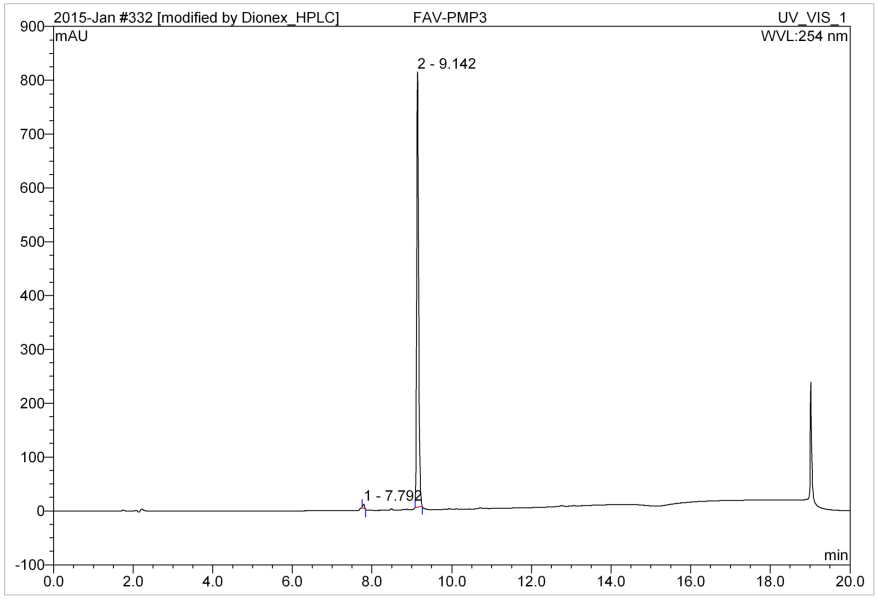
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9.97	n.a.	2653.466	211.670	100.00	n.a.	BMB*
Total:			2653.466	211.670	100.00	0.000	

Compound 40



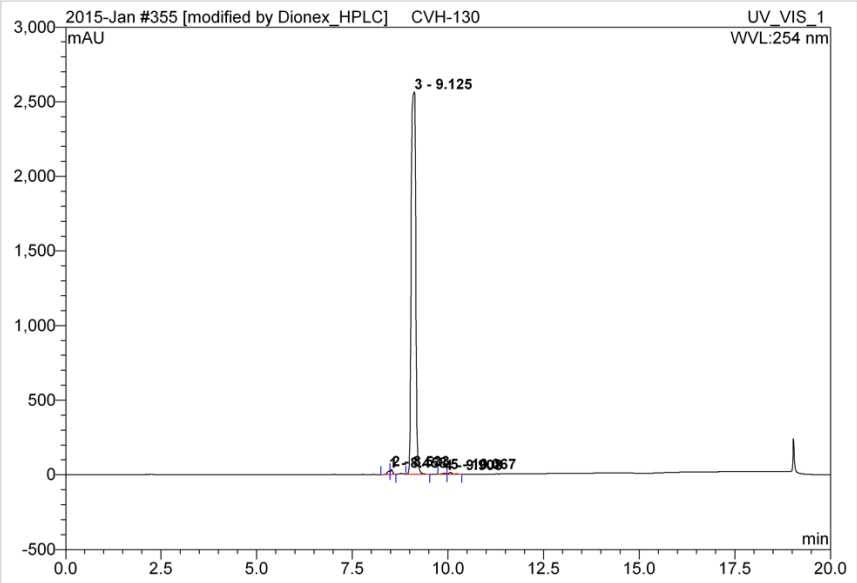
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	9,90	n.a.	2123,090	140,050	100,00	n.a.	BMB*
Total:			2123,090	140,050	100,00	0,000	

Compound 41



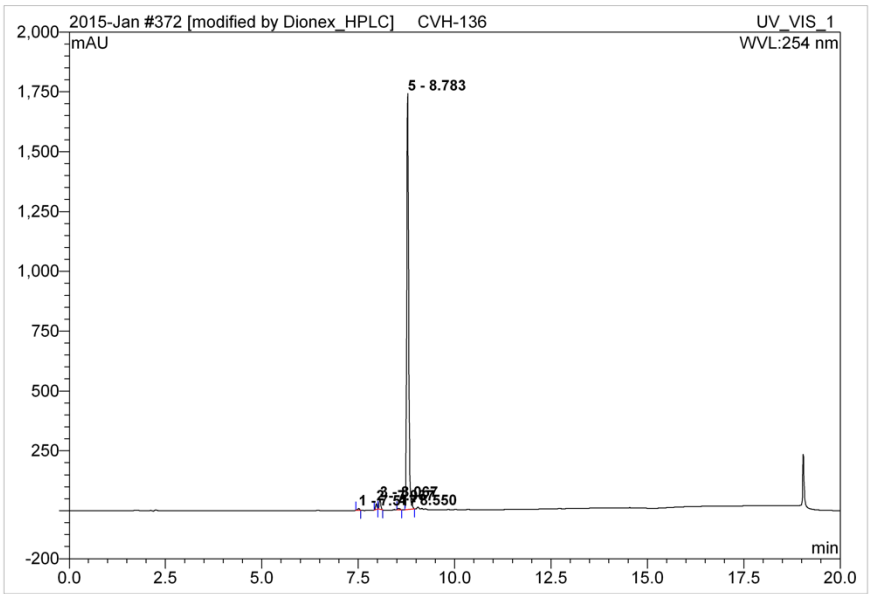
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	7.79	n.a.	8.068	0.352	0.75	n.a.	BMB*
2	9.14	n.a.	808.437	46.410	99.25	n.a.	BMB*
Total:			816.505	46.762	100.00	0.000	

Compound 42



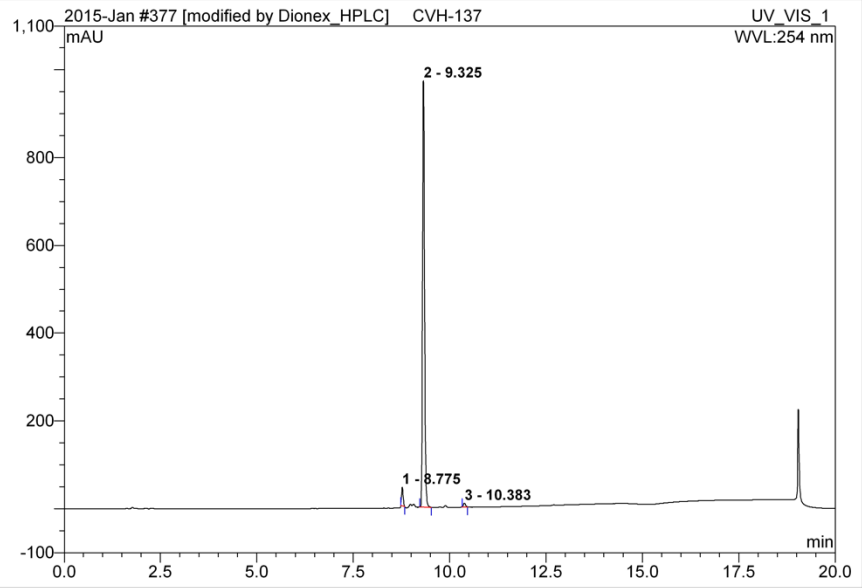
No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8.46	n.a.	23.140	1.840	0.52	n.a.	BM
2	8.53	n.a.	32.764	2.021	0.57	n.a.	MB*
3	9.13	n.a.	2561.243	349.559	98.30	n.a.	BMB*
4	9.91	n.a.	7.371	0.770	0.22	n.a.	BM *
5	10.07	n.a.	13.224	1.410	0.40	n.a.	MB*
Total:			2637.742	355.601	100.00	0.000	

Compound 43



No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	7.52	n.a.	6.800	0.392	0.38	n.a.	BMB*
2	7.97	n.a.	24.947	1.135	1.09	n.a.	BMb*
3	8.07	n.a.	40.101	1.969	1.90	n.a.	bMB*
4	8.55	n.a.	6.851	0.406	0.39	n.a.	BMB*
5	8.78	n.a.	1738.003	100.001	96.24	n.a.	BMB*
Total:			1816.702	103.903	100.00	0.000	

Compound 44



No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount	Type
1	8.78	n.a.	42.575	2.047	3.39	n.a.	BMB*
2	9.33	n.a.	972.238	57.836	95.72	n.a.	BMB*
3	10.38	n.a.	8.466	0.540	0.89	n.a.	BMB*
Total:			1023.279	60.422	100.00	0.000	